

THE CAMBRIDGE ENCYCLOPEDIA OF LANGUAGE

DAVID CRYSTAL

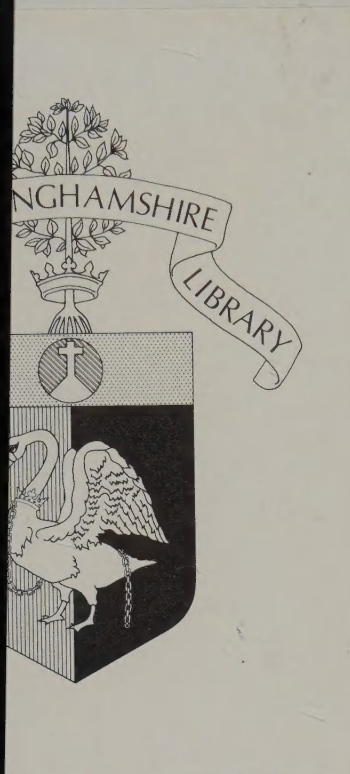




Abkhaz, accents, acoustics, advertising, bilingualism, blasphemy, and brain function; child language, chimpanzee communication, creoles, crosswords, dialects, and dictionaries; Esperanto, ethnicity, forensic linguistics, and grammar; handicap, handwriting, Indo-European, intonation, Japanese, and Kannada; language learning and teaching, language planning, machine translation, morphology, and motherese; names, national languages, onomastics, phonetics, phonology, and prescriptivism; reading, rebuses, semantics, signing, speech synthesis, spelling, and stylistics; taboos, typology, universals, the voice, and voice-prints; wolf-children, writing, Xhosa, Yoruba, and Zulu . . .

Any list can only begin to convey the enormous diversity, complexity, and intrinsic fascination of the human faculty of language which is celebrated in **The Cambridge Encyclopedia of Language**. Carefully developed to present an exceptionally wide range of information in a lively, readable and visually exciting way, it provides the general reader with a succinct, thematic account of language variety, history, structure, and behaviour. Above all it responds to the everyday questions that arise when, for example, teachers face multilingual classrooms, parents listen to their children beginning to talk or read, or professionals consider the practical applications of linguistic research. At the same time the encyclopedia reflects a deeper level of interest, arising out of the researcher's attempt to find patterns and principles in what we observe: the neurolinguist's study of the brain's functions; the speech scientist's investigation of speech and hearing mechanisms; or the linguist's comparative study of the languages of the world, whether spoken by hundreds or by millions.

David Crystal's departure from conventional alphabetical principles has meant that the major Parts of the encyclopedia are organized in the most logical and natural way and the text written throughout in his easy and accessible style. Nevertheless, the Glossary (of over 1000 terms), the Table of the world's languages, and the substantial indexes included in the Appendices, as well as meticulous cross-referencing throughout the work, ensure that this will be an authoritative source of reference for all readers with an interest in language, languages, and language-related matters.



milton keynes

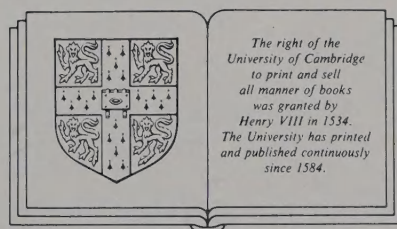
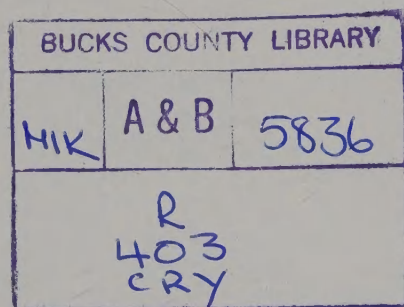


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DAVID CRYSTAL

Professorial Fellow,
University College of North Wales, Bangor



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EDITORIAL ADVISORS

Professor Charles Ferguson
Department of Linguistics, Stanford University

Professor Vicky Fromkin
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Professor Shirley Brice Heath
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The late Professor C. F. and Professor F. M. Voegelin
Department of Anthropology, Indiana University

Preface

My purpose in writing this book is to celebrate the existence of human language, and to provide a tribute to those who engage in its study. Its aim is to illustrate the enormous diversity of the world's languages, and the great range, complexity, and beauty of expression that can be encountered in any of them, whether spoken by millions or by hundreds – from the most polished formulations of respected literature to the most routine utterances of everyday conversation. At the same time, I want to convey something of the fascination and value of linguistic research, which has led to innumerable general findings about language structure, development, and use, and which has prompted so many important applications in relation to the problems of the individual and society.

The book therefore operates on two levels. It reflects the kind of interest in language history and behaviour that we encounter daily as we argue over the history of a word's meaning or listen in fascination to a young child's early attempts to talk. At the same time, it reflects a deeper level of interest, arising out of our attempt to make sense of what we observe, and to find patterns and principles in it – an interest that can lead to a professional career in linguistic research or in one of the language-related professions, such as language teaching or therapy.

I have certain practical aims also. I hope the book will help promote an informed awareness of the complexity of human language, draw attention to the range of human problems that have a linguistic cause or solution, and emphasize the fact that people have language rights which should not be neglected. Earlier this year, in fact, I received a copy of a plea for a 'Declaration of Individual Linguistic Rights', sponsored by Francisco Gomes de Matos of the Federal University of Pernambuco, Recife, Brazil. The plea points to the widespread occurrence of linguistic prejudice and discrimination around the world, and to the problems people face when they wish to receive special help in language learning and use. All people have the right to use their mother tongue, to learn a second language, to receive special treatment when suffering from a language handicap ... but in many parts of the world, these rights are absent or inadequately provisioned. Only concentrated public attention on the issues will promote the recognition of such rights,

and it is my hope that this encyclopedia will play its part in helping to develop a climate where people will sense the importance of language in the individual and in society, and act accordingly.

I have used the term 'encyclopedia', but not without misgivings: if there were a term for 'embryo encyclopedia', it would be better. The subject of language is truly vast, and it is possible only to make a start in 480 pages. In particular, because my background is in linguistics, I am conscious of paying insufficient attention to other traditions of thinking and research, such as in philosophy, psychology, and artificial intelligence. Also, although I write from a linguistic point of view, this book is not an introduction to linguistics: I have stopped short of a discussion of the many approaches to the analysis of language that linguistics provides, and I give few technical details about theoretical differences, hoping that my references will provide sources for those who wish to enquire into these matters further.

This is just one of many apologies scattered throughout the book. Facts about the use of language are extremely difficult to come by, and, when obtained, fall quickly out of date. Language changes rapidly, as do the techniques and theories that scholars devise to study it. On the other hand, few books can have been written with such an optimistic outlook – thanks largely to the backing and enthusiasm of the team of editorial advisors appointed by Cambridge University Press. To know that one's plans and material will be scrutinized by scholars of such eminence is immensely reassuring, and I have benefitted immeasurably from their advice while the book was being written. I am therefore delighted to acknowledge my debt of gratitude to these advisors: it has been a privilege to have their support, and I hope the result does them no disservice. Needless to say, the responsibility for what remains is mine alone.

Finally, it is my pleasant duty to thank members of the Department of Linguistic Science, University of Reading, and of the Centre for Information on Language Teaching, London, for help in researching aspects of the work; the editorial and design staff of the Press, for their invaluable advice during the period of this book's preparation; and, above all, the support and assistance of my wife, Hilary, in helping this project come to fruition.

DAVID CRYSTAL





PART I

Popular ideas about language

Why does language provide such a fascinating object of study? Perhaps because of its unique role in capturing the breadth of human thought and endeavour. We look around us, and are awed by the variety of several thousand languages and dialects, expressing a multiplicity of world views, literatures, and ways of life. We look back at the thoughts of our predecessors, and find we can see only as far as language lets us see. We look forward in time, and find we can plan only through language. We look outward in space, and send symbols of communication along with our spacecraft, to explain who we are, in case there is anyone there who wants to know.

Alongside this, there is the importance we attach to language, as a means of understanding ourselves and our society, and of resolving some of the problems and tensions that arise from human interaction. No sector of society is unaffected, and all can benefit from the study of the linguistic factors that constitute a barrier, as well as a means of communication. But linguistic problems rarely admit simple solutions, and it is this elementary observation that has led to the present work.

The main aim of this encyclopedia is to provide information about all aspects of language structure and use, so that the complex forces which act upon language, and upon the people who use it, will be more readily understood. The work is founded on the belief that the systematic analysis and discussion of language in an objective way is an essential step forward towards any world in which mutual respect and tolerance is a reality. 'They don't speak

like us; therefore they aren't like us; therefore they don't like us.' This is the kind of logic that the information in this book seeks to deny.

But such a world is a long way off. The world we currently see displays many signs of linguistic intolerance and tension. They appear most noticeably in the language riots of India or Belgium, and in the disfigured road signs of Wales or northern Spain; but they are present in more subtle ways, in the unmotivated preservation of traditional purist linguistic practices in many schools, and in the regular flow of complaints on the world's radio channels and in the press about *other* people's usage.

In the opening part of this book, therefore, we look at the most important ideas that have influenced the nature of popular opinion about language, in both 'civilized' and 'uncivilized' societies. We begin with the idea of correctness, and the historical development of prescriptive attitudes to language. We look at the desire to keep language 'pure', as encountered in the movements in support of language academies, and the general concern over linguistic change. We address the proposition that all languages are equal, in the face of the widespread view that some are more equal than others. This is followed by a discussion of popular beliefs about the magical and mystical power of language, and a general investigation of the wide range of functions that language performs in everyday life. Part I then concludes by considering the intriguing but intricate question of the relationship between language and thought.

The cultural diversity of language, as reflected in a disputation between three medieval doctors (an engraving by Marcantonio Raimondi), a ritual debate among Rotinese elders, and a confrontation between human beings and their computer database.

1 The prescriptive tradition

At the beginning of any book on language, readers have a distinct advantage over the author. More than in most areas of enquiry, they already 'know' the subject, in the sense that they already speak and read a language. Moreover, because in modern societies linguistic skills are highly valued, many readers will have definite views about the nature of language and how it should function. This is not the usual state of mind of someone who opens an encyclopedia on, say, astronomy, Roman mythology, or physics.

We must therefore begin our investigation by looking at the main opinions and beliefs people already hold about language as a result of the normal processes of education and social development. These views will provide a frame of reference familiar to many readers, and they will also act as a point of departure for the detailed, systematic, and objective study of the subject in the following pages.

AN EMOTIONAL SUBJECT

It is not easy to be systematic and objective about language study. Popular linguistic debate regularly deteriorates into invective and polemic. Language belongs to everyone; so most people feel they have a right to hold an opinion about it. And when opinions differ, emotions can run high. Arguments can flare as easily over minor points of usage as over major policies of linguistic planning and education (§61).

Language, moreover, is a very public behaviour, so that it is easy for different usages to be noted and criticized. No part of society or social behaviour is exempt: linguistic factors influence our judgments of personality, intelligence, social status, educational standards, job aptitude, and many other areas of identity and social survival. As a result, it is easy to hurt, and to be hurt, when language use is unfeeling attacked.

The American linguist Leonard Bloomfield (1887–1949) discussed this situation in terms of three levels of response people give to language. The 'primary response' is actual usage. 'Secondary responses' are the views we have about language, often expressed in some kind of terminology. 'Tertiary responses' are the feelings which flare up when anyone dares to question these views. Bloomfield tells the story of visiting a doctor who was quite firm in his view that the Amerindian language Chippewa had only a few hundred words (p. 6). When Bloomfield attempted to dispute the point, the doctor turned away and refused to listen. Irrational responses of this kind are unfortunately all too common; but everyone is prone to them – linguist and non-linguist alike.

Prescriptivism

In its most general sense, prescriptivism is the view that one variety of language has an inherently higher value than others, and that this ought to be imposed on the whole of the speech community. The view is propounded especially in relation to grammar and vocabulary, and frequently with reference to pronunciation. The variety which is favoured, in this account, is usually a version of the 'standard' written language, especially as encountered in literature, or in the formal spoken language which most closely reflects this style. Adherents to this variety are said to speak or write 'correctly'; deviations from it are said to be 'incorrect'.

All the main European languages have been studied prescriptively, especially in the 18th century approach to the writing of grammars and dictionaries. The aims of these early grammarians were threefold: (a) they wanted to codify the principles of their languages, to show that there was a system beneath the apparent chaos of usage, (b) they wanted a means of settling disputes over usage, (c) they wanted to point out what they felt to be common errors, in order to 'improve' the language. The authoritarian nature of the approach is best characterized by its reliance on 'rules' of grammar. Some usages are 'prescribed', to be learnt and followed accurately; others are 'proscribed', to be avoided. In this early period, there were no half-measures: usage was either right or wrong, and it was the task of the grammarian not simply to record alternatives, but to pronounce judgment upon them.

These attitudes are still with us, and they motivate a widespread concern that linguistic standards should be maintained. Nevertheless, there is an alternative point of view that is concerned less with 'standards' than with the *facts* of linguistic usage. This approach is summarized in the statement that it is the task of the grammarian to *describe*, not *prescribe* – to record the facts of linguistic diversity, and not to attempt the impossible tasks of evaluating language variation or halting language change. In the second half of the 18th century, we already find advocates of this view, such as Joseph Priestley, whose *Rudiments of English Grammar* (1761) insists that 'the custom of speaking is the original and only just standard of any language'. Linguistic issues, it is argued, cannot be solved by logic and legislation. And this view has become the tenet of the modern linguistic approach to grammatical analysis.

In our own time, the opposition between 'descriptivists' and 'prescriptivists' has often become



George Orwell (1903–50)

In *Politics and the English Language* (1947), Orwell lists six rules 'that one can rely on when instinct fails'. These rules were not written with literary or scientific language in mind, but with the everyday need to foster language 'as an instrument for expressing and not for concealing or preventing thought'. In this way, Orwell hoped, it would be possible to halt the decline in the language, which he saw as intimately connected with the 'political chaos' of the time.

- 1 Never use a metaphor, simile or other figure of speech which you are used to seeing in print.
 - 2 Never use a long word when a short one will do.
 - 3 If it is possible to cut a word out, always cut it out.
 - 4 Never use the passive where you can use the active.
 - 5 Never use a foreign phrase, a scientific word or a jargon word if you can think of an everyday English equivalent.
 - 6 Break any of these rules sooner than say anything outright barbarous.
- (See further, p. 378.)

extreme, with both sides painting unreal pictures of the other. Descriptive grammarians have been presented as people who do not care about standards, because of the way they see all forms of usage as equally valid. Prescriptive grammarians have been presented as blind adherents to a historical tradition. The opposition has even been presented in quasi-political terms – of radical liberalism vs elitist conservatism.

If these stereotypes are abandoned, we can see that both approaches are important, and have more in common than is often realized – involving a mutual interest in such matters as acceptability, ambiguity, and intelligibility. The descriptive approach is essential because it is the only way in which the competing claims of different standards can be reconciled: when we know the facts of language use, we are in a better position to avoid the idiosyncrasies of private opinions, and to make realistic recommendations about teaching or style. The prescriptive approach provides a focus for the sense of linguistic values which everyone possesses, and which ultimately forms part of our view of social structure, and of our own place within it. After 200 years of dispute, it is perhaps sanguine to expect any immediate rapport to be achieved, but there are some grounds for optimism, now that sociolinguists (p. 410) are beginning to look more seriously at prescriptivism in the context of explaining linguistic attitudes, uses, and beliefs.

Where traditional grammatical rules come from

	Example of a prescriptive rule	Descriptive comment
Latin and Greek The unchanging form of these languages, the high prestige they held in European education, and the undisputed brilliance of classical literature led to their adoption as models of linguistic excellence by grammarians of other languages.	You should say or write <i>It is I</i> and not <i>It is me</i> , because the verb <i>be</i> is followed by the nominative case in Latin, not the accusative.	The Latin rule is not universal. In Arabic, for example, <i>be</i> is followed by the accusative. In English, <i>me</i> is the educated informal norm; <i>I</i> is felt to be very formal. In French, only <i>moi</i> is possible (<i>c'est moi</i> , etc.)
The written language Writing is more careful, prestigious and permanent than speech, especially in the context of literature. People are therefore often told to speak as they would write.	You should say and write <i>whom</i> and not <i>who</i> , in such sentences as — <i>did you speak to?</i>	<i>Whom</i> is common in writing, and in formal styles of speech; but <i>who</i> is more acceptable in informal speech. The rules which govern acceptable speech and writing are often very different.
Logic Many people feel that grammar should be judged insofar as it follows the principles of logic. Mathematics, from this viewpoint, is the ideal use of language.	You shouldn't say <i>I haven't done nothing</i> because two negatives make a positive.	Here, two negatives do not make a positive, but a more emphatic negative – a construction which is found in many languages (e.g. French, Russian). The example is not acceptable in standard English, but this is the result of social factors, not the dictates of logic.

Murray's Grammar

One of the most influential grammars of the 18th century was Robert Lowth's *Short Introduction to English Grammar* (1762). This was the inspiration for Lindley Murray's widely used *English Grammar* (1794). Both grammars went through over 20 editions in the decades following publication.

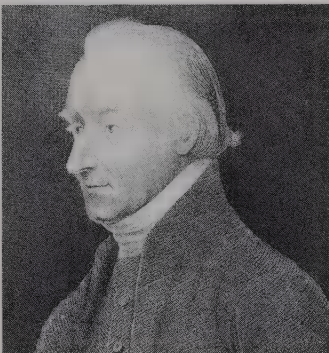
Murray's book had an enormous influence on school practice and popular attitudes, especially in the USA. His alliterative axiom contains several watchwords of prescriptivism: 'Perspicuity requires the qualities of purity, propriety and precision'.

Some of Murray's general linguistic principles were unexceptionable, such as 'Keep clear of double meaning or ambiguity' and 'Avoid unintelligible words or phrases.' But most of his analyses, and the detailed principles of his Appendix, 'Rules and observations for promoting perspicuity in speaking and writing', contain the kind of arbitrary rule

and artificial, Latinate analysis which was to fuel two centuries of argument. In Rule 16, for example, we find the negation principle illustrated: 'Two negatives, in English, destroy one another, or are equivalent to an affirmative.'

Murray's rules were widely taught, and formed the basis for much of the linguistic purism still encountered today. However, they were also fiercely attacked. One writer in the *American Journal of Education* (in 1826) compares the grammar to a 'foreign rack on which our simple language has been stretched'. Another (in 1833) insists that grammarians should 'discover' and not 'invent' rules. Long before the advent of modern linguistics, the battle lines of both descriptivism and prescriptivism had been clearly established.

Right: **Murray's English Grammar**



Left: Lindley Murray (1745–1826)

ENGLISH GRAMMAR,

ADAPTED TO THE

DIFFERENT CLASSES OF LEARNERS.

WITH

AN APPENDIX,

CONTAINING

RULES AND OBSERVATIONS,

FOR ASSISTING THE MORE ADVANCED STUDENTS

TO WRITE WITH PERSPICUITY AND ACCURACY.

"They who are learning to compose and arrange their sentence, with accuracy and order, are learning, at the same time, to think with accuracy and order." BLAIR.

By LINDLEY MURRAY.

THE NINTH EDITION,

WITH CORRECTIONS AND ADDITIONS.

Printed by T. Wilson and R. Spence, High-Ousegate, ~~Dankey Street~~

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The academies

Some countries have felt that the best way to look after a language is to place it in the care of an academy. In Italy, the *Accademia della Crusca* was founded as early as 1582, with the object of purifying the Italian language. In France, in 1635, Cardinal Richelieu established the *Académie française*, which set the pattern for many subsequent bodies. The statutes of the *Académie* define as its principal function:

to labour with all possible care and diligence to give definite rules to our language, and to render it pure, eloquent, and capable of treating the arts and sciences.

The 40 academicians were drawn from the ranks of the church, nobility, and military – a bias which continues to the present day. The *Académie*'s first dictionary appeared in 1694.

Several other academies were founded in the 18th and 19th centuries. The Spanish Academy was founded in 1713 by Philip V, and within 200 years corresponding bodies had been set up in most South American Spanish countries. The Swedish Academy was founded in 1786; the Hungarian in 1830. There are three Arabic academies, in Syria, Iraq, and Egypt. The Hebrew Language Academy was set up more recently, in 1953.

In England, a proposal for an academy was made in the 17th century, with the support of such men as John Dryden and Daniel Defoe. In Defoe's view,

the reputation of the members of this academy

would be enough to make them the allowed judges of style and language; and no author would have the impudence to coin without their authority ... There should be no more occasion to search for derivations and constructions, and it would be as criminal then to coin words as money.

In 1712, Jonathan Swift presented his *Proposal for Correcting, Improving and Ascertaining the English Tongue*, in which he complains to the Lord Treasurer of England, the Earl of Oxford, that

our language is extremely imperfect; that its daily improvements are by no means in proportion to its daily corruptions; that the pretenders to polish and refine it have chiefly multiplied abuses and absurdities; and that in many instances it offends against every part of grammar.

His academy would 'fix our language for ever', for,

I am of the opinion, it is better a language should not be wholly perfect, than it should be perpetually changing.

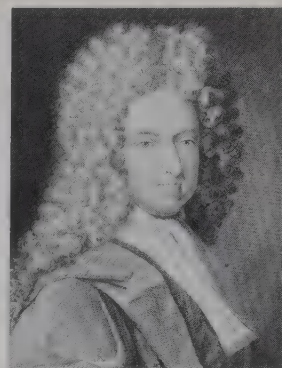
The idea received a great deal of support at the time, but nothing was done. And in due course, opposition to the notion grew. It became evident that the French and Italian academies had been unsuccessful in stopping the course of language change. Dr Johnson, in the Preface to his Dictionary, is under no illusion about the futility of an academy, especially in England, where he finds 'the spirit of English liberty' contrary to the whole idea:

When we see men grow old and die at a certain time one after another, century after century, we laugh at the elixir that promises to prolong life to a thousand years; and with equal justice may the lexicographer be derided, who being able to produce no example of a nation that has preserved their words and phrases from mutability, shall imagine that his dictionary can embalm his language, and secure it from corruption, and decay, that it is in his power to change sublunary nature, or clear the world at once from folly, vanity, and affectation.

From time to time, the idea of an English Academy continues to be voiced, but the response has never been enthusiastic. A similar proposal in the USA was also rejected. By contrast, since the 18th century, there has been an increasing flow of individual grammars, dictionaries, and manuals of style in all parts of the English-speaking world.

Language change

The phenomenon of language change probably attracts more public notice and criticism than any other linguistic issue. There is a widely held belief that change must mean deterioration and decay. Older people observe the casual speech of the young, and conclude that standards have fallen markedly. They place the blame in various quarters – most often in the schools, where patterns of language education have changed a great deal in recent



Daniel Defoe
(1660?–1731)



Jonathan Swift (1667–1745)



Kippers surtoast? Advertisements like this could be found, with the appropriate language change, in almost any European city. They illustrate the way English has permeated public life, despite the efforts of many countries to stop it. The German post office, for example, insisted for many years that *Fernsprecher* should be used on phone booths, though *Telefon* was far more common in speech; but in 1981 they made the change.

In 1977, the French went so far as to pass a law banning the use of English loan words in official contexts, if an equivalent word exists in French – but it is a law honoured more in the breach than in the observance. Whether one approves or not, the academies seem to be no match for *Franglais*, *Angldeutsch*, *Swedish*, *Spanglish*, and all the other hybrids which have become so noticeable in recent years (§§55, 61).

years (§44), but also in state public broadcasting institutions, where any deviations from traditional norms provide an immediate focus of attack by conservative, linguistically sensitive listeners. The concern can even reach national proportions, as in the widespread reaction in Europe against what is thought of as the 'American' English invasion.

UNFOUNDED PESSIMISM

It is understandable that many people dislike change, but most of the criticism of linguistic change is misconceived. It is widely felt that the contemporary language illustrates the problem at its worst, but this belief is shared by every generation. Moreover, many of the usage issues recur across generations: several of the English controversies which are the focus of current attention can be found in the books and magazines of the 18th and 19th centuries – the debate over *it's me* and *very unique*, for example. In *The Queen's English* (1863), Henry Alford, the Dean of Canterbury, lists a large number of usage issues which worried his contemporaries, and gave them cause to think that the language was rapidly decaying. Most are still with us, with the language not obviously affected. In the mid-19th century, it was predicted that British and American English would be mutually unintelligible within 100 years!

There are indeed cases where linguistic change can lead to problems of unintelligibility, ambiguity, and social division. If change is too rapid, there can be major communication problems, as in contemporary Papua New Guinea – a point which needs to be considered in connection with the field of language planning (§§55, 61). But as a rule, the parts of language which are changing at any given time are tiny, in comparison to the vast, unchanging areas of language. Indeed, it is because change is so infrequent that it is so distinctive and noticeable. Some degree of caution and concern is therefore always desirable, in the interests of maintaining precise and efficient communication; but there are no grounds for the extreme pessimism and conservatism which is so often encountered – and which in English is often summed up in such slogans as 'Let us preserve the tongue that Shakespeare spoke.'

THE INEVITABILITY OF CHANGE

For the most part, language changes because society changes (§10). To stop or control the one requires that we stop or control the other – a task which can succeed to only a very limited extent. Language change is inevitable and rarely predictable, and those who try to plan a language's future waste their time if they think otherwise – time which would be better spent in devising fresh ways of enabling society to cope with the new linguistic forms that accompany each generation. These days, there is in fact a growing recognition of the need to develop a greater linguistic awareness and tolerance of change, especially in a multi-ethnic



William Caxton

One of the earliest English voices to complain about the problems of linguistic change was William Caxton (1422?–91). He was writing at a time when English had undergone its greatest period of change, which had resulted in a major shift in pronunciation, the almost total loss of Anglo-Saxon inflections, and an enormous influx of new vocabulary, mainly from French:

And certaynly our language now used varyeth ferre from that whiche was used and spoken whan I was borne . . . And that comyn Englysshe that is spoken in one shyre varyeth from a nother. In so moche that in my dayes hapened that certayn marchauntes were in a shippe in Tamyse [Thames] for to have sayled over the see into Zelande, and for lacke of wynde thei taryed atte forlond, and wente to lande for to refreshe them. And one of theym named Sheffelde, a mercer, cam in to an hows and axed for mete, and specyally he axyd after 'eggys'. And the good wyf answerde that she coude speke no Frenshe. And the marchaunt was angry, for he also coude speke no Frenshe, but wold have hadde eggys, and she understode hym not. And thenne at last a nother sayd that he wolde have 'eyren'. Then the good wyf sayd that she understod hym wel. Loo! What sholde a man in thyse dayes now wryte, 'eggys' or 'eyren'? Certaynly, it is harde to playse every man by cause of dyversite & chaunge of langage.

(Preface to *Eneydos*, 1490; modernized punctuation)

Caxton's plaint echoes through the ages, though problems of linguistic change have never been so serious since, with the subsequent standardization of English, and the spread of the written language.

society. This requires, among other things, that schools have the knowledge and resources to teach a common standard, while recognizing the existence and value of linguistic diversity. Such policies provide a constructive alternative to the emotional attacks which are so commonly made against the development of new words, meanings, pronunciations, and grammatical constructions. But before these policies can be implemented, it is necessary to develop a proper understanding of the inevitability and consequences of linguistic change (§54).

Some people go a stage further, and see change in language as a progression from a simple to a complex state – a view which was common as a consequence of 19th-century evolutionary thinking. But there is no evidence for this view. Languages do not develop, progress, decay, evolve, or act according to any of the metaphors which imply a specific endpoint and level of excellence. They simply change, as society changes. If a language dies out, it does so because its status alters in society, as other cultures and languages take over its role: it does not die because it has 'got too old', or 'become too complicated', as is sometimes maintained. Nor, when languages change, do they move in a predetermined direction. Some are losing inflections; some are gaining them. Some are moving to an order where the verb precedes the object; others to an order where the object precedes the verb. Some languages are losing vowels and gaining consonants; others are doing the opposite. If metaphors must be used to talk about language change, one of the best is that of a system holding itself in a state of equilibrium, while changes take place within it; another is that of the tide, which always and inevitably changes, but never progresses, while it ebbs and flows.

2 The equality of languages

It comes near to stating the obvious that all languages have developed to express the needs of their users, and that in a sense all languages are equal. But this tenet of modern linguistics has often been denied, and still needs to be defended. Part of the problem is that the word 'equal' needs to be used very carefully. We do not know how to quantify language, so as to be able to say whether all languages have the same 'amounts' of grammar, phonology, or semantic structure (§§16, 17, 28). There may indeed be important differences in the structural complexity of language, and this possibility needs to be investigated. But all languages are arguably equal in the sense that there is nothing intrinsically limiting, demeaning, or handicapping about any of them. All languages meet the social and psychological needs of their speakers, are equally deserving of scientific study, and can provide us with valuable information about human nature and society. This view is the foundation on which the whole of the present book is based.

'Primitive' languages

There are, however, several widely held misconceptions about languages which stem from a failure to recognize this view. The most important of these is the idea that there are such things as 'primitive' languages – languages with a simple grammar, a few sounds, and a vocabulary of only a few hundred words, whose speakers have to compensate for their language's deficiencies through gestures. Speakers of 'primitive' languages have often been thought to exist, and there has been a great deal of speculation about where they might live, and what their problems might be. If they relied on gestures, how would they be able to communicate at night? Without abstract terms, how could they possibly develop moral or religious beliefs? In the 19th century, such questions were common, and it was widely thought that it was only a matter of time before explorers would discover a genuinely primitive language.

The fact of the matter is that every culture which has been investigated, no matter how 'primitive' it may be in cultural terms, turns out to have a fully developed language, with a complexity comparable to those of the so-called 'civilized' nations. Anthropologically speaking, the human race can be said to have evolved from primitive to civilized states, but there is no sign of language having gone through the same kind of evolution (§48). There are no 'bronze age' or 'stone age' languages, nor have any language types been discovered which correlate with recognized anthropological groups (pastoral, nomadic, etc.). All languages have a com-

plex grammar: there may be relative simplicity in one respect (e.g. no word-endings), but there seems always to be relative complexity in another (e.g. word-position). People sometimes think of languages such as English as 'having little grammar', because there are few word-endings. But this is once again (§1) the unfortunate influence of Latin, which makes us think of complexity in terms of the inflectional system of that language.

Simplicity and regularity are usually thought to be desirable features of language; but no natural language is simple or wholly regular. All languages have intricate grammatical rules, and all have exceptions to those rules. The nearest we come to real simplicity with natural languages is in the case of pidgin languages (§55); and the desire for regu-



Navaho Indian Chief Manulito

The Roman goddess

Fortuna, holding a cornucopia and a rudder – an appropriate deity to associate with the uncertain destinies of languages.



Simple savages?

Edward Sapir was one of the first linguists to attack the myth that primitive peoples spoke primitive languages. In one study, he compared the grammatical equivalents of the sentence *he will give it* (a stone) *to you* in six Amerindian languages. (Hyphens separate the parts of the Indian sentences, and in the literal translations that follow they join words that are equivalent to a single Indian form. For phonetic symbols, see p. 442.)

Wishram

a-č-i-m-l-ud-a
will he him thee to give will

Takelma

?òk-t-xpi-nk

will-give to thee he-or-they-
in-future

Southern Paiute

ma·ya·vaania·aka·aga·'mi
give will visible-thing visible-
creature thee

Yana

ba·'ja·ma·si·wa·?numa
round-thing away to does-or-
will done-unto thou-in-future

Nootka

o?·yi·-?a·q̄x·?at·e?ic
that give will done-unto thou-
art

Navaho

n-a·'yi·diho·?á·l
thee to transitive-marker will
round-thing-in-future

Among many fascinating
features of these complex
grammatical forms, note the

level of abstraction
introduced by some
languages (expressed by
round thing and *visible*) –
quite contrary to the claim
that primitive peoples could
only talk about concrete
objects.

Sapir also gave part of the
full Takelma verb paradigm:

?òkúspi	gives/gave it to you
?òspink	will give to you
?òspi	can give to you
?òspik	evidently gave to you

He points out the similarity to
the way the verb varies in
Latin – a comparison which
many traditional scholars
would have considered to
verge on blasphemy!

larity is a major motivation for the development of auxiliary languages (§58). But these are the only exceptions. Similarly, there is no evidence to suggest that some languages are in the long term 'easier for children to learn' than others – though in the short term some linguistic features may be learned at different rates by the children of speakers of different languages (Part VIII).

None of this is to deny the possibility of linguistic differences which correlate with cultural or social features (such as the extent of technological development), but these have not been found; and there is no evidence to suggest that primitive peoples are in any sense 'handicapped' by their language when they are using it within their own community.

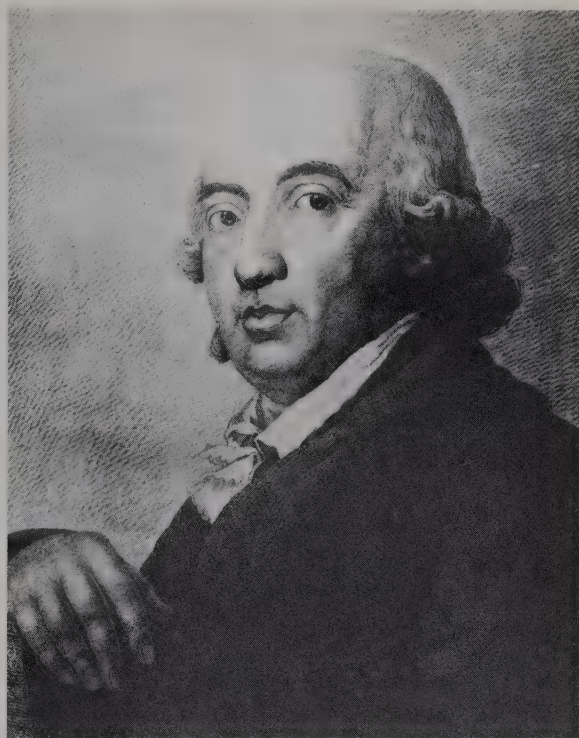
Languages of excellence

At the other end of the scale from so-called 'primitive' languages are opinions about the 'natural superiority' of certain languages. Latin and Greek were for centuries viewed as models of excellence in western Europe because of the literature and thought which these languages expressed; and the study of modern languages is still influenced by the practices of generations of classical linguistic scholars (p. 374).

The idea that one's own language is superior to others is widespread, but the reasons given for the superiority vary greatly. A language might be viewed as the oldest, or the most logical, or the language of gods, or simply the easiest to pronounce or the best for singing. Arabic speakers, for example, feel that their classical language is the most beautiful and logical, with an incomparable grammatical symmetry and lexical richness. Classical Arabic is strongly identified with religion (p. 384), as the language of the Qur'an is held to provide miraculous evidence of the truth of Islam. From this viewpoint, it would be self-evident that, as God chose Arabic as the vehicle of his revelation to his Prophet, this must be the language used in heaven, and thus must be superior to all others.

However, a similar argument has been applied to several other languages, such as Sanskrit and Classical Hebrew, especially in relation to claims about which language is the oldest (§49). For example, J. G. Becanus (1518–72) argued that German was superior to all other languages. It was the language Adam spoke in Eden, but it was not affected in the Babel event, because the early Germans (the Cimbrians) did not assist in the construction of the tower. God later caused the Old Testament to be translated from the original German (no longer extant) into Hebrew.

There have been many other spurious linguistic evaluations, reflecting the sociopolitical situation of the time. Charles V of Germany (who ruled from 1519 to 1558) is said to have spoken French to men, Italian to women, Spanish to God, and German to horses! The Swedish writer, Andreas Kempe (1622–89), satirized contemporary clerical



Johann Herder (1744–1803)

attitudes in presenting the view that in Paradise Adam spoke Danish, God spoke Swedish, and the serpent spoke French.

A LINGUISTIC MYTH

A belief that some languages are intrinsically superior to others is widespread, but it has no basis in linguistic fact. Some languages are of course more useful or prestigious than others, at a given period of history, but this is due to the preeminence of the speakers at that time, and not to any inherent linguistic characteristics. The view of modern linguistics is that a language should not be valued on the basis of the political or economic influence of its speakers. If it were otherwise, we would have to rate the Spanish and Portuguese spoken in the 16th century as somehow 'better' than they are today, and modern American English would be 'better' than British English. Yet when we make such comparisons, we find only a small range of linguistic differences, and nothing to warrant such sweeping conclusions.

At present, it is not possible to rate the excellence of languages in linguistic terms. And it is no less difficult to arrive at an evaluation in aesthetic, philosophical, literary, religious, or cultural terms. How, ultimately, could we compare the merits of Latin and Greek with the proverbial wisdom of Chinese, the extensive oral literature of the Polynesian islands, or the depth of scientific knowledge which has been expressed in English? Perhaps one day some kind of objective linguistic evaluation measure will be devised; but until then, the thesis that some languages are intrinsically better than others has to be denied.

Nationalism In the 18th and 19th centuries, language evaluations were often tied to questions of national identity (§9), especially in Germany, in a school of thought which can be traced back to the view of Johann Herder: 'Has a nation anything more precious than the language of its fathers?' Johann Gottlieb Fichte (1762–1814) praised the German language, and dismissed others, in his *Addresses to the German Nation* (1807), even to the extent of claiming that the native German speaker 'can always be superior to the foreigner and understand him fully, even better than the foreigner understands himself'. But comparable claims were made for French and Spanish; and English was similarly lauded by Thomas Macaulay (1800–59): in his *Minute on Education* (1835), referring to the languages of India, he wrote that English 'stands pre-eminent even among the languages of the West... It may safely be said that the literature now extant in that language is of greater value than all the literature which three hundred years ago was extant in all the languages of the world together.'

3 The magic of language

The magical influence of language is a theme which reverberates throughout the literatures and legends of the world. Language, especially in its written form, is thought to contain special powers, which only the initiated are allowed to understand or control. The beliefs are often linked to a myth about the divine origins of language (§49), but they extend beyond this, to influence religious activities of all kinds, and to reflect a widespread primitive superstition about objects and events which have a symbolic meaning and use.

The belief that words control objects, people, and spirits can be seen in the use of magical formulae, incantations, litanies of names, and many other rites in black and white magic and in organized religion. The language is thought to be able to cure sickness, keep evil away, bring good to oneself and harm to an enemy. Such language usually has to be used with great exactitude, if an effect is to be obtained: meticulous attention is paid to pronunciation, phraseology, and verbal tradition (a factor which appears, most notably, in the history of Sanskrit and Massoretic Hebrew). There often has to be a great deal of repetition, in order to intensify the power of the words. The language, however, does not have to be intelligible to have its effect: many magical formulae are meaningless to those who use them, but there is still great belief in their efficacy (p. 11).

Cases of linguistic superstition abound. To primitive peoples, the written language must appear to be omniscient, when encountered for the first time. Several stories tell of illiterate people stealing an object from a parcel, and being found out when they delivered the message which accompanied it. The writing, it would seem, had a voice of its own – or perhaps a god lived in the letters. Such ideas are found throughout history. The search for mystical meaning in alphabetic script can be seen in the use of runic charms, or in the systems, still in use, which relate letters to numbers, such as gematria (p. 61).

At another level, the mystique of language is something which we encounter throughout modern society, especially in the field of advertising (pp. 386–9). Conquerors, too, well know the power that exists in words. Napoleon, it is said, preferred newspapers to battalions. And what better way is there to remove a nation's influence than to burn its writings? Cortéz did this to the Aztecs in 1520; and the Nazis and Allies did it to each other in World War II.

VERBAL TABOOS

The word *taboo* has been borrowed from Tongan, where it means 'holy' or 'untouchable'. Taboos

exist in all known cultures, referring to certain acts, objects, or relationships which society wishes to avoid – and thus to the language used to talk about them. Verbal taboos are generally related to sex, the supernatural, excretion, and death, but quite often they extend to other aspects of domestic and social life. For example, certain animals may be considered taboo: the Zuñi of New Mexico prohibit the use of the word *takka* ('frogs') during ceremonies; until recently, many southern Americans avoided the word *bull* in polite speech, replacing it by a euphemism, such as *he-cow* or *male beast*; in Lappish and Yakuts, the original name for *bear* is replaced by such phrases as *our lord* or *good father*; and wolves, weasels, rats, lice, snakes, and many other animals have been given name-taboos by various cultures. Even people can be affected: certain members of the family are considered taboo among Australian aborigines; either a special language has to be used to them, or they are not directly addressed at all (§10).

The use of a taboo word can lead to a variety of sayings, practices and responses. The mention of a devil or unclean spirit can evoke a verbal or physical reaction, such as a divine invocation, or the sign of the cross. An obscenity can be the cause of shocked recrimination ('go and wash your mouth out'), physical violence (especially if 'ladies' are present), or legal action (as in the trial over the publication of the unexpurgated D. H. Lawrence novel, *Lady Chatterley's Lover* (p. 61)). The influence of taboo words can even extend across language boundaries. It has been noted that Creek Indians avoid their native words for 'earth' and 'meat' (*fákki* and *apíswa* respectively) because of their phonetic resemblance to English taboo words, which is the dominant language around them. A similar phenomenon has been recorded with Thai learners of English, where English *yet* closely resembles Thai *jēd* (an impolite word for 'to have intercourse'). And Chinese people called *Li* (a common family name) can find their name a source of embarrassment in Rangoon, in view of the Burmese word *lī* ('phallus').

The usual way of coping with taboo words and notions is to develop euphemisms and circumlocutions. Hundreds of words and phrases have emerged to express basic biological functions, and talk about death has its own linguistic world, with its morticians, caskets, and innumerable ways of dying. English examples include to *pass on*, *pass over*, *make one's bow*, *kick the bucket*, *snuff the candle*, *go aloft*, and *cut the painter*. French has *fermer son parapluie* ('to close one's umbrella'), the indescribably final *n'avoir plus mal aux dents* ('to have no more toothache'), and many more.



A Jewish boy wearing phylacteries (Hebrew tefillin) These are a pair of small leather boxes containing scriptural passages, traditionally worn by male Jews over 13 years of age, as a reminder of God's Law. They are worn on the left arm facing the heart, and on the forehead during morning weekday prayers. The bands of the phylacteries are knotted so as to form the Hebrew letters *daleth*, *yod* and *shin*, which form the divine name *Shaddai*.

PROPER NAMES

The use of words as personal labels is a matter of particular significance – a fact which is early learned by children, who are often anxious to conceal their own names, and who so easily hurt, and are hurt, by name-calling. Many primitive people do not like to hear their name used, especially in unfavourable circumstances, for they believe that the whole of their being resides in it, and they may thereby fall under the influence of others. The danger is even greater in tribes (in Australia and New Zealand, for example), where people are given two names – a 'public' name, for general use, and a 'secret' name, which is known only to God, or to the closest members of their group. To get to know a secret name is to have total power over its owner.

The Todas of southern India dislike uttering their own names, to the extent that, if they are asked for their name, they will ask someone else to give it. The Sakalavas of Madagascar do not communicate their own name, or the name of their village, to strangers, in case mischievous use should be made of it. In folklore, there are many examples of forbidden names which, when discovered, break the evil power of their owners – Tom-tit-tot, Vargalaska, Rumpelstiltskin.

The process of personal naming can even affect the whole of a language. Stories are common of tribal chiefs who change their name when they take office, as a result of which any everyday words which resemble that name have to be replaced, so that the name will not be used in inauspicious circumstances. It is reported, for example, that when Queen Rasoharina of the Anemerina tribe in Madagascar came to the throne, the word *sopherina* ('silk worm') was forbidden, and replaced by *zana dandy* ('silk's child').

Death can lead to major taboo effects on the use of names. Often, the names of the dead are not to be uttered – though this may well be out of fear rather than respect: while a name endures, it is believed, the dead person does also, and those who utter the name bring the evil of death upon themselves. In some cultures (such as the Polynesian), therefore, when a person dies, other people of the same name have to be renamed, or, if the name happens to correspond to a word in the language, that word would have to be changed. By contrast, some cultures (such as the Greenlandic) place great store by the name of the dead person, who is thought to be unable to rest in peace, unless a child has been named after him. In yet others, if a child dies, the next by the same mother will be called by some evil name, to show the death spirit that the child is not worth bothering about.

Sophisticated societies have had their superstitions too. In the Roman levies, the authorities took good care to enrol first those men who had auspicious names, such as Victor and Felix. The names of Greek gods were carved on stone and sunk in the sea, to guard against profanation. In Plato's *Cratylus*, the debaters worry about using the names of gods as etymological examples (p. 404), and in the Christian era there are long-standing prohibitions over taking the name of the Lord 'in vain' (p. 61). Older Hebrew names usually had meanings, such as Nathaniah ('Yahweh has given') or Azzan ('Strong'). When Adrian VI became pope, he was persuaded not to retain his own name on the grounds that all popes who had done so had died in the first year of their reign. People in the 20th century may find it easy to dismiss such attitudes, but things have not greatly changed. It is unlikely that popular opinion would ever allow a new ship to be named *Titanic*.

The name of God

The true name of God, or of individual gods, is a closely guarded secret in many cultures, if indeed it is known at all. The real names of Allah and Confucius are secret, as were the names of many Egyptian deities.

Observant Jews do not pronounce the divine name as it occurred in the Hebrew of the Old Testament. It was written with four consonants, YHWH (the tetragrammaton), vowel points not being written in pre-Massoretic Hebrew (p. 202). In reading aloud, the forms 'Adonai' or 'Elohim' are substituted. The form *Yahweh* is a scholarly attempt at reconstruction, interpreting its meaning as part of the verb 'to be', to give the title 'the One who is'. The name *Jehovah* has been traced back only to the 14th century: it is reached by inserting the vowels of 'Adonai' under the tetragrammaton, and arose from a misreading by Christian scholars of the two sources as one word. It is thus not of Scriptural origin, and the true pronunciation of YHWH is now quite lost.

Out with the old, in with the new

The mystique of words can affect place names too, as a country searches to replace forms which have unhappy associations. In 1868, *Edo* was renamed *Tokyo* ('eastern residence'), symbolizing a new period in Japanese history. *St Petersburg* became *Petrograd* and then *Leningrad*; *Christiania* became *Oslo*. It is common practice for new nations to change their names, or the names of their major cities, to symbolize their independence and freedom from imperialist influence. Thus in recent times in Africa, for example, we have seen Upper Volta change its name to Burkina Faso (1985); Rhodesia was renamed as Zimbabwe

(1980), with its capital city Salisbury renamed Harare (1982); Dahomey has become Benin (1975), French Sudan has become Mali (1960), and Gold Coast has become Ghana (1957).

The old and new Tokyo: the Imperial Palace, with the Shinjuku skyscrapers behind



4 The functions of language

The question ‘Why do we use language?’ seems hardly to require an answer. But, as is often the way with linguistic questions, our everyday familiarity with speech and writing can make it difficult to appreciate the complexity of the skills we have learned. This is particularly so when we try to define the range of functions to which language can be put.

‘To communicate our ideas’ is the usual answer to the question – and, indeed, this must surely be the most widely recognized function of language. Whenever we tell people about ourselves or our circumstances, or ask for information about other selves and circumstances, we are using language in order to exchange facts and opinions. The use of language is often called ‘referential’, ‘propositional’, or ‘ideational’. It is the kind of language which will be found throughout this encyclopedia – and in any spoken or written interaction where people wish to learn from each other. But it would be wrong to think of it as the *only* way in which we use language. Language scholars have identified several other functions where the communication of ideas is a marginal or irrelevant consideration.

Emotional expression

Mr X carefully leans his walking stick against a wall, but it falls over. He tries again, and it falls a second time. Mr X roundly curses the walking stick. How should we classify this function of language? It cannot be ‘communication of ideas’, for there is no-one else in the room.

Here we have one of the commonest uses of language – a means of getting rid of our nervous energy when we are under stress. It is the clearest case of what is often called an ‘emotive’ or ‘expressive’ function of language. Emotive language can be used whether or not we are alone. Swear words and obscenities are probably the commonest signals to be used in this way, especially when we are in an angry or frustrated state (p. 61). But there are also many emotive utterances of a positive kind, such as our involuntary verbal reactions to beautiful art or scenery, our expression of fear and affection, and the emotional outpourings of certain kinds of poetry.

The most common linguistic expressions of emotion consist of conventional words or phrases (such as *Gosh*, *My*, *Darn it*, and *What a sight*) and the semi-linguistic noises often called *interjections* (such as *Tut-tut*, *Ugh*, *Wow*, *Ow*, and *Ouch*). Also, an important function of the prosody of language (§29) is to provide an outlet for our attitudes while we speak. At a more sophisticated level, there are

many literary devices of grammar and vocabulary which convey the writer’s feelings (§12). However, in these more complex cases it becomes difficult to distinguish the emotional function of language from the ‘ideational’ function described above.

Social interaction

Mrs P sneezes violently. Mrs. Q says ‘Bless you!’ Mrs P says ‘Thank you.’ Again, this hardly seems to be a case of language being used to communicate ideas, but rather to maintain a comfortable relationship between people. Its sole function is to provide a means of avoiding a situation which both parties might otherwise find embarrassing. No factual content is involved. Similarly, the use of such phrases as *Good morning* or *Pleased to meet you*, and ritual exchanges about health or the weather, do not ‘communicate ideas’ in the usual sense.

Sentences of this kind are usually automatically produced, and stereotyped in structure. They often state the obvious (e.g. *Lovely day*) or have no content at all (e.g. *Hello*). They certainly require a special kind of explanation, and this is found in the idea that language is here being used for the purpose of maintaining rapport between people. The anthropologist Bronisław Malinowski (1884–1942) coined the phrase ‘phatic communion’ to refer to this social function of language, which arises out of the basic human need to signal friendship – or, at least, lack of enmity. For someone to withhold these sentences when they are expected, by staying silent, is a sure sign of distance, alienation, even danger.

These illustrations apply to English and to many European languages. But cultures vary greatly in the topics which they permit as phatic communion. The weather is not as universal a conversation-filler as the English might like to think! For example, Rundi women (in Burundi, Central Africa), upon taking leave, are quite often heard to say, routinely and politely, ‘I must go home now, or my husband

Sneezing in Tonga

When someone sneezes, the English stock response is *Bless you*. But there is no equivalent to such forms in many languages, and any remarks which might be made can have a totally different meaning and function. In German, one says *Gesundheit* (‘health’); in Mende (Sierra Leone), the word to use is *biseh* (‘thank you’); in Bembe (Congo), it

is *kuma* (‘be well’); and in Malagasy, it is *velona* (‘alive’). In Tonga, a sneeze is often taken to be a sign that your loved one is missing you. It is quite common for someone to say jokingly, after a sneeze, *Ikai ke nofo noa mua!* – literally, ‘Not to be nothing, alas.’ The sense intended is that the loved one who has ‘caused’ the

sneeze should be thinking about nothing, instead of about the one who has sneezed. A major difference with English is that the person who has sneezed may utter the phrase – a kind of *Bless me!*

will beat me.' Moreover, phatic communion itself is far from universal: some cultures say little, and prefer silence, as in the case of the Paliyans of southern India, or the Aritama of Colombia.

The power of sound

In 1952, children skipping in a school playground were heard to chant: 'Shirley Oneple, Shirley Two-ple, Shirley Threeple ...' and so on up to 'Shirley Tenple'. The instance was recorded by Iona and Peter Opie in *The Lore and Language of School-children* (1959), and it clearly illustrates the 'phonic' character of children's rhymes and games. It is largely nonsense, and yet it performs an important function: the repetitive rhythms help to control the game, and the children plainly take great delight in it.

There are many situations where the only apparent reason for a use of language is the effect the sounds have on the users or listeners. We can group together here such different cases as the rhythmical litanies of religious groups, the persuasive cadences of political speechmaking, the dialogue chants used by prisoners or slaves as they work, the various kinds of language games played by children and adults (p. 59), and the voices of individuals singing in the kitchen or the bath. Perhaps the clearest cases

are the lyrics of popular songs and the range of phonetic effects which can be encountered in poetry. Unintelligible words and phrases are commonplace in the oral poetry of many languages, and can be explained only by a universal desire to exploit the sonic potential of language.

Speaking in tongues

*paka bante rine sokuntare
mare paka tore moti sha-
lara tamere pakashara
merime ...*

This is part of an utterance which occurred spontaneously at a religious service. It displays the repetitive, reduced range of syllabic and rhythmic patterns typical of tongue-speaking, or *glossolalia* – a widespread phenomenon within the Pentecostal tradition of Protestantism and charismatic Roman Catholicism.

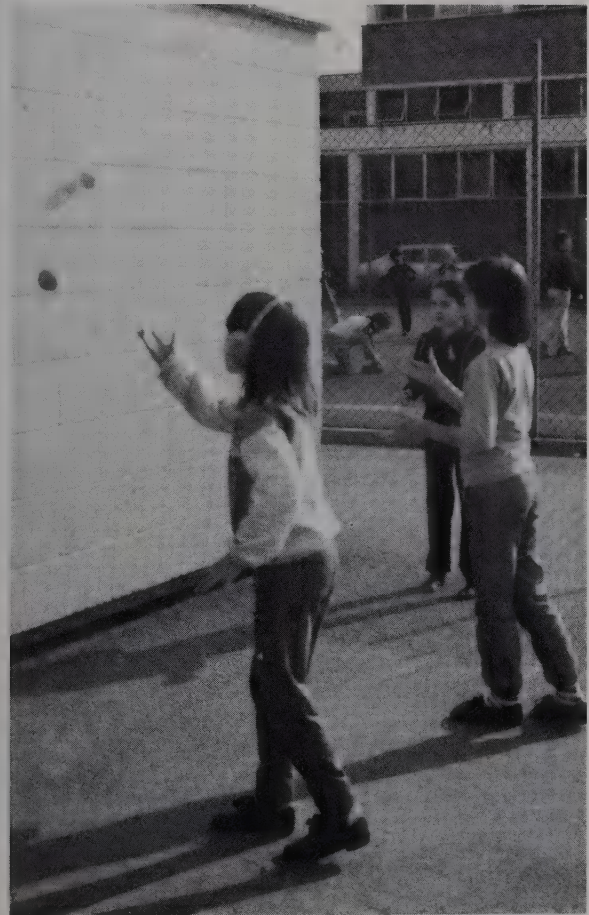
Though many glossolalists believe they are speaking a real but unknown language, the utterance patterns are quite un-

like ordinary language: the sounds are simpler and more repetitive; there are few predictable structural units; and there is no systematic word- or sentence-meaning. When asked, glossolalists are usually unable to repeat utterances exactly, or give a detailed account of their meaning.

Glossolalic speech is interpreted in a general way. To speak in tongues is taken as a sign of the sincerity of a person's belief, or as evidence of conversion. The speakers treat it as a highly significant, emotional event, which reflects their new-found sense of the presence of God. In this respect, the phenomenon

(or its written equivalent, *glossographia*) must be classed along with other cases of functional pseudo-linguistic behaviour, such as jazz 'scat' singing.

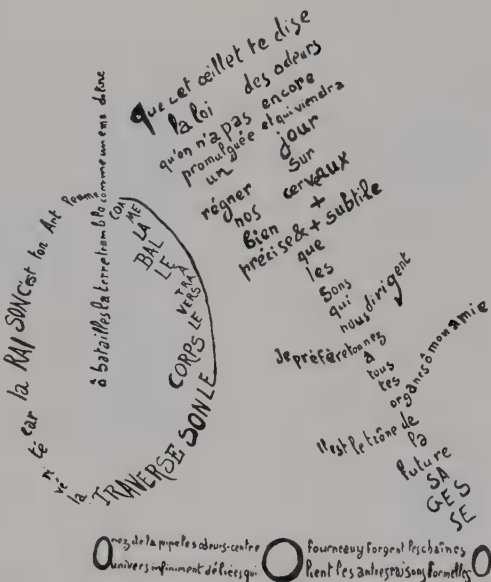
Glossolalia needs to be distinguished from cases of *xenoglossia*, where people miraculously speak a language they have not previously learned or heard. Claims for such cases are rare, difficult to prove (e.g. to rule out the possibility that the speaker heard the language as a child), and usually turn out to involve chance effects – as when a few syllables happen to resemble a sequence in some language.



'I like coffee, I like tea, I like radio, and TV ...' – a typical ball-bouncing monologue

Graphic power

*La mandoline
l'aillet et le bambou*



Writing and print can exercise a purely visual effect upon the reader, over and above the linguistic content of the words (§32). This is best illustrated in poetry where the shape of the poem reflects its subject matter – as in this poem from Guillaume Apollinaire's *Calligrammes* (1918), showing a mandolin, a bamboo stick, and a flower.

Icelandic names

The names of dwarfs in the 13th-century Icelandic Edda are like a painting in sound. A few of the names resemble words in the language, but most have no meaning. (ð and þ are the *th* sound in *this* and *thin* respectively.)

Nýi ok Niði,
Norðri, Suðri,
Austri, Vestri,
Alþjófr, Dvalinn,
Nár ok Náinn,
Nípingr, Dáinn,
Bífurr, Bofurr,
Bomburr, Nóri,
Óri, Ónarr,
Óinn, Mjóðvitnir,
Viggr ok Gandálfr,
Vindálfr, Þorinn,
Fíli, Kíli,
Fundinn, Váli,
Þrór, Þróinn,
Þekkr, Littr ok Vittr,
Nýr, Nýráðr,
Rekkrr, Ráðsiviðr.

The control of reality

In the northern borderland of Nigeria, an Igbo man invokes the spirit powers in his ancestral prayers, using a formulaic curse: *Kwo, unu, kwosi okiro!* ('Wash, all of you, wash down upon all of our enemies!'). In an English church, a priest holds a baby over a font, and pours water on its head, saying *I baptize you* . . .



'Devil dancer' performing a healing ritual in Sri Lanka.

All forms of supernatural belief involve the use of language as a means of controlling the forces which the believers feel affect their lives. The various prayers and formulae which are directed at God, gods, devils, spirits, objects, and other physical forces are always highly distinctive forms of language (p. 384). In some cases, the language might be regarded as a form of ideational communication, with a supernatural being as the recipient – but if so, it is a somewhat abnormal type of communication, for the response is usually appreciated only in the mind or behaviour of the speaker, and there may be no evident response at all.

In other cases, the function of the language is to control matter, or the reality which the matter is supposed to represent. For example, the gardening ritual of the Trobriand Islanders involves a series of formulae which 'charm' the axes, making them effective tools. At a Roman Catholic Mass, the speaking of the words *This is my body* is believed to identify the moment when the communion bread is changed into the body of Christ. Several other situations, apart from the magical and the religious, illustrate this 'performative' function of language – such as the words which name a ship at a launching ceremony.

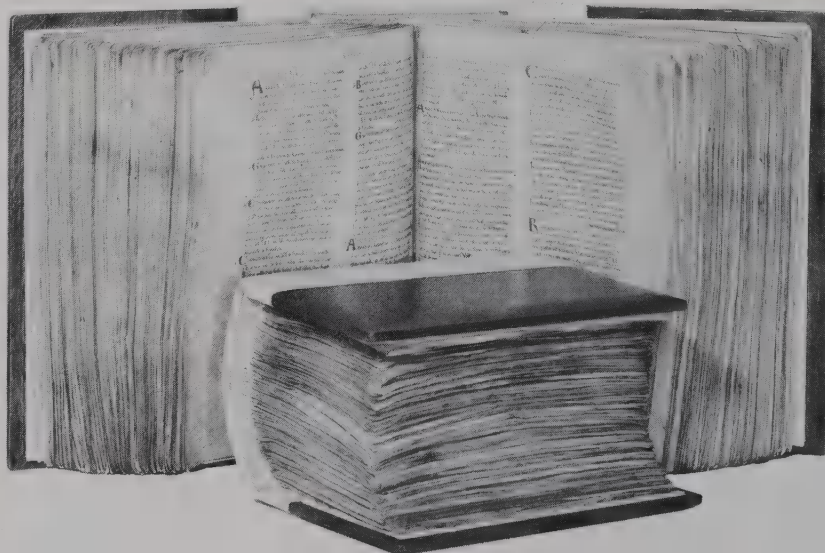
Recording the facts

A solicitor is preparing a case for a client. He pulls down an old book of judgments from his shelf, and reads a report of a case which took place 25 years ago. What use of language is this? At first sight, it would appear to be 'ideational'; but the situation in which the communication takes place is quite different in several respects.

When information is stored for future use, it is impossible to predict who is likely to use it – indeed, much of the material may never be referred to again. There is therefore no 'dialogue' element in the communication. The information has to be as self-contained as possible, for it is impossible to predict the demands which may one day be made upon it, and in most cases there is no way in which the user can respond so as to influence the writer. Accordingly, when language is used for the purposes of recording facts, it is very different from that used in everyday conversation – in particular, it displays a much greater degree of organization, impersonality, and explicitness.

This function of language is represented by all kinds of record-keeping, such as historical records, geographical surveys, business accounts, scientific reports, parliamentary acts, and public data banks. It is an essential domain of language use, for the availability of this material guarantees the knowledge-base of subsequent generations, which is a prerequisite of social development.

The Domesday Book



The two volumes which comprise Domesday Book

This was the summarizing record of William I's survey of England, which was carried out in 1086. The smaller volume contains all the information returned

about Essex, Norfolk, and Suffolk; the larger volume contains the abbreviated account of all other counties surveyed (the whole of England except some of the most northerly areas). The 'once-and-for-all' func-

tion of this kind of language is well symbolized by the popular label for the books, 'Domesday', which came to be widely used by the 12th century. From this record there would be no appeal!

The instrument of thought

A man sits alone at a workbench, staring at a piece of equipment with a puzzled frown. He says: 'So if I put red four there, and link it to blue three, that'll leave blue six free. Then I can use that for green four. Right.' He sets to work.

People often feel the need to speak their thoughts aloud. If asked why they do it, they reply that it helps their concentration. Authors often make similar remarks about the need to get a first draft down on paper, in order to see whether what they have written corresponds to what they had in mind. The French thinker, Joseph Joubert (1754–1824), once said: 'We only know just what we meant to say after we have said it.'

Perhaps the most common use of language as an instrument of thought is found when people perform mathematical calculations 'in their head'. Very often, this supposedly 'mental' act is accompanied by a verbal commentary. However, it is not essential that language used in this way should always be spoken aloud or written down. Often, people can be seen to move their lips while they are thinking, but no actual sound emerges. Language is evidently present, but in a 'sub-vocal' form.

Several theories have been proposed concerning the role of language as the instrument of thought – notably that of the Russian psychologist, Lev Semenovich Vygotsky (1896–1934), who argued for a concept of 'inner speech', a mental use of words to evoke a sequence of thoughts. Does all thought, then, require language? This complex question will be reviewed in §5.

The expression of identity

The crowds attending President Reagan's pre-election meetings in 1984 repeatedly shouted in unison 'Four more years!' What kind of language is this?

Such language is hardly informative to those who use it, but it plainly has an important role in fostering a sense of identity – in this case, among those who share the same political views. Many social situations display language which unites rather than informs – the chanting of a crowd at a football match, the shouting of names or slogans at public meetings, the stage-managed audience reactions to television game shows, or the shouts of affirmation at some religious meetings.

Our use of language can tell our listener or reader a great deal about ourselves – in particular, about our regional origins, social background, level of education, occupation, age, sex, and personality. The way language is used to express these variables is so complex that it requires separate discussion (§§6–12), but the general point can be made here, that a major function of language is the expression of personal identity – the signalling of who we are and where we 'belong'.

These signals enter into the whole of our linguistic behaviour, so much so that it is often a problem distinguishing the identifying function of language from that used for the communication of ideas. In a public meeting, for instance, Mr A may make a speech in support of Mr B, and it may be difficult to decide whether the reason for his speech is to make a fresh point, or simply to demonstrate to all concerned that A is on B's side. The arena of political debate is full of such manoeuvrings, as individuals strive to express their solidarity with (or distance from) each other.



Jacques Inaudi (1867–1950)

There are two kinds of mental calculating prodigies: those who 'hear' numbers and those who 'see' them. Both rely on some kind of 'inner' language, especially when faced with a complex problem. Inaudi was one of the great 'auditory' calculators. Though he did not learn to read or write until he was 20, by the age of 7 he was able to multiply two 5-digit numbers in his head.

When he was studied by the psychologist Alfred Binet in 1894, Inaudi's auditory techniques clearly emerged – in his own words, 'I hear numbers . . . resound in my ear, in the

way I pronounce them, with the sound of my own voice, and this interior audition stays with me a good part of the day.' In observing him perform on stage, he was usually seen to move his lips or mutter, and he often accompanied this by exaggerated gestures and pacing.

An interesting parallel is sometimes drawn between prodigious calculating abilities and language. Are these mental feats very far removed from our impressive everyday generative ability (§16) to manipulate the complex structure of a vast range of novel sentences?

Graphic identity

The characteristic typefaces of several British newspapers provide an illustration of identity using the graphic medium (p. 185). These examples are all taken from the *Guardian's* spoof edition of 1 April 1978, in which news from the fictitious island of San Serriffe was presented in a series of typical formats and language styles lampooning actual British newspapers of the time. The joke relies totally on the reader being able to identify these formats immediately, using a mixture of typographic and linguistic cues.



Saturday April 1 1978



■ SERRIFFE'S BIGGEST DAILY SALE

Saturday April 1 1978

THE SS TIMES



SATURDAY, APRIL 1, 1978

Printed in BODONI and METRO



Printed in Metro and sometimes Bodoni

Saturday April 1 1978

5 Language and thought

It seems evident that there is the closest of relationships between language and thought: everyday experience suggests that much of our thinking is facilitated by language (p. 13). But is there identity between the two? Is it possible to think without language? Or does our language dictate the ways in which we are able to think? Such matters have exercised generations of philosophers, psychologists, and linguists, who have uncovered layers of complexity in these apparently straightforward questions. A simple answer is certainly not possible; but at least we can be clear about the main factors which give rise to the complications.

KINDS OF THINKING

Many kinds of behaviour have been referred to as 'thinking', but not all of them require us to posit a relationship with language. Most obviously, there is no suggestion that language is involved in our emotional response to some object or event, such as when we react to a beautiful painting or an unpleasant incident: we may use language to explain our reaction to others, but the emotion itself is 'beyond words'. Nor do people engaged in the creative arts find it essential to think using language: composers, for example, often report that they 'hear' the music they wish to write. Also, our everyday fantasies, day-dreams, and other free associations can all proceed without language.

The thinking which seems to involve language is of a different kind: this is the reasoned thinking which takes place as we work out problems, tell stories, plan strategies, and so on. It has been called 'rational', 'directed', 'logical', or 'propositional' thinking. It involves elements that are both deductive (when we solve problems by using a given set of rules, as in an arithmetical task) and inductive (when we solve problems on the basis of data placed before us, as in working out a travel route). Language seems to be very important for this kind of thinking. The formal properties of language, such as word order and sentence sequencing, constitute the medium in which our connected thoughts can be presented and organized.

INDEPENDENCE OR IDENTITY?

But how close is this relationship between language and thought? It is usual to see this question in terms of two extremes. First, there is the hypothesis that language and thought are totally separate entities, with one being dependent on the other. At the opposite extreme, there is the hypothesis that language and thought are identical – that it is not possible to engage in any rational thinking without using language. The truth seems to lie somewhere between these two positions.

Within the first position, there are plainly two possibilities: language might be dependent upon thought, or thought might be dependent upon language. The traditional view, which is widely held at a popular level, adopts the first of these: people have thoughts, and then they put these thoughts into words. It is summarized in such metaphorical views of language as the 'dress' or 'tool' of thought. The view is well represented in the field of child language acquisition (§38), where children are seen to develop a range of cognitive abilities which precede the learning of language.

The second possibility has also been widely held: the way people use language dictates the lines along which they can think. An expressive summary of this is Shelley's 'He gave men speech, and speech created thought, / Which is the measure of the universe' (*Prometheus Unbound*). This view is also represented in the language acquisition field, in the argument that the child's earliest encounters with language are the main influence on the way concepts are learned. The most influential expression of this position, however, is found in the Sapir-Whorf hypothesis (see facing page).

A third possibility, which is also widely held these days, is that language and thought are interdependent – but this is not to say that they are identical. The identity view (for example, that thought is no more than an internalized vocalization) is no longer common. There are too many exceptions for such a strong position to be maintained: we need think only of the various kinds of mental operations which we can perform without language, such as recalling a sequence of movements in a game or sport, or visualizing the route from home to work. It is also widely recognized that pictorial images and physical models are helpful in problem-solving, and may at times be more efficient than purely verbal representations of a problem.

On the other hand, these cases are far outnumbered by those where language does seem to be the main means whereby successful thinking can proceed. To see language and thought as interdependent, then, is to recognize that language is a regular part of the process of thinking, at the same time recognizing that we have to think in order to understand language. It is not a question of one notion taking precedence over the other, but of both notions being essential, if we are to explain behaviour. Once again, people have searched for metaphors to express their views. Language has been likened to the arch of a tunnel; thought, to the tunnel itself. But the complex structure and function of language defies such simple analogies.

Non-verbal and verbal thought

The two dimensions to rational thinking – linguistic and non-linguistic – can be discovered in a simple experiment, which anyone can perform.

1. Think of where you work. Now visualize the route you follow, as if you were driving along in a car, as you proceed from work to your home. The sequence of visual images which you bring to mind will be largely independent of language.
2. Now imagine you have to explain to a visitor how to reach your house from work. Think out the steps of your explanation, as you would present them, without saying anything aloud. The sequence of ideas will be expressed internally using language.



The Sapir–Whorf hypothesis

The romantic idealism of the late 18th century, as encountered in the views of Johann Herder (1744–1803) and Wilhelm von Humboldt (1762–1835), placed great value on the diversity of the world’s languages and cultures. The tradition was taken up by the American linguist and anthropologist Edward Sapir (1884–1939) and his pupil Benjamin Lee Whorf (1897–1941), and resulted in a view about the relation between language and thought which was widely influential in the middle decades of this century.

The ‘Sapir–Whorf hypothesis’, as it came to be called, combines two principles. The first is known as *linguistic determinism*: it states that language determines the way we think. The second follows from this, and is known as *linguistic relativity*: it states that the distinctions encoded in one language are not found in any other language. In a much-quoted paragraph, Whorf propounds the view as follows:

We dissect nature along lines laid down by our native languages. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds – and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significances as we do, largely because we are parties to an agreement to organize it in this way – an agreement that holds throughout our speech community and is codified in the patterns of our language. The agreement is, of course, an implicit and unstated one, but its terms are absolutely obligatory; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees.

Whorf illustrated his view by taking examples from several languages, and in particular from Hopi, an Amerindian language. In Hopi, there is one word (*masa’yataka*) for everything that flies except birds – which would include insects, aeroplanes and pilots. This seems alien to someone used to thinking in English, but, Whorf argues, it is no stranger than English-speakers having one word for many kinds of snow, in contrast to Eskimo, where there are different words for falling snow, snow on the ground, snow packed hard like ice, slushy snow (cf. English *slush*), and so on. In Aztec, a single word (with different endings) covers an even greater range of English notions – snow, cold and ice. When more abstract notions are considered (such as time, duration, velocity), the differences become yet more complex: Hopi, for instance, lacks a concept of time seen as a dimension; there are no forms corresponding to English tenses, but there are a series of forms which make it possible to talk about various durations, from the speaker’s point of view. It would be very difficult, Whorf argues, for a Hopi and an English physicist to understand each other’s thinking, given the major differences between the languages.

Having a word for it

There is nothing in everyday English to correspond to the many Arabic words for *horse* or *camel*, the Eskimo words for *snow*, or the Australian languages’ words for *hole* or *sand*. Speakers of English have to resort to circumlocutions if they want to draw the distinctions which these languages convey by separate words – such as the size, breed, function, and condition of a camel. On the other hand, several languages cannot match the many words English has available to identify different sizes, types, and uses

of vehicles – *car, lorry, bus, tractor, taxi, moped, truck*, and so on – and might have just one word for all of these.

There is in fact no single word in English for the driver of all kinds of motor vehicles – *motorist* being restricted to private cars, and *driver* being unacceptable for motorcycles – a lexical gap which greatly worried the British Automobile Association in 1961. It was felt that such a word would be useful, and they therefore asked for suggestions. Among the 500 they received were:

- | | |
|--|------------------|
| <i>autoist</i> | <i>autonaut</i> |
| <i>roadist</i> | <i>vehiclist</i> |
| <i>chassimover</i> | <i>murderist</i> |
| <i>mobilist</i> | <i>roadent</i> |
| <i>wheelist</i> | <i>vehicuway</i> |
| <i>doice</i> (Driver Of Internal Combustion Engine) | |
| <i>pupamotor</i> (Person Using Power-Assisted Means of Travel On Roads) | |
| <i>licentiat</i> (Licensed Internal Combustion Engine Navigator Trained in Automobile Tactics) | |

However, none of these ingenious ideas has survived.

Examples such as these made the Sapir–Whorf hypothesis very plausible; but in its strongest form it is unlikely to have any adherents now. The fact that successful translations between languages can be made is a major argument against it, as is the fact that the conceptual uniqueness of a language such as Hopi can nonetheless be explained using English. That there are some conceptual differences between cultures due to language is undeniable, but this is not to say that the differences are so great that mutual comprehension is impossible. One language may take many words to say what another language says in a single word, but in the end the circumlocution can make the point.

Similarly, it does not follow that, because a language lacks a word, its speakers therefore cannot grasp the concept. Several languages have few words for numerals: Australian aboriginal languages, for example, are often restricted to a few general words (such as ‘all’, ‘many’, ‘few’), ‘one’ and ‘two’. In such cases, it is sometimes said that the people lack the concept of number – that aborigines ‘haven’t the intelligence to count’, as it was once put. But this is not so, as is shown when these speakers learn English as a second language: their ability to count and calculate is quite comparable to that of English native speakers.

However, a weaker version of the Sapir–Whorf hypothesis is generally accepted. Language may not determine the way we think, but it does influence the way we perceive and remember, and it affects the ease with which we perform mental tasks. Several experiments have shown that people recall things more easily if the things correspond to readily available words or phrases. And people certainly find it easier to make a conceptual distinction if it neatly corresponds to words available in their language. Some salvation for the Sapir–Whorf hypothesis can therefore be found in these studies, which are carried out within the developing field of psycholinguistics (p. 412).

Words for *hole* in Pintupi

It takes between three and 14 English words to distinguish the various senses of *hole* in this Australian aboriginal language, but the distinctions can nonetheless be conveyed.

- yarla* a hole in an object
- pirti* a hole in the ground
- pirnki* a hole formed by a rock shelf
- kartalpa* a small hole in the ground
- yulpiipa* a shallow hole in which ants live
- mutara* a special hole in a spear
- nyarrkalpa* a burrow for small animals
- pulpa* a rabbit burrow
- makampa* a goanna burrow
- katarta* the hole left by a goanna when it has broken the surface after hibernation





PART II

Language and identity

'Who are you? How old are you? Where are you from? What do you do? What are you doing now? ...' We would only have to speak, to provide our interrogator with innumerable clues about our personal history and social identity. The linguistic signals we unwittingly transmit about ourselves every moment of our waking day are highly distinctive and discriminating. More than anything else, language shows we 'belong', providing the most natural badge, or symbol, of public and private identity. The reports and discussion in this part of the encyclopedia plainly demonstrate this fact and illustrate how our perception of our own and others' language can become, in varying degrees, a source of pleasure, pride, anxiety, offence, anger, and even violence.

The various sections of Part II explore this relationship between language and the many 'faces' of our identity as we interact with others. We begin with the relatively permanent features of language that express aspects of a person's physical or psychological identity – factors such as age, sex, body type, personality, and intelligence. Next, we look at the linguistic facts and issues surrounding the notion of geographical background, and the way this is manifested in regional accent and dialect. This leads, in particular, to a consideration of the world of dialectology, with its atlases and questionnaires, which has attracted widespread interest.

The following sections review the complex set of factors that enter into the definition of ethnic and social identity: racism and nationalism, stratification into classes and castes, status and role, solidarity and distance, social stereotypes – it emerges

that all have an influence on the way in which language is used, and that language, in turn, exercises a dominant influence on our perception of social structure, whatever our mother tongue.

An even wider range of linguistic variation is subsumed under the heading of contextual identity. Here we examine how the immediate situation in which people communicate can influence the kind of language they use. Three main features of context are distinguished – the setting, the participants, and the type of activity in which they engage. This leads us to consider such divergent topics as greetings, news-readings, speech making, everyday conversation, proverbial expressions, and slang. In addition, there are separate sections devoted to visual varieties, restricted languages, hidden and secret languages, word games, humour, and the many forms of verbal art.

These last topics lead naturally to the final subject of Part II: personal linguistic identity, with its reliance on the concept of 'style'. We begin by identifying different kinds of approach to stylistic study, and look in detail at one of them, stylostistics, where we encounter linguistic detective work in areas as far apart as literary authorship and the investigation of murder. The concept of stylistic distinctiveness then leads us to examine the relationship between literary and non-literary uses of language, with particular reference to the traditional study of rhetoric and to each of the major literary genres – poetry, drama, and the novel. Part II then concludes with a summary of recent trends in literary theory that have focused on the role of language in the interpretation of texts: the antecedents and consequences of structuralism.

The linguistic reflection of cultural identity, here seen in Montreal in 1980 during the campaign leading to the referendum for an independent Quebec.

Physical type

We have to reach a similar conclusion when we consider the kinds of anatomical variation that distinguish the world's racial groups. Certainly several differences could be relevant for speech – for example, the considerable variation in the length of the tongue. In one study (F. Brosnahan, 1961), the tongues of Japanese, Melanesians, and blacks were measured: blacks had the longest tongues on average (a mean of 97 mm, with individual variation

Despite the superficial differences, it has generally been concluded that vocal tracts the world over are sufficiently similar that we can regard them as variants of a single, universal type. Work in phonetics (§27) proceeds on this assumption. But we still know very little about the general potential for sound production in human beings – a subject that the Polish linguist Jan Baudouin de Courtenay (1845–1929) christened *anthropophonics*.

While these distinctions proved in due course to be too simplified for practical application, certain general correlations between body type and voice have been observed. In one study, which matched voices with photographs of these types, the pyknic type were matched most accurately, followed by the leptosomic, with the athletic type least well predicted. Other studies have also shown significant correlations between voices and photographs of the speakers, doubtless because of the general physical relationship between a person's size and physique, and the dimensions of the larynx and vocal tract. There are, however, wide margins of error in these studies.



Physical condition

That there must be some kind of relationship between physical condition and language is plain from the way language can be affected in cases of physical handicap. Several disorders of constitutional origin have a direct effect on a person's ability to use language, variously affecting the ability to comprehend and produce speech, read, and write. Temporary handicaps may have minor but quite noticeable effects – such as the change in voice quality that accompanies a cold or a sore throat, or the alterations in pronunciation that may follow a visit to the dentist. At a much more serious level, there are such cases as the child with cleft palate, or the adult with *myaesthesia gravis*, where speech can be fundamentally and dramatically affected. Here, it is often possible to make deductions about the nature of the person's handicap solely from a tape recording. Voice quality, individual sounds, grammar, vocabulary, and other features of language can all be affected. It is thus a complex field of study, which needs a separate review to do it justice (Part VIII).

Age

What can be said of the normal process of aging, from a linguistic point of view? In general terms, there is a clear and unmistakable relationship: no-one would have much difficulty identifying a baby, a young child, a teenager, a middle-aged person, or a very old person from a tape recording. With children, it is possible for specialists in language development, and people experienced in child care, to make very detailed predictions about how language correlates with age in the early years – a research field treated separately in Part VII.

Little is known about the patterns of linguistic change that affect older people. It is plain that our voice quality, vocabulary, and style alter as we grow older, but research into the nature of these changes is in its earliest stages. However, a certain amount of information is available about the production and comprehension of spoken language by very old people, especially regarding the phonetic changes that take place.

Speech is likely to be affected by reductions in the efficiency of the vocal organs (§22). The muscles of the chest weaken, the lungs become less elastic, the ribs less mobile: as a result, respiratory efficiency at age 75 is only about half that at age 30, and this has consequences for the ability to speak loudly, rhythmically, and with good tone. The cartilages, joints, muscles, and tissues of the larynx also deteriorate, especially in men; and this affects the range and quality of voice produced by the vocal folds, which is often rougher, breathier and characterized by tremor. In addition, speech is affected by poorer movement of the soft palate

The voice 'breaks'

Cutting across the distinctions between age, sex, and physical type is the phenomenon of *voice mutation*, which accompanies the development of secondary sex characteristics during puberty. At this time, the child voice differentiates into male and female types, due mainly to the rapid growth of the larynx.

The development is far more noticeable in boys: male vocal folds become about 1 cm longer, whereas with girls the increase is only around 3–4 mm. As a consequence, in boys, the entire vocal range is both broadened and lowered by about one octave. In girls, there is no such 'octave shift', and the increase in voice range is much less marked: the lower limit of their range extends by only one-third of an octave, and

the upper limit by only a few tones.

As well as the pitch change, certain other vocal features usually mark the onset of puberty. The voice is often husky and weak, with poorly controlled vocal fold vibration (§22). Subsequently, in males, the voice depth is the most noticeable feature; in females, the voice becomes louder, and it changes in timbre – the thin childlike voice becomes fuller and more vibrant.

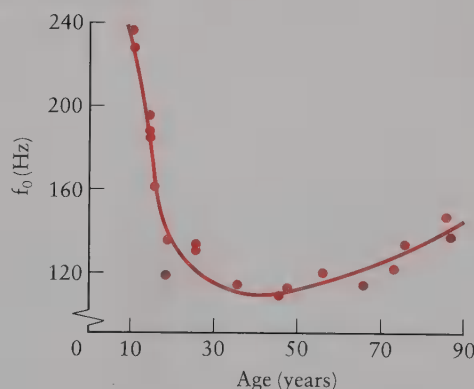
The term 'break' is not always an accurate way of describing the changes that take place. The change from infantile to adult voice is often a gradual transition, rather than a sudden shift, especially in females. Moreover, the speaking voice and the singing voice may be differently affected. The muta-

tional change of the former usually takes between 3 and 6 months, whereas the latter may take much longer. For this reason, it is generally felt to be wise to delay adult singing instruction until well after the change in speaking voice has taken place, to avoid the risk of vocal strain (p. 276).

There is no predictable rule relating adult singing registers to child voices. Whether a boy is soprano or alto, he will develop a bass or baritone singing voice in about two-thirds of cases – a phenomenon that accounts for the common complaint among choirmasters about the shortage of tenors, and the fact that operatic tenors receive the higher salaries! Similarly, sopranos are far more common than other female voices.

and changes in the facial skeleton, especially around the mouth and jaw.

There are other, more general signs of age. Speech rate slows, and fluency may be more erratic. Hearing deteriorates, especially after the early fifties. Weakening faculties of memory and attention may affect the ability to comprehend complex speech patterns. But it is not all bad news: vocabulary awareness may continue to grow, as may stylistic ability – skills in narration, for example. And grammatical ability seems to be little affected.



The aging voice The fundamental frequency of the voice (§23) changes quite markedly with age. The graph shows the change that takes place in males: the level drops sharply at adolescence, continues to decrease until middle age, and then increases into senescence. The data points are a composite of averages taken from various published studies. For females, the level is stable during middle age, decreasing later. (After R. D. Kent & R. Burkard, 1981.)

VOICEPRINTS

The traditional method of identifying a person is through fingerprint patterns, which seem to be unique to each person. In recent years, several attempts have been made to provide an analogous technique using the voice. One approach, which received widespread publicity in the 1960s, was developed by an American acoustic scientist, Lawrence Kersta (1907–).

‘Voiceprints’ are made from an acoustic analysis of speech by a sound spectrograph (p. 136). It is assumed that no two people will have identical vocal tracts, and therefore the patterns of sound vibration they produce when they speak will be different. Kersta claimed it was possible to tell people apart by analysing the visual patterns shown on the spectrograms of ten common words (cf. the ten fingerprints). The patterns were displayed both as bar voiceprints and as contours.

The approach attracted considerable interest among law enforcement agencies, who saw its potential value in crime detection, and voiceprints were soon used as evidence in US courts. In 1965, for example, a youth boasted on a television programme of having set fire to several shops in Los Angeles. His face was concealed, and the television company exercised its legal right not to say who he was. Using other clues in the broadcast, detectives were able to trace a youth, who was brought to trial. Voiceprint evidence established that the voice of the youth in court and that of the youth in the programme were the same. Despite an attack by defence lawyers on the voiceprint evidence, the youth was found guilty.

Critical reactions

After several cases, criticism of the technique began to grow. In 1976, a special committee of the Acoustical Society of America expressed its concern that voiceprints were being admitted as legal evidence when there had been insufficient scientific evaluation of the technique.

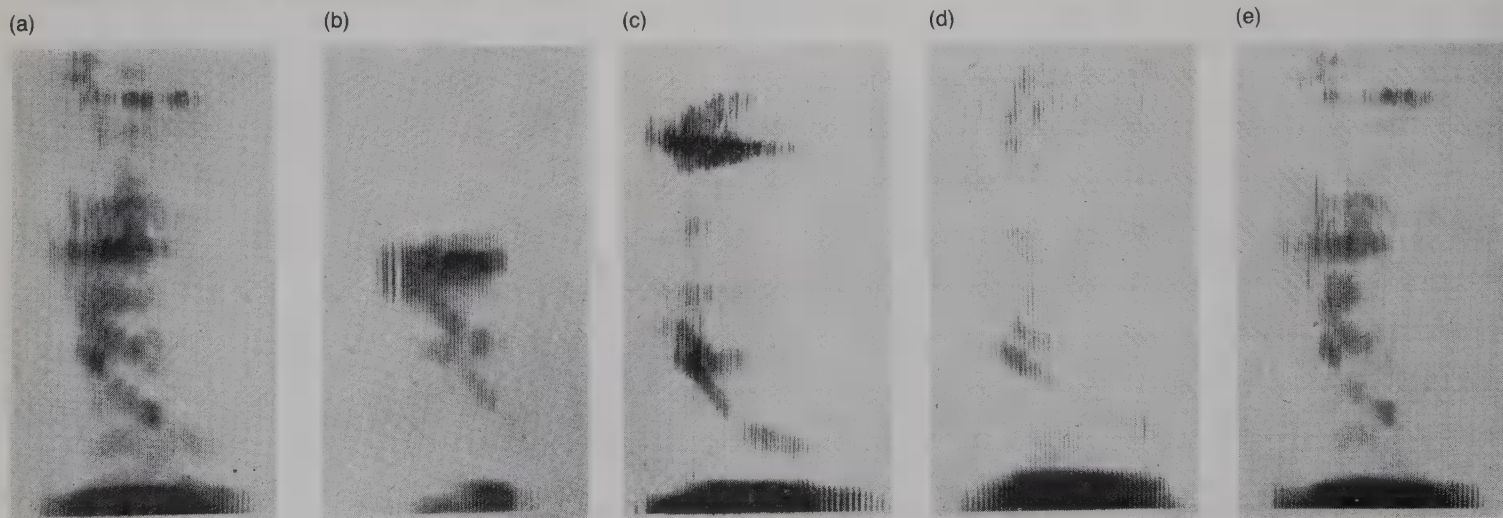
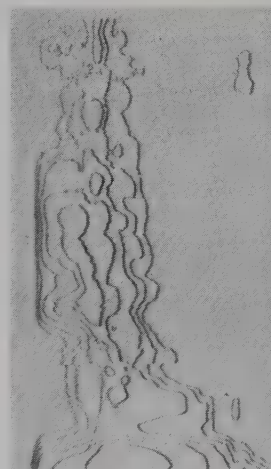
The main thrust of the criticism was directed

at the fingerprint analogy. Fingerprint patterns are established in the foetus; they change in size, as people grow, but not in form. Voices, however, are partly the result of learning, and they vary: speakers can utter sounds in different ways on different occasions. Also, speakers might produce voiceprints that would not be distinguishable (at the level of detail shown on a spectrogram).

Professional impersonators were invoked. In Britain, a television programme showed a spectrogram of John Bird impersonating the Prime Minister, Harold Wilson, and compared it with one of Wilson’s own voice. The similarities were thought to be much greater than those seen on spectrograms both of Bird’s impersonation compared with his normal voice, and of Wilson’s voice on that occasion compared with other occasions. On the other hand, in the US, people who could not hear the difference between President Kennedy and Elliot Reid’s impersonation were able to see from the voiceprints that the two voices were not the same.

The technique remains controversial. On the positive side, it is accepted that some features of the voice are indicative of speakers rather than of languages (e.g. the higher formants, §23). Also, more refined techniques in spectrography and more sophisticated methods of pattern recognition using computers could circumvent some of the first criticisms. Interest in the possibilities remains high, because the potential value of the approach is very great – not only in forensic science, but in such fields as commerce (identifying people over the phone), medicine (distinguishing abnormal body-noises), and engineering (identifying abnormal moving parts in machinery). On the negative side, the error rate among analysts is still unacceptably high (as much as 1 in 20, according to some critics), and many people doubt whether the properties of the vocal tract are in principle capable of making the discriminations required by the theory. As a result, speech scientists have been extremely cautious about making claims for voiceprinting procedures.

A contour representation of bar voiceprint (a) (below).



Voiceprints. The bar voiceprints of four male speakers uttering *you*, taken from Kersta’s paper in *Nature*, 1962. One speaker has uttered the word a second time. Can you tell which two voiceprints are from the same person? (*See foot of facing page for answer.)

Sex

Phonetic differences (p. 19) are the most obvious measures of sexual identity; but languages provide many instances of males and females *learning* different styles of speech – as in Japanese, Thai, Carib, Chukchi, and Yana. Pronunciation, grammar, vocabulary, and context of use can all be affected. In Koasati, certain verb forms differ according to the sex of the speaker. If the form ends in a vowel or /tʃ/, there is no difference; but in cases where the woman’s form ends in a nasalized vowel, or in certain consonants, the man’s form substitutes /s/. This can be seen in the following examples (after M. R. Haas, 1944):

Female	Male	
<i>iskó</i>	<i>iskó</i>	he drank
<i>lakáwč</i>	<i>lakáwč</i>	you are lifting it
<i>kq̃</i>	<i>kā́s</i>	he is saying
<i>molh̃il</i>	<i>molh̃is</i>	we are peeling it
<i>tačwân</i>	<i>tačilwấs</i>	don’t sing!

When Haas carried out her study, only middle-aged and elderly women used the female forms; younger women were beginning to use the forms typical of male speech. But members of each sex were quite familiar with both speech styles, and could use either upon occasion. If a man were telling a story involving a female character, he would use women’s forms when quoting her speech.

JAPANESE MALE AND FEMALE SPEECH

A clear case of linguistic sex-differentiation is Japanese, where well-defined styles of speech have been known since the early 11th century. Females have used a style known as *joseigo* or *onnakotoba*, which evolved among upper-class women as a sign of their special position in society. Books on feminine etiquette fostered the use of special vocabulary and grammar, alongside norms of gentle and submissive behaviour. This traditional view is undergoing considerable change today; but clearly defined sexual roles still predominate, and distinct linguistic forms are widely encountered.

Japanese female speech is a style over which women have conscious control. It is used when women wish to emphasize their femininity; on other occasions, they adopt a sexually neutral style. Thus a woman may use feminine style in talking to her friends about her children but use neutral style when talking to business colleagues. It is also possible for women to use the masculine speech style if they wish to express themselves in an assertive way – and this is often done these days by many who are concerned to promote notions of sexual equality. A particular example is the increasing use of *boku* (‘I’) among schoolgirls – traditionally used only by males.

There are also frequency differences in the use of forms. Both males and females use the formal

and the honorific (p. 99) varieties of speech, but females use them much more commonly and in a wider range of situations. For example, a man might use a certain honorific form only in talking to a superior, whereas a woman might use it for a social equal as well. The polite forms of nouns, verbs, and adjectives are also used more frequently by women.

There have been fewer studies of male speech style, reflecting a tradition that sees female speech as the ‘special’ variety; and a separate label for the male style is not often used. But the style can be clearly defined, and is heard in contexts where traditional notions of masculinity are to be found (assertiveness, toughness, etc.). By no means all male language is distinctive, however: as in the case of women, sex-neutral speech will often be used, and on occasion there may be the use of feminine features, as signals of gentleness or consideration.

ENGLISH MALE AND FEMALE SPEECH

In English, the situation is less clear. There are no grammatical forms, lexical items, or patterns of pronunciation that are used exclusively by one sex, but there are several differences in frequency. For example, among the words and phrases that women are supposed to use more often are such emotive adjectives as *super* and *lovely*, exclamations such as *Goodness me* and *Oh dear*, and intensifiers such as *so* or *such* (e.g. *It was so busy*). This use of intensifiers has been noted in several languages, including German, French, and Russian.

More important are the strategies adopted by the two sexes in cross-sex conversation. Women have been found to ask more questions, make more use of positive and encouraging ‘noises’ (such as *mhm*), use a wider intonational range and a more marked rhythmical stress, and make greater use of the pronouns *you* and *we*. By contrast, men are much more likely to interrupt (more than three times as much, in some studies), to dispute what has been said, to ignore or respond poorly to what has been said, to introduce more new topics into the conversation, and to make more declarations of fact or opinion.

Most interpretations of these differences refer to the contrasting social roles of the sexes in modern society. Men are seen to reflect in their conversational dominance the power they have traditionally received from society; women, likewise, exercise the supporting role that they have been taught to adopt – in this case, helping the conversation along and providing men with opportunities to express this dominance. The situation is undoubtedly more complex than this, as neither sex is linguistically homogeneous, and considerable variation exists when real contexts of use are studied. The danger, as some commentators have pointed out, is that in the process of criticizing old sexual stereotypes, researchers are in danger of creating new ones (p. 46).

Some markers of Japanese female style

- Use of *atashi* (‘I’), instead of *watakushi*.
- Sentence particle *wa* used at the end of sentences with rising intonation, instead of with falling intonation.
- Interjections of surprise, such as *ara*, *mā*, *uwā*.
- Less frequent use of such interjections as *ā* or *ē*.
- Use of sentence particle *yo* following a noun, instead of *da* (male) or *desu yo* (sex-neutral).
- Use of *no* (‘matter’) at the end of statements, instead of *n da* (male) or *n desu* (sex-neutral), e.g. *Dekinai no* (‘It’s [a matter of being] impossible’) vs *Dekinai n da*.
- Use of polite forms of nouns, such as *osakana* (‘fish’) for *sakana* (sex-neutral).
- More frequent use of particle *ne* (‘right?’, ‘okay’) at the end of sentences.
- Less frequent use of the assertive particles *ze* and *zo* at the end of statements.

* (a) and (e)

7 Psychological identity

It is common practice to identify individuals, or groups of people, in terms of their psychological attributes – whether they have high intelligence, good concentration, an aggressive personality, a poor memory, and so on. We generally make these judgments on the basis of the non-linguistic way in which people behave when they carry out tasks and interact in specific situations. For example, we do not need to refer to language in order to see whether someone can pay attention, remember which route to take, fix a piece of equipment, or behave in a friendly manner. But very often we do rely on language in order to evaluate such matters, and this forms an important part of the study of identity.

Any of the fields of academic psychology can prompt a linguistic enquiry of this kind. We might investigate whether there is a relationship between language structures or skills and such notions as memory, attention, perception, personality, intelligence, learning, or any other recognised psychological domain. These studies have both theoretical and practical implications. They suggest ways of constructing models of our mental processes – a major preoccupation of the field of psycholinguistics (p. 412). And they relate to several issues of language learning – both normal (in such contexts as mother-tongue education and foreign language learning) and pathological (in such contexts as speech and hearing disorders). The main findings are thus more appropriately reviewed in other sections (§§25, 34, 38, 45). Furthermore, any linguistic medium (speech, writing, signing) can be the focus of enquiry, though only spoken language characteristics are considered here (for handwriting and signing, see §§32, 35).

This cluster of cross-references shows how the topic of psycholinguistic identity extends well beyond the subject matter of the present section. It is also somewhat arbitrary dealing with it next to the section on physical identity instead of later, as part of the section that deals with the distinctive features of 'style' (§12). However, this decision should not be construed as taking sides in the controversies that have raged over the role of 'nature' and 'nurture' in the formation of such attributes as personality and intelligence. From a linguistic point of view, it is simply to recognize the fact that, once adulthood is achieved, any features of language that can be related to psychological attributes seem to be relatively permanent, and thus have more in common with the long-term characteristics of physical constitution, than with the temporary and consciously controllable features that form the basis of stylistic study.

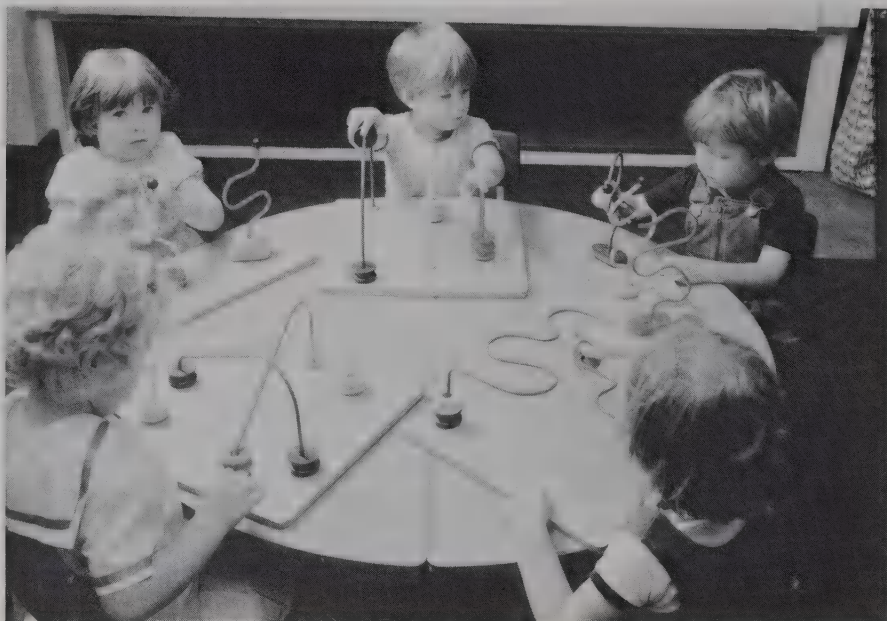
LANGUAGE AND INTELLIGENCE

Decades of controversy over the nature and assessment of intelligence preclude any straightforward statement about its relationship to language. It is evident that people are judged as more or less intelligent, based on how they behave in certain situations, and in response to certain tasks. There is a long tradition of intelligence testing, in which sets of tasks are presented in order to ascertain levels of achievement, and to demonstrate individual differences; the scores that result are widely used in educational, clinical, and other contexts.

Most research has been carried out in relation to the development of children's intellectual processes, as they learn about the world, react to situations, solve problems, and carry out all kinds of tasks. Several theoretical positions exist, which are reviewed in Part VII. Studies with mentally handicapped children have shown that a certain minimum level of intelligence, as measured on conventional tests, is a prerequisite for language development. However, this need not be very high, and there is no clear relationship between intelligence and the ability to use particular language structures. Attempts have been made to relate intelligence to quantity of infant babbling, amount of vocabulary, grammatical complexity, the prosodic features of speech, the use of figurative expressions, and other variables. In no case is there a neat correlation, though stereotypes of performance undoubtedly exist, and here the psycholinguistic study of intelligence overlaps with that of personality.

Verbal vs non-verbal IQ

Some intelligence tests do not contain any tasks that require a knowledge of language in order to solve them. A person is asked to carry out such activities as building an object, matching shapes, finding a way through a maze, detecting picture similarities and differences, or deciding which entities 'go together'. These 'non-verbal' tests contrast with 'verbal' tests, which rely on a prior awareness of language comprehension or production – for example, tests of general knowledge, memory for digits, arithmetic, vocabulary comprehension, and similarities between words. Several kinds of material have been devised to help promote non-verbal skills. The picture below shows preschool children using equipment which helps to train movement, manipulation, and perception. The children thread wooden blocks along an increasingly difficult series of wires, from a very basic loop to a multi-dimensional maze.



PERSONALITY

This complex field deals with the characteristics that enable us to distinguish between people, and to make predictions about their behaviour – characteristics generally classified as personality *traits* and *types*. Traits are styles of behaviour that an individual displays, whatever the stimulus, in many different circumstances. Types involve the identification of a salient feature that is then used as a label for the whole personality. In one study (G. W. Allport & H. S. Odbert, 1936), nearly 18,000 trait labels were found to be available in English to distinguish one person's behaviour from another (honest, tidy, shy, thoughtful, stupid ...), but of course many of these overlap in meaning, and most studies classify traits into much smaller sets of basic dimensions, such as dominance, extraversion, or likeability.

Several interesting inferences have been drawn about the relationship between personality traits or types and aspects of speech, especially in 'matched-guise' experiments. The first of these studies (W. E. Lambert *et al.*, 1960) aimed to show how English- and French-speaking Canadians viewed each other. English-speaking college students in Montreal were asked to listen to recordings of a passage being read aloud in English and in French, and to mark on a checklist what the personality traits of the speakers were. They were told to disregard language, and concentrate solely on voice and personality. However, the students were *not* told that the voices were in fact those of perfectly bilingual speakers, each of whom read the passage both in an English and a French 'guise'.

The results were illuminating. The English guises of the speakers were evaluated much more favourably than were the French guises: for example, they were thought to be better looking, more intelligent, kinder, and more ambitious. But in a second part to the study, there was an even more interesting finding. When French-speaking Canadians were given the same test, they too rated the English guises as higher, in almost all respects, indicating the low esteem in which the French language was held at that time.

There is of course no correlation between such attributes as intelligence or attractiveness and the speaking of English or French. But it is a fact that people do form such stereotyped impressions on the basis of linguistic features (especially prosody, §29). Moreover, *all* accents, dialects, and languages are affected by evaluations of this kind. If speakers use a standard accent, speak quickly and fluently, and use few hesitations, they are likely to be rated as more competent, dominant, and dynamic. The use of regional, ethnic, or lower-class varieties, on the other hand, is associated with greater speaker integrity and attractiveness. Even national personalities can be perceived: British speakers rate French as a more romantic language, it seems, and German as a more businesslike one.

Vocal stereotypes

Listeners are very ready to make stereotyped judgments about personality: comments such as *You can tell he's anxious from his voice* or *She sounds very strong minded* are often to be heard. Systematic information has been obtained in social psychology experiments since the 1930s, when researchers began to use the new broadcasting medium to get large-scale listener judgments of different voices. In one study (T. H. Pear, 1931), 4,000 listener judgments were obtained about nine speakers played over the air. Age and sex proved easiest to identify, and among the vocations represented, actors and clergymen were most frequently recognized. But even when the listeners made the wrong decisions about vocation, they were extremely consistent in their errors. People who sound like clergymen, it appears, will be rated as if they are clergymen, whether they are or not.

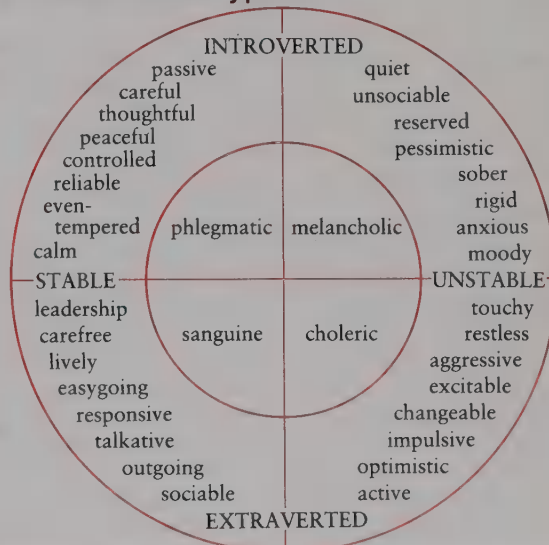
Stereotypes of this kind markedly colour interpersonal and intergroup relationships. They are widespread, with similar results being found in several other areas where accent, dialect, or language conflicts exist, such as between speakers of white and black American English, Canadian and European French, Hebrew and Arabic in Israel, and urban and rural accents of British English. They are also seen in social and occupational contexts (e.g. affecting the way in which a jury judges the credibility of witnesses in court, p. 387), and in education (where teachers' evaluations of a pupil's capabilities can be more influenced by speech style than by written composition, artistic work, or personal appearance). Our impressions of a person's guilt, innocence, intelligence, or stupidity are, it seems, much affected by phonetic and linguistic factors. A more informed popular awareness of the dangers of vocal stereotyping is thus an important aim of this branch of sociopsychological research.

Psychopathology

Voice characteristics are also an important diagnostic feature of abnormal personalities. Patients suffering from schizophrenia, depression, and other such conditions often speak with voices that are monotonous, weak, hesitant, slow, and deviant in timbre. Abnormal intonation, loudness, rhythm, and timbre can also be heard in the voices of many autistic children. Some clinicians have maintained that psychopathological syndromes can be detected on the basis of the voice alone; but this seems exaggerated. Even experienced clinicians find it difficult to make predictions about some types of mental state solely from audio recordings.

Personality traits and voice stereotypes

This graphic presentation of personality traits was devised by the British psychologist Hans Eysenck (1916–). The inner ring shows the four ancient Greek temperaments, based on the predominance of one of the four 'body fluids'. The outer ring represents the location of different traits, grouped on a statistical basis, and related to two principal dimensions: instability/stability and extraversion/introversion. But would it always follow that if someone *sounds* reliable (sober, etc.) then he/she *is* reliable (sober, etc.)?



8 Geographical identity

The most widely recognized features of linguistic identity are those that point to the geographical origins of the speakers – features of *regional dialect*, which prompt us to ask the question ‘Where are they from?’ But there are several levels of response to this question. We might have a single person in mind, yet all of the following answers would be correct: ‘America’, ‘The United States’, ‘East Coast’, ‘New York’, ‘Brooklyn’. People belong to regional communities of varying extent, and the dialect they speak changes its name as we ‘place’ them in relation to these communities.

Languages, as well as dialects, can convey geographical information about their speakers, but this information varies greatly, depending on the language of which we are thinking. The variation can be seen if we complete a test sentence using different language names: ‘If they speak —, they must be from —.’ If the first blank is filled by ‘Swedish’, the second blank will almost certainly be filled by ‘Sweden’. But ‘Portuguese’ would not inevitably lead to ‘Portugal’: the second blank could be filled by ‘Brazil’, ‘Angola’, ‘Mozambique’, and several other countries. ‘French’ would give us the choice of about 40 countries, and ‘English’ well over 50. ‘Dialect’, by contrast with ‘language’, is a much more specific geographical term.

POPULAR NOTIONS OF DIALECT

It is sometimes thought that only a few people speak regional dialects. Many restrict the term to rural forms of speech – as when they say that ‘dialects are dying out these days’. They have noticed that country dialects are not as widespread as they once were, but they have failed to notice that urban dialects are now on the increase (p. 32). Another view is to see dialects as sub-standard varieties of a language, spoken only by low-status groups – implicit in such comments as ‘He speaks correct English, without a trace of dialect.’ Comments of this kind fail to recognize that standard English is as much a dialect as any other variety – though a dialect of a rather special kind (p. 39). Or again, languages in isolated parts of the world, which may not have been written down, are sometimes referred to pejoratively as dialects, as when someone talks of a tribe speaking ‘a primitive kind of dialect’. But this fails to recognize the true complexity and range of all the world’s languages (§47).

In this encyclopedia, as is standard practice in linguistics, dialects are seen as applicable to all languages and all speakers. In this view, all languages are analysed into a range of dialects, which reflect the regional and social background of their speakers. The view maintains that everyone speaks

a dialect – whether urban or rural, standard or non-standard, upper class or lower class. And no dialect is thought of as ‘superior’ to any other, in terms of linguistic structure – though several are considered prestigious from a social point of view.

Where are you from?

How easy is it to tell where someone is from? A few years ago, it would have been relatively straightforward for a specialist to work out from a sample of speech the features that identified someone’s regional background. Some dialect experts have been known to run radio shows in which they were able to identify the general regional background of members of their audience with considerable success. But it is doubtful whether anyone has ever developed the abilities of

Shaw’s Henry Higgins: ‘I can place any man within six miles. I can place him within two miles in London. Sometimes within two streets’ (*Pygmalion*, Act 1).

These days, dialect identification has become much more difficult, mainly because of increased social mobility. In many countries, it is becoming less common for people to live their whole lives in one place, and ‘mixed’ dialects are more the norm. Also, as towns and cities grow, once-distinct communities

merge, with a consequent blurring of speech patterns. And nowadays, through radio and television, there is much more exposure to a wide range of dialects, which can influence the speech of listeners or viewers even within their own homes. A radio dialect show would be much less impressive today. On the other hand, meticulous analysis can bring results, and there have been several notable successes in the field of forensic linguistics (p. 69).

Dialect or accent?

It is important to keep these terms apart, when discussing someone’s linguistic origins. *Accent* refers only to distinctive pronunciation, whereas *dialect* refers to grammar and vocabulary as well. If we heard one person say *He done it* and another say *He did it*, we would refer to them as using different dialects, be-

cause a grammatical difference is involved. Similarly, the choice between *wee bairn* and *small child* is dialectal, because this is a contrast in vocabulary. But the difference between *bath* with a ‘short a’ [a] and *bath* with a ‘long a’ [ɑ:] is a matter of accent, as this is solely a matter of pronunciation (or phonology,

§28).

Usually, speakers of different dialects have different accents; but speakers of the same dialect may have different accents too. The dialect known as ‘standard English’ is used throughout the world, but it is spoken in a vast range of regional accents.

Dialect, idiolect, and lect

Probably no two people are identical in the way they use language or react to the usage of others. Minor differences in phonology, grammar, and vocabulary are normal, so that everyone has, to a limited extent, a ‘personal dialect’. It is often useful to talk about the linguistic system as found in a single speaker, and this is known as an *idiolect*. In fact, when we in-

vestigate a language, we have no alternative but to begin with the speech habits of individual speakers: idiolects are the first objects of study. Dialects can thus be seen as an abstraction, deriving from an analysis of a number of idiolects; and languages, in turn, are an abstraction deriving from a number of dialects.

It is also useful to have

a term for any variety of a language which can be identified in a speech community – whether this be on personal, regional, social, occupational, or other grounds. The term *variety* is itself often used for this purpose; but in recent years, many sociolinguists (p. 412) have begun to use *lect* as a general term in this way.

Language vs dialect

One of the most difficult theoretical issues in linguistics is how to draw a satisfactory distinction between language and dialect. The importance of this matter will be repeatedly referred to in Part IX, where we have to make judgments about the number of languages in the world and how they are best classified.

At first sight, there may appear to be no problem. If two people speak differently, then, it might be thought, there are really only two possibilities. Either they are not able to understand each other, in which case they can be said to speak different languages; or they do understand each other, in which case they must be speaking different dialects of the same language. This criterion of *mutual intelligibility* works much of the time; but, unfortunately, matters are not always so simple.

MUTUAL INTELLIGIBILITY

One common problem with this criterion is that dialects belonging to the same language are not always mutually intelligible in their spoken form. It can be very difficult for someone from the south of England to understand some of the regional dialects of Scotland or Northern Ireland, for instance; and the degree of intelligibility can be even worse when people attempt to communicate with English speakers from other countries. However, at least all of these speakers have one thing in common: they share a common written language. On this count, the varieties they speak could justly be called dialects of the same language.

A rather more serious problem arises in cases where there is a geographical *dialect continuum*. There is often a 'chain' of dialects spoken throughout an area. At any point in the chain, speakers of a dialect can understand the speakers of other dialects who live in adjacent areas to them; but they find it difficult to understand people who live further along the chain; and they may find the people who live furthest away completely unintelligible. The speakers of the dialects at the two ends of the chain will not understand each other; but they are nonetheless linked by a chain of mutual intelligibility.

This kind of situation is very common. An extensive continuum links all the dialects of the languages known as German, Dutch, and Flemish. Speakers in eastern Switzerland cannot understand speakers in eastern Belgium; but they are linked by a chain of mutually intelligible dialects throughout the Netherlands, Germany, and Austria. Other chains in Europe include the Scandinavian continuum, which links dialects of Norwegian, Swedish, and Danish; the West Romance continuum, which links rural dialects of Portuguese, Spanish, Catalan, French, and Italian; and the North Slavic continuum, which links Slovak, Czech, Ukrainian, Polish, and Russian.

The theoretical problem should be clear. At what

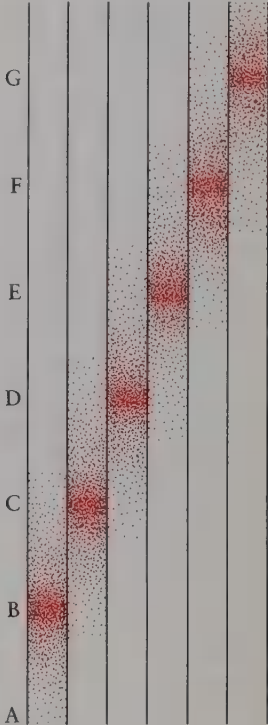
point in the chain can we say that one language ends and the next begins? On what basis can we draw boundary lines between Portuguese, Spanish, French, and so on? We are used to thinking of these languages as quite different from each other, but this is only because we are usually exposed to their standard varieties, which are not mutually intelligible. At the local level, it is not possible to make a clear decision on linguistic grounds.

But decisions are of course made on other grounds. As one crosses a well-established national boundary, the variety of speech will change its name: 'Dutch' will become 'German', 'Spanish' will become 'Portuguese', 'Swedish' will become 'Norwegian'. It is important to appreciate that the reasons are political and historical, not linguistic (§47). Arguments over language names often reduce to arguments of a political nature, especially when there is a dispute over national boundaries. For example, in the South Slavic continuum, varieties spoken on the Yugoslavian side of the border between Yugoslavia and Bulgaria are called dialects of Macedonian by the former country, but dialects of Bulgarian by the latter – as part of a claim to the territory. However, because there is a dialect chain in the area, linguistic criteria will never be able to solve conflicts of this kind.

Dialect continua in Europe



A schematic dialect continuum between dialects A and G. The possible degrees of mutual intelligibility are represented by different shading, from maximum (black) to zero (white).



Dialectology

The systematic study of regional dialects is known variously as *dialectology*, *dialect geography*, or *linguistic geography*; but these terms are not exact equivalents. In particular, the latter terms suggest a much wider regional scope for the subject. A dialect specialist who spends his life researching the local usage of a single Yorkshire village can hardly be called a 'linguistic geographer', though he is certainly a 'dialectologist'. By contrast, the 'geographer' designation would be quite appropriate for anyone involved in plotting the distribution of forms over a large area, such as Scotland, or the eastern United States.

There is another difference between these terms. Traditionally, dialectology has been the study of regional dialects, and for many people that is still its main focus. But in recent years, dialectologists have been paying more attention to social as well as geographical space, in order to explain the extent of language variation (§§9–10). Factors such as age, sex, social class, and ethnic group are now seen as critical, alongside factors of a purely regional kind.

But whatever the approach, the contemporary fascination with dialects seems no less than that shown by previous generations. Radio programmes on dialect variations are popular in several countries, and compilations of dialect data continue to be produced in the form of grammars, dictionaries, folk-lore collections, and guides to usage. Local dialect societies thrive in many parts of the world. Dialects continue to be seen as a major source of information about contemporary popular culture and its historical background; and dialect variation forms part of the study of change (§54).

Probably the most important application of dialectology these days is in education, where the development of dialect 'awareness' in children is widely recognized as a way of getting them to see the heterogeneity of contemporary society, and their place within it (§§44, 61). Teachers are often faced with a conflict between the child's spontaneous use of dialect forms and the need to instil a command of the standard language, especially in writing. The conflict can be resolved only by developing in children a sense of the relationships between the two kinds of language, so that the value of both can be better appreciated. There needs to be an awareness of the history, structure, and function of present-day dialects – and this is what dialectology can provide.

THE HISTORY OF REGIONAL DIALECTOLOGY

While there has been sporadic interest in regional dialects for centuries, the first large-scale systematic studies, in Germany and France, did not take place until the end of the 19th century. In 1876, Georg Wenker (1852–1911) began sending out question-

naires to all the school districts in the German Empire. It took him ten years to contact nearly 50,000 local teachers, who were asked to provide equivalents for 40 sentences in the local dialect. An enormous amount of data was received, and this led to the publication in 1881 of the first linguistic atlas, *Sprachatlas des Deutschen Reichs*. A larger series of works, based on Wenker's files, appeared between 1926 and 1956; but even today, much of the original material has not been published.

The postal questionnaire method enables a large amount of data to be accumulated in a relatively short time, but it has several limitations – chiefly that dialect pronunciations cannot be accurately recorded. The alternative, to send out trained field workers to observe and record the dialect forms, was first used in the linguistic survey of France, which began in 1896. The director, Jules Gilliéron (1854–1926), appointed Edmond Edmont (1849–1926) – a greengrocer with a very sharp ear for phonetic differences – to do the field work. For four years, Edmont went around France on a bicycle, conducting interviews with 700 informants using a specially devised questionnaire of nearly 2,000 items. The *Atlas linguistique de la France* was subsequently published in 13 volumes between 1902 and 1910. It stands as the most influential work in the history of dialectology.

In the first half of this century, major projects were initiated in many parts of Europe, such as Romania, Italy, Holland, Spain, and Denmark, and there have been several impressive publications. In due course the large-scale dialect surveys of the United States and England began (p. 30). A great deal of dialect work has also been undertaken in Japan and China, as well as in parts of Africa, Australia, and South America. In some countries, even, surveys leading to a 'second generation' of linguistic atlases have begun. Direct interviewing and postal questionnaires continue to be used today, as does the tradition of presenting the linguistic material in the form of maps; and in recent years, dialectology has benefited enormously from the development of techniques using tape recorders. The field is also now being influenced by the electronic revolution, with computers helping to 'crunch' the data provided by questionnaires, and making large data-bases of regional variants more available, accessible, and analysable – and even more visible, using computer graphic techniques.

However, nowadays there are fewer big regional dialect projects, and some of those that have begun may never be completed. This is mainly because of the large costs involved in collecting, analysing, and publishing dialect data; but it is also partly because of the new direction dialect studies have taken. Younger scholars are these days more likely to be attracted by the sociolinguistically inspired approaches that developed in the 1970s, with their focus on social factors, and on urban rather than on rural dialects (p. 32).

The earliest use of dialectology?

Then Gilead cut Ephraim off from the fords of the Jordan, and whenever an Ephraimite fugitive said 'Let me cross', the men of Gilead asked him, 'Are you an Ephraimite?'. If he answered 'No', they said, 'Then say "Shibboleth".' He would say 'Sibboleth', since he could not pronounce the word correctly. Thereupon they seized and slaughtered him by the fords of the Jordan.

(Judges XII, 4–6)

The Ephraimites were betrayed by their regional pronunciation. As a result of this story, *shibboleth*, which then meant 'ear of corn' or 'flowing stream', has in modern use come to mean 'distinguishing mark' or 'criterion'.

THE FARM THE FARMSTEAD

Show an aerial photograph of a farmstead and surrounding fields □.

- 1 ... these? **Fields.**
- 2 ... this? **Farmstead.**
- 3 ... this? **Farmyard.**
- 4 ... this? **Stackyard.**
- ... the various buildings?

If necessary, ask the relevant question below.

- 5 ... the place where you keep pigs? **Pigsty.**—April 1953, *the animals that go (i. grunting)* replaced *pigs*.
- 6 ... the place where you keep hens? **Hen-house.**—April 1953, *the birds that lay eggs for you* replaced *hens*.
- 7 ... the place where you keep pigeons? **Dove-cote.**—April 1953, *the birds that go (i. cooing)* replaced *pigeons*.
- 8 ... the place where you keep your cows? **Cow-house.**—April 1953, *the animals that give you milk* replaced *your cows*.
- 9 ... the yard in which cattle are kept, especially during the winter, for fattening, and for producing dung? **Straw-yard.** (Verify the kind of cattle and the purpose).
- 10 ... the small enclosed piece of pasture near the farmhouse, the place where you might put a cow or a pony that's none too well? **Paddock.**
- 11 What's the **barn** for and where is it?

COW-HOUSE

Q. What do you call the place where you keep your cows?—April 1953, *the animals that give you milk* replaced *your cows*.

Rr. BEEF-HOUSE (COW-)BYRE, COW-HOLE/HOUSE/HULL/SHADE/SHED, LATHE, MISTALL, SHIPPON

- 1 Nb 1 baɔʷ 2 baɔʷ [baɔʷmən¹ byre-man (= cowman) 1.2.3] 3 ku:baɔʷ 4-5 baɔʷ 6 baɔʷ 7 baɔʷ, 8 baɔʷ 9 baɔʷ
- 2 Cu 1 baɔʷ 2 baɔʷ 3 baɔʷ, ku:əs 4 baɔʷ, 5 ku:baɔʷ 6 baɔʷ, 7 baɔʷ ["old name"]
- 3 Du 1 ku:baɔʷ, 2 bɛɪəʳ 3 baɔʷ 4-5 baɔʷ 6 baɔʷ 7 baɔʷ
- 4 We 1 baɔʷ, 2-3 baɔʷ 4 fɔpm
- 5 La 1-3 fɔpm 4 fɔpn, 5 fɔpn 6 fɔpm, 7 fɔpn, 8 fɔpn, 9 fɔpn, 10 fɔpn, 11 fɔpn, 12 fɔpn, 13 fɔpn, 14 fɔpn

Questionnaires

In a large dialect survey, there will be many informants and several investigators. One way of ensuring that the results of all the interviews will be comparable, while also saving a great deal of time, is through the use of questionnaires. On the other hand, unless the questions are particularly ingenious, the responses will lack the spontaneity of informal speech. Results thus have to be interpreted with caution.

Opposite is an extract from the questionnaire used in the English Dialect Survey (p. 30). The dots at the beginning of each line stand for 'What do you call ...'; i = imitate. The second extract illustrates the depth of phonetic detail recorded by the field workers. Abbreviations after each number stand for the different northern counties of England.

PAUSY, *adj.* n.Lin.¹ [pəʊzi.] Slightly intoxicated. Slightly the worse for drink; said of persons who combine an amiable desire to impart information with an incapacity to call to mind all the necessary words. 'Drunk! naw he was n't what you'd call drunk, nobbudd he was pausy like.'

PAUT, *v.* and *sb.* Sc. Nhb. Dur. Lakel. Yks. Lan. Chs. Der. Not. Lin. Wor. Suf. Also written **pawt** Sc. Lakel.² Cum.¹⁴ n.Yks.² e.Yks.¹ m.Yks.¹ w.Yks. ne.Lan.¹ Der.¹ Not.¹⁸ n.Lin.¹ sw.Lin.¹; **pawte** w.Yks.; port w.Yks. Not.²; and in forms **paat** Cai.¹ Nhb.¹ Cum.¹⁴; **paout** se.Wor.¹; **pout** Sc. (JAM.) N.Cy.¹ s.Wor.; **pout** Sc. (JAM.) Bnff.¹ n.Cy. Suf.¹ [pəʊt, pəʊt, pāt.] 1. *v.* To poke or push with the hand or a stick; to stir up; to paw, handle, or finger things. Cf. **pote**.

Sc. To search with a rod or stick in water, or in a dark or confined place. To make a noise when searching or poking in water (JAM.). n.Cy. Grose (1790). Nhb.¹ Divent paat on w'd, or ye'll spoild. Cum. Children pawt when they make repeated attempts to get things with their hands (E.W.P.). Cum.⁴ A dog pawts at the door when it wants to get in, and children pawt when they make repeated attempts to get hold of things with their hands. n.Yks.¹; n.Yks.² Kneading with the fingers into a soft mass. n.Lin. Sutton Wds. (1881); n.Lin.¹ I wish we hed n't no cats, really, thaay're alus pawtin' at one, when one's gettin' one's meat. sw.Lin.¹ Some lasses are always pawting things about they've no business with. n.Wor. To beat down apples, Porson Quaint Wds. (1875) 15.

Hence (1) **Pouting**, *vbl. sb.* the practice of spearing salmon; also used *attrib.*; (2) **Pout-net**, *sb.* a net fastened

An extract from the *English Dialect Dictionary* Joseph Wright (1855–1930), published this dictionary in six volumes between 1898 and 1905; it contained 100,000 entries. Wright was largely self-taught, and did not learn to read until he was a teenager – a fact that may have been an advantage to him in his later studies, as his early awareness of dialect differences would not have been influenced by the forms of the standard written language.

From Strine to Scouse

The contrast between regional dialect and standard English usage has been a source of humour the world over. In *Let Stalk Strine* (1965), Afferbeck Lauder (said to be Professor of Strine Studies at the University of Sinny) uses standard spellings to represent the popular impression of an Australian accent, with bizarre results:

Egg Nishner: A mechanical device for cooling and purifying the air of a room.

Jezz: Articles of furniture. As in: 'Set the tible, love, and get a coupler jezz.'

Money: The day following Sunny. (Sunny, Money, Chewsdy, Wensdy, Thursdy, Fridy, Sairdy.) **Score**: A meteorological term. As in: 'Scona rine.' **Sly Drool**: An instrument

used by engineers for discovering Kew brutes and for making other calculations.

Tiger: Imperative mood of the verb to take. As in: 'Tiger look at this, Reg ...' **X**: The twenty-fourth letter of the Strine alphabet; also plural of egg; also a tool for chopping wood.

Some of the colloquial pronunciations here are found in many dialects. For example, **Gissa** ('Please give me ...') is a feature of Strine, but it is also well known in Liverpool, as can be seen from the section on 'Forms of Address' in *Lern Yerself Scouse* (1966), by Frank Shaw, Fritz Spiegl, and Stan Kelly (whose standard English translations are given in

parentheses):

Ullo dur! ('Greetings; I am pleased to make your acquaintance.') **Gisalite** ('Could you oblige me with a match, please?') **Ay-ay** ('I say!') **La** ('I say, young man.') **Ere, tatty-head!** ('I say, young woman!')

In the Appendix to this work, selected verses from *The Rubáiyat of Omár Khayyám* are translated into Scouse by Stan Kelly:

Gerrup dere La! De knocker-up sleeps light; Dawn taps yer winder, ends anudder night; And Lo! de dog-eared moggies from next-door Tear up de jigger fer an early fight.

Lines on maps

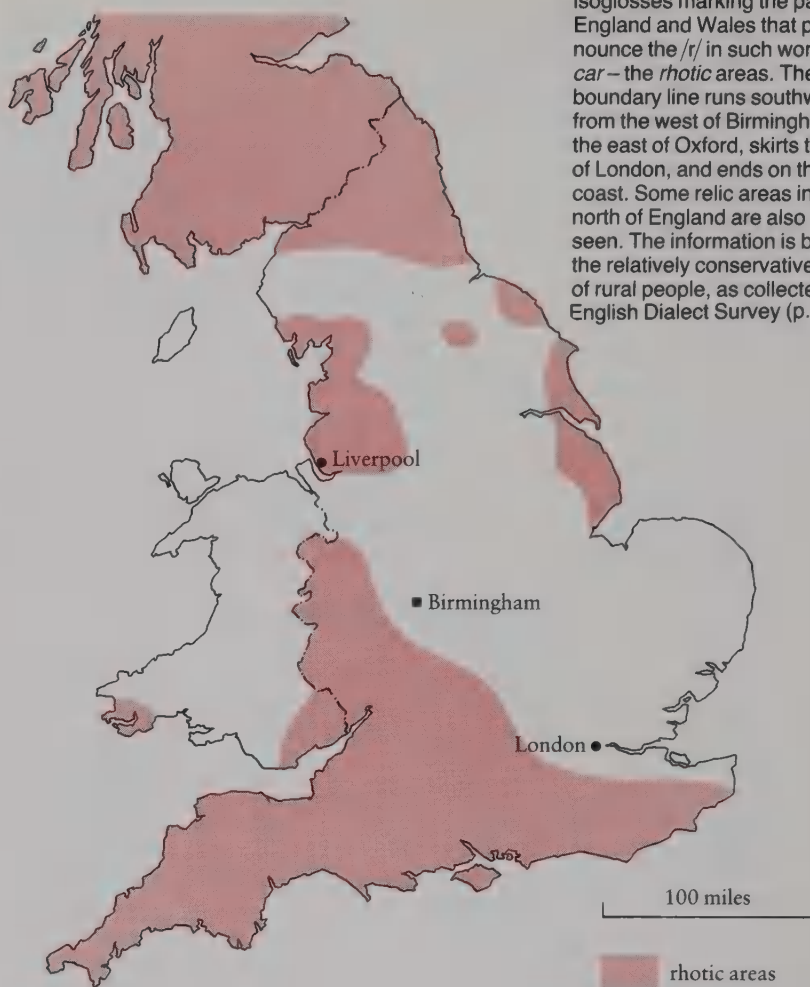
Once the speech of dialect informants has been collected, it is analysed, and the important features are marked on a map of the area in which the informants live. When several points on the map have been located, it is then possible to see whether there is a pattern in the way these features are used. The usual way of identifying dialect patterns is to draw lines around the places where the people use a linguistic feature in the same way. These boundary lines are known as *isoglosses*. For example, one famous isogloss runs across England, from the Severn to the Wash: it distinguishes northern speakers who pronounce a rounded *u* /*ʊ*/ in words like *cup* from southern speakers who keep the vowel open and unrounded, /*ʌ*/. A series of lexical isoglosses, identifying various words for *snack*, is illustrated on p. 30.

When isoglosses were first introduced (in 1892), it was expected that they would provide a clear method for identifying dialect areas. Because people from a particular part of a country 'speak in the same way', it was assumed that the isoglosses for many linguistic features would coincide, and form a neat 'bundle', demarcating one dialect from another. However, early dialectology studies soon discovered that the reality was very different. Isoglosses criss-crossed maps in all directions, and very few actually coincided. There seemed to be no clear dialect boundaries at all – a finding which made some scholars go so far as to argue that the whole idea of a dialect was meaningless.

In due course, however, supplementary notions were developed to make sense of the data. It was noted that, while isoglosses rarely coincided, they did often run in the same general direction. Some areas, called *focal areas*, were seen to be relatively homogeneous, containing few isoglosses. Where focal areas merged, there was a great deal of linguistic variation, with many isoglosses present: these became known as *transition areas*. Often, a feature might be left isolated, as a result of linguistic change affecting the areas around it: these 'islands' of more conservative usage were called *relic areas*.

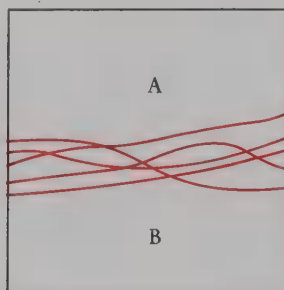
Dialectologists have mixed feelings about isoglosses. There is often too much variability in the way a linguistic feature is used for the data to be easily summarized in a single isogloss. Also, the relative significance of different isoglosses remains to be interpreted. Some isoglosses mark distinctions that are considered to be more important than others (such as the contrast between short and long *a* in words like *bath* in British English, which has long been the focus of special comment). Isoglosses are an important visual guide, but they need to be supplemented by other criteria if they are to display, and not to obscure, the true complexity of regional variation.

Isoglosses The map illustrates isoglosses marking the parts of England and Wales that pronounce the /*r*/ in such words as *car* – the *rhotic* areas. The main boundary line runs southwards from the west of Birmingham to the east of Oxford, skirts the west of London, and ends on the Kent coast. Some relic areas in the north of England are also to be seen. The information is based on the relatively conservative speech of rural people, as collected by the English Dialect Survey (p. 30).

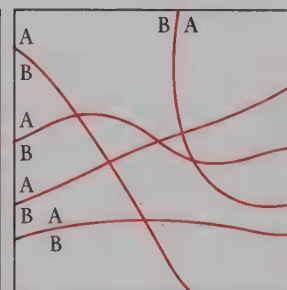


The main kinds of isogloss

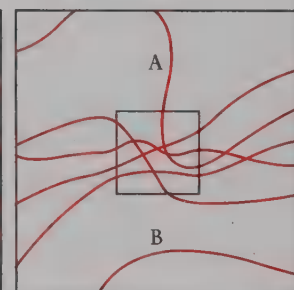
Term	Separates	Examples
isolex	lexical items	<i>nunch</i> vs <i>nuncheon</i> (p. 30)
isomorph	morphological features	<i>dived</i> vs <i>dove</i>
isophone	phonological features	<i>put</i> / <i>put</i> / vs <i>pāt</i> /
isoseme	semantic features	<i>dinner</i> (mid-day meal) vs (evening meal)



(a)



(b)



(c)

The expectation Isoglosses will form neat bundles, demarcating dialect A from dialect B.

The reality Isoglosses criss-cross an area, with no clear boundary between A and B.

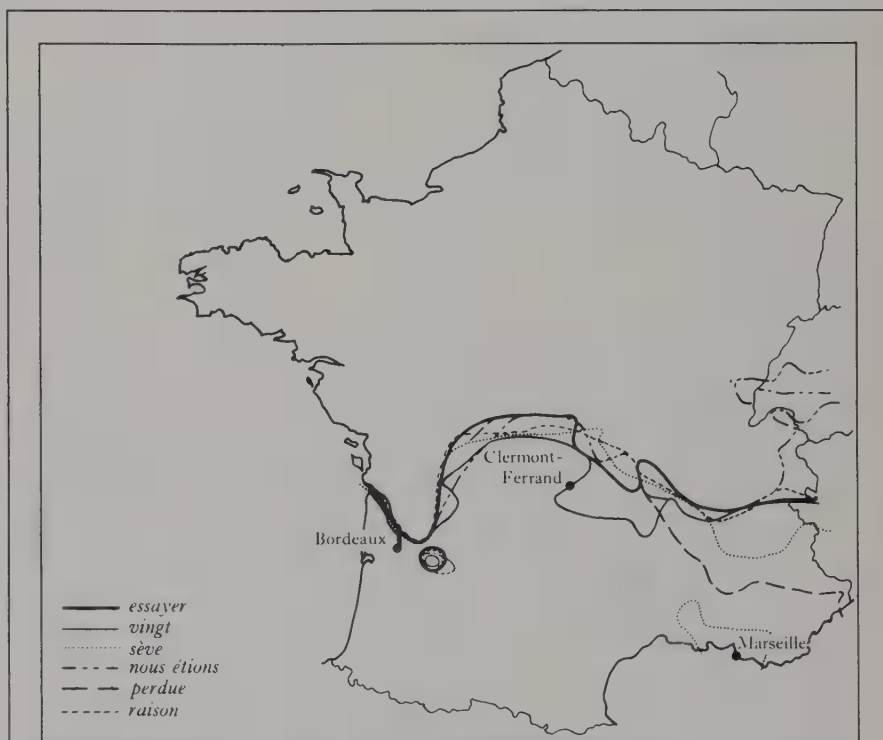
Focal and transitional On a larger scale, the isoglosses are seen to constitute a transitional area between the focal areas A and B.

THE RHENISH FAN

One of the best examples of the way isoglosses fail to group themselves into bundles is in northern Europe. A set of isoglosses runs east–west across Germany and Holland, separating Low German, in the north, from High German, in the south. They reflect the different ways in which these dialects have developed the voiceless plosive consonants of Indo-European (p. 328). In Low German, the sounds have remained plosives (/p, t, k/); but in High German, these have generally become fricatives. For example, ‘village’ is [dorp] in the north, [dorf] in the south; ‘that’ is [dat], as opposed to [das]; ‘make’ and ‘I’ are [makən] and [ik] respectively, rather than [maxən] and [iç].

The map shows the location of the isoglosses that distinguish these words. Through most of Germany, they are close together, displaying only minor variations; but where they meet the River Rhine, the isoglosses move in quite different directions, in a pattern that resembles the folds in a fan. It thus becomes impossible to make simple generalizations about dialect differences in this area. A speaker in a village near Cologne, for example, would say [iç] and [maxən], as in High German, but say [dorp] and [dat], as in Low German.

What accounts for the Rhenish fan? It has been suggested that several of the linguistic features could be explained with reference to certain facts of social history. For example, the area between the [dorp/dorf] and [dat/das] isoglosses was co-extensive with the old diocese of Trier; the area immediately north was coextensive with the old diocese of Cologne. The linguistic innovations seem to have spread along the Rhine from southern Germany to the cities, and then ‘fanned out’ throughout the administrative areas these cities controlled. Rural speakers were naturally influenced most by the speech of their own capital cities, and political and linguistic boundaries gradually came to coincide. (After L. Bloomfield, 1933.)



The two halves of France

One of the main findings of the *Atlas linguistique de la France* (p. 26) was the bundle of isoglosses that runs across France from east to west, dividing the country into two major dialect areas. The areas are traditionally known as *langue d'oïl* (in the north) and *langue d'oc* (in the south) – names based on the words for ‘yes’ current in these areas during the 13th century, when the division was first recognized. The map

shows six items that are used differently on either side of an isogloss (J. K. Chambers & P. Trudgill, 1980, p. 111).

The distinction corresponds to several important social and cultural differences, some of which can still be observed today. For example, to the south of the isogloss bundle (roughly where the Provençal region begins), a biennial (as opposed to a triennial) method of crop rotation is traditionally

used. A different legal system existed until the early 19th century, using a written code inspired by Roman traditions. And there is a major difference in architectural style, the roofs being generally flat, and not steeply pitched (as they are to the north of the bundle). Such clear correlations between language and cultural identity illustrate the way in which dialect studies form an important part of the study of social history.

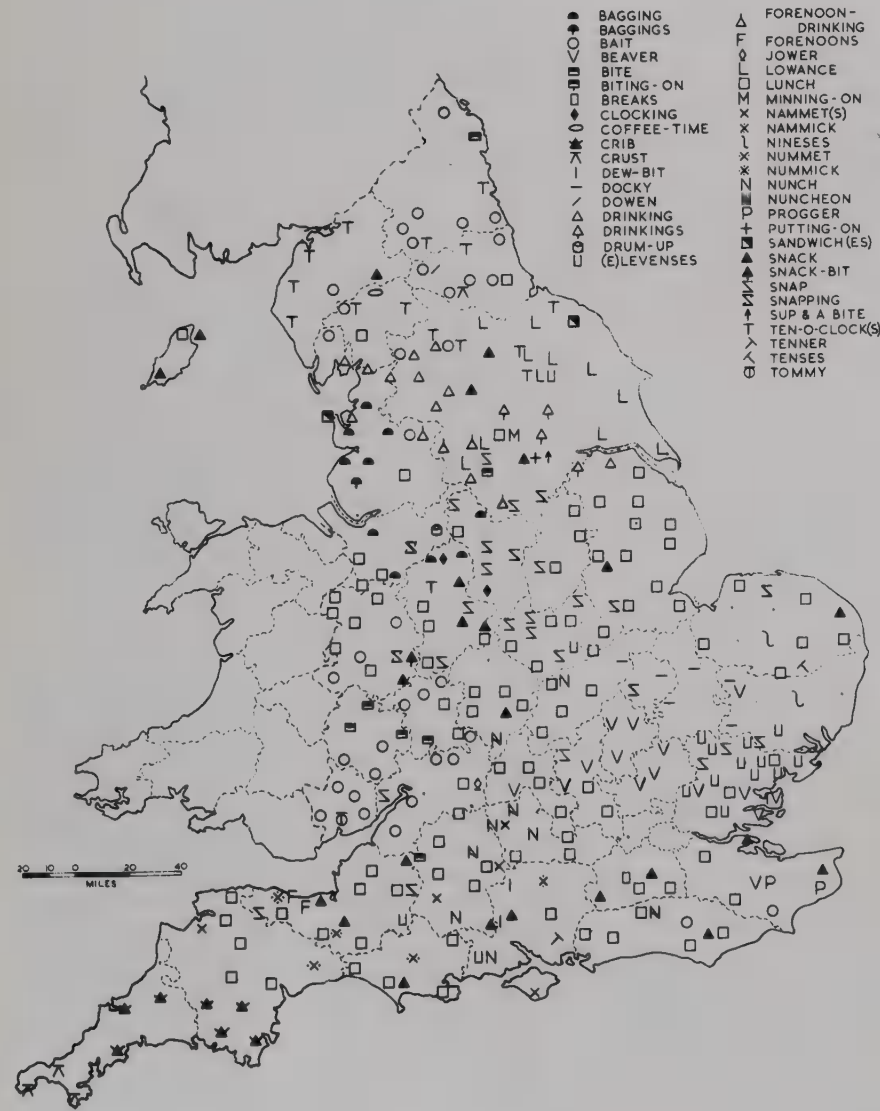
THE LINGUISTIC ATLAS OF ENGLAND

Three of the maps from the English Dialect Survey, carried out by Harold Orton (1898–1975) and Eugene Dieth (1893–1956), are illustrated here. The field survey was undertaken between 1950 and 1961 in 313 localities throughout England. The localities were usually not more than 15 miles apart, and generally consisted of villages with a fairly stable population. The informants were natives of the locality, mainly male agricultural workers, with good mouths, teeth, and hearing, and over 60 years of age.

The principal method was a questionnaire that elicited information about phonological, lexical, morphological, and syntactic features. Tape recordings of informal conversation were also made. Questionnaire responses were transcribed using the International Phonetic Alphabet (p. 158). Over 1,300 questions were used, on such themes

as farming, animals, housekeeping, weather, and social activities; and over 404,000 items of information were recorded.

Between 1962 and 1971 the basic material of the survey was published in an introduction and four separate volumes; in 1977 the *Linguistic Atlas of England* was published, containing an interpretation of a selection of the data. The maps below provide an example of the Survey's basic material for the item *snack* and two interpretive maps, based on this material. The first map is a display of all the responses obtained, which are listed in the top right-hand corner. The other maps pick out various trends in usage, and are a considerable simplification. (After H. Orton, S. Sanderson & J. Widdowson, 1978.)

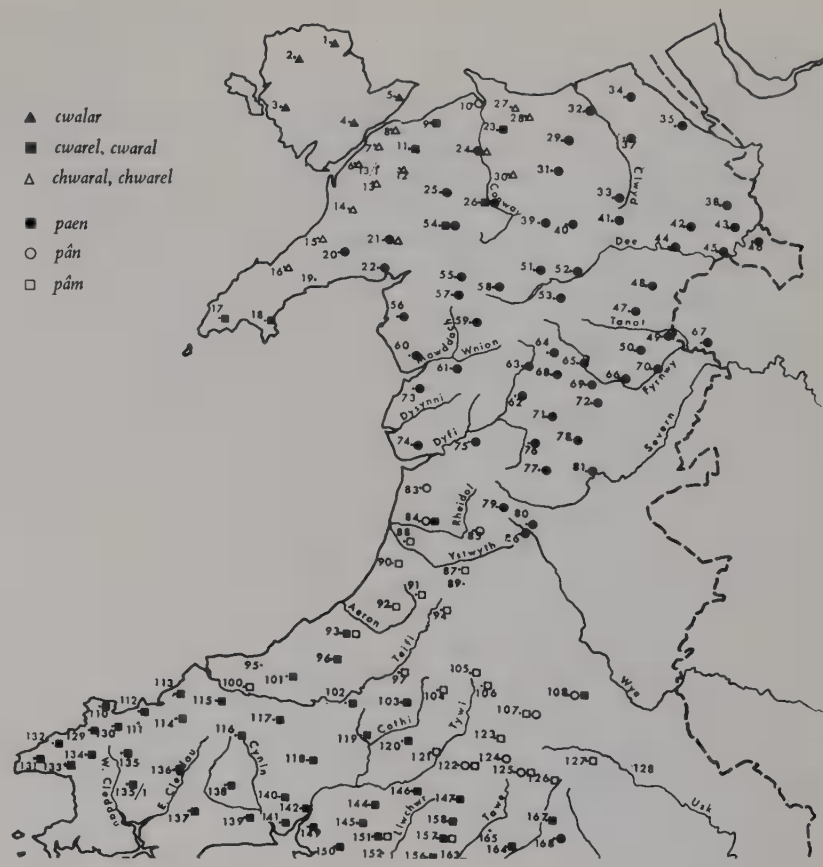


THE LINGUISTIC GEOGRAPHY OF WALES

One of the most recent dialect surveys was carried out in Wales in the 1960s under the direction of Alan R. Thomas (1935 –) and published in 1973. It was based on 180 points of enquiry in the Welsh-speaking areas, the localities being selected on the basis of their position relative to the physical geography of the country and to the main communication routes.

The survey was based on a postal questionnaire, with questions using both Welsh and English. There were over 500 questions, which dealt largely with domestic, rural, and farming vocabulary; about 130,000 responses were received. The questionnaire was sent to a person of educated background, who supervised its completion by local informants, using spelling that reflected regional pronunciation. Informants were of the older generation, with little formal education, and had spent no prolonged periods away from their native area.

The main part of the atlas discusses the distribution of regional words for around 400 items, on the basis of which the main Welsh speech areas are drawn up. The illustration (right) shows the distribution of Welsh words for *pane of glass*, an item in which two distinct patterns of use can be clearly seen: *paen* and its variants in the north-east and the midlands, *cwalar* and its variants in most other places. (After A. R. Thomas, 1973.)

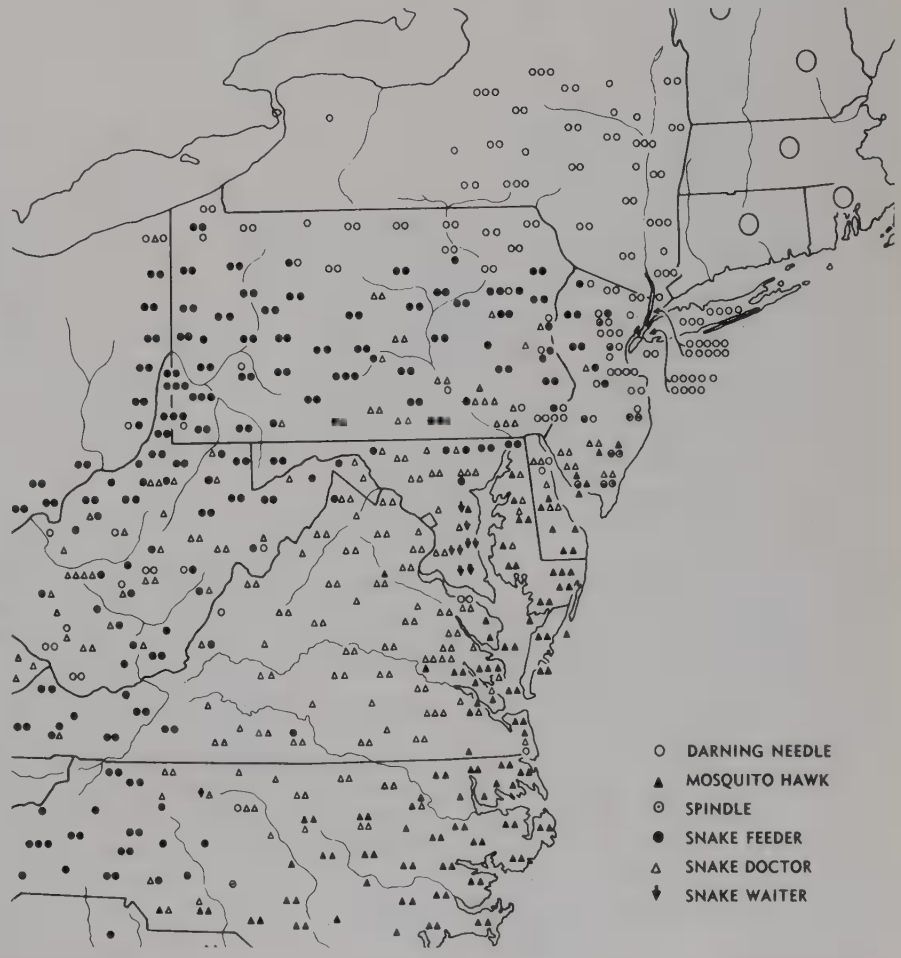


THE LINGUISTIC ATLAS OF THE UNITED STATES

This survey began in 1931, under the direction of Hans Kurath (1891 –), as part of an ambitious programme to establish a linguistic atlas of the United States and Canada. The region was divided into survey areas, and the first atlas to appear, dealing with New England, was published in 1939–43. The project is ongoing, with informant interviews complete in many areas, but the amount of work involved means that publication is a slow and irregular process.

The illustration (right) is taken from Kurath's *Word Geography of the Eastern United States* (1949) – a survey area that included the coastal Atlantic states from Maine to Georgia, Pennsylvania, West Virginia, and eastern Ohio. Dialectologists went to nearly every county in these states and interviewed two people in each – one older-generation and unschooled, the other a member of the middle class with some degree of education. In the larger cities, people with a more cultured background were also interviewed. All were natives of their area, and had not moved much outside it. Interviewers spent from 10 to 15 hours with each informant, dealing with over 1,000 points of usage. More than 1,200 people were interviewed, and information was obtained about the diffusion of around 400 regional expressions for domestic and agricultural items.

The map records the distribution of words for *dragonfly*.



Modern dialect studies

Traditional dialectology studied geographical variation, generally using elderly, untravelled, and uneducated speakers from rural areas. Modern dialectology has moved in other directions.

Social factors now provide the focus of investigation. Speech variation can be partly understood with reference to regional location and movement, but social background is felt to be an equally if not more important factor in explaining linguistic diversity and change. Modern dialectologists therefore take account of socioeconomic status, using such indicators as occupation, income, or education, alongside age and sex. Ideally informants are found in all social groups, and the traditional focus on the language of older people of working-class backgrounds has been replaced by the study of speakers of all ages and from all walks of life (§10).

Dialect studies have moved from the country to the city. The description of rural dialects led to fascinating results, but only a small proportion of a country's population was represented in such studies. In many countries, over 80% of the population live in towns and cities, and their speech patterns need to be described too – especially as linguistic change so often begins when people from the country imitate those from urban areas. This approach, accordingly, is known as *urban dialectology*.

Informants are now randomly selected. In the older studies, small numbers of speakers were carefully chosen to represent what were thought of as 'pure' forms of dialect. Today, larger numbers of people are chosen from the whole population of a city – perhaps using the electoral register or a telephone directory. Also, the earlier approach generally asked for one-word responses to a range of carefully chosen questions. This produced useful data, but these speech patterns were unlikely to have been typical. When people have their attention drawn to the way they speak, they usually adopt a more careful and unnatural style. Attempts are therefore now made to elicit speech that is more spontaneous in character by engaging informants in topics of conversation that they find interesting or emotionally involving (p. 332). The questionnaire has been largely replaced by the tape recorder.

LINGUISTIC VARIABLES

Traditional dialectology studied the fact that different people do not speak in the same way. Contemporary dialectology adds to this study the fact that the same person does not speak in the same way all the time. Individuals vary in their pronunciation, grammar, and vocabulary. Is there a reason for this variation, or is it random – 'free' variation, as it is often called? The current belief is that most of the variation is systematic, the result of the interplay between linguistic and social factors.

In the 1970s, the notion of the *linguistic variable* was developed, as a means of describing this vari-

ation. A linguistic variable is a unit with at least two variant forms, the choice of which depends on other factors, such as sex, age, social status, and situation. For example, in New York, speakers sometimes pronounce /r/ in words like *car* and sometimes they do not. This unit can thus be seen as a variable, (r), with two variant forms, /r/ and zero. (It is usual to transcribe linguistic variables in parentheses.) It is then possible to calculate the extent to which individual speakers, or groups of speakers, use /r/, and to determine whether there is a correlation between their preferences and their backgrounds. Several interesting correlations have in fact been found (see also p. 332).

Dropping the h

In British English, the accent which carries most prestige (p. 39) pronounces /h/ at the beginnings of words such as *head*. But in most other accents of England and Wales, it is common to omit /h/ in this position. Regions do not pronounce or omit /h/ with total consistency, however, as can be seen from the results of two studies of this variable carried out in Norwich and Bradford.

The speakers were grouped into five social classes, based on such factors as their occupation, income, and education. The proportion of /h/-dropping was calculated, with the following results:

Class	Bradford	Norwich
Middle middle (MMC)	12%	6%
Lower middle (LMC)	28%	14%
Upper working (UMC)	67%	40%
Middle working (MWC)	89%	60%
Lower working (LWC)	93%	60%

The correlation is clear. In both areas, there is more /h/-dropping as one moves down the social scale. Moreover, the proportion is always greater in Bradford, suggesting that the phenomenon has been longer established in that area. (After J. K. Chambers & P. Trudgill, 1980.)

Reading aloud in Norwich

People of different social levels were asked to read aloud a list of isolated words (A) and a piece of continuous text (B), and their pronunciations when reading were compared with their formal (C) and casual (D) speech.

The table shows whether the variable (ng) in such words as *walking* was pronounced /ŋ/ or /n/. (0 = no use of /n/; 100 = 100% use of /n/.)

Class	A	B	C	D
MMC	0	0	3	28
LMC	0	10	15	42
UWC	5	15	74	87
MWC	23	44	88	95
LWC	29	66	98	100

The consistency with which speakers increase their use of /n/ as their language becomes more spontaneous and casual is reflected at every social level. (After P. Trudgill, 1974.)

/l/-dropping in Montreal

The consonant /l/ is often dropped in the pronunciation of *il* ('he, it'), *elle* ('she, it'), *ils* ('they'), *la* ('her, it, the'), and *les* ('the, them'). The prestige forms retain the /l/. When usage is analysed by sex of speaker, a clear pattern emerges. (The numbers represent the percentage of /l/-dropping.)

	Male	Female
<i>il</i> (impersonal)	99	97
<i>ils</i>	94	90

<i>il</i> (personal)	94	84
<i>elle</i>	67	59
<i>les</i> (pronoun)	53	41
<i>la</i> (article)	34	25
<i>la</i> (pronoun)	31	23
<i>les</i> (article)	25	15

Women are much more likely to use the higher-prestige variant than men – a pattern of differentiation that has often been found in studies of urban dialectology. (After G. Sankoff & H. Cedergren, 1971.)

Linguistic areas

Geographical identity can sometimes be established within a broader context than that provided by rural or urban dialectology. Certain features of speech can identify someone as coming from a particular part of the world, but the area involved may extend over several countries, languages, or even language families (§50). The study of 'areal features' of this kind is sometimes referred to as *areal linguistics*.

Features of pronunciation are often shared by adjacent, but historically-unrelated languages. In the indigenous languages of southern Africa (p. 315), the use of click sounds in speech identifies speakers of the Khoisan languages as well as of local Bantu languages, such as Zulu and Xhosa. In the Indian sub-continent (p. 308), languages that belong to different families (such as Indo-European and Dravidian) have several important phonological features in common – the use of retroflex consonants (p. 155) is particularly widespread, for example. In Europe the distribution of the affricate [tʃ] is interesting: it is found in many of the languages on the periphery of the area, such as Lapp, Romanian, Hungarian, Spanish, Basque, Italian, Gaelic, English, and the Slavic languages. The languages within this periphery, such as Danish, German, and French, do not use it.

Grammatical features can also cross linguistic and national boundaries. The use of particles to mark different semantic classes of nouns (§16) can be found throughout South-east Asia. In Europe, the Balkans constitutes a particularly well-defined linguistic area. For example, Albanian, Romanian, Bulgarian, and Macedonian all place the definite article *after* the noun, as in Romanian *lup* ('wolf') and *lupul* ('the wolf'), whereas historically-related languages outside of the Balkans area (such as Italian or Polish) do not.





How do areal features develop? In some areas, dialect chains (p. 25) have probably helped to diffuse a linguistic feature throughout an area. Concentrations of bilingual speakers along lines of communication would also play a part, and political factors will have exercised their influence. Sometimes, the progress of an areal feature can be traced – an example being the uvular pronunciation of /r/. Originally, speakers of European languages pronounced /r/ with the front of their tongue; but, in the 17th century, Parisians began to use a uvular variant. The variant caught on, spreading first throughout most of France, then to parts of Italy, Switzerland, Luxembourg, Belgium, Holland, Germany, Denmark, and (by the end of the 19th century) to southern Norway and Sweden. Spain, Austria, England, and other countries were not affected. The historical reasons for this complex state of affairs are little understood, and require investigation on several fronts. In such cases, the facts of dialectology, social history, and political history merge.

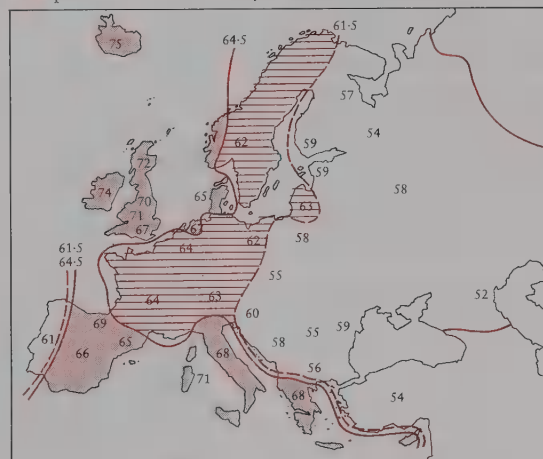


Front-rounded vowels

These vowels, such as in German *müde* ('tired') or French *sœur* ('sister'), are found along an axis which runs diagonally across northern Europe. They are heard in French, Dutch, German, Danish, Norwegian, Swedish, and Finnish. The feature cannot be explained on historical grounds: German and English are closely related, but the latter does not have front-rounded vowels; nor does Spanish, which is closely related to French. The main factor seems to be geographical proximity – as further illustrated by the way in which many south German dialects lack these vowels, whereas they are found in north-east Italy. (J. K. Chambers & P. Trudgill, 1980, p. 185.)



 Dental fricative as phoneme today	 Dental fricative in the past
 Dental fricative as phoneme variant today	 No dental fricative recorded



A genetic explanation?

The distinctive European distribution of such sounds as front-rounded vowels, affricates, and dental fricatives has been studied from a genetic point of view. The geneticist C. D. Darlington (1903–) proposed in the 1940s that the genetic composition of a community would partly determine its preferences for types of sound. The maps show the distribution of dental fricatives in western Europe (above, left), and the frequency with which the O blood-group gene is distributed in the population (below, left). There is an intriguing correlation: in populations where fewer than 60% have the gene, there is no history of these sounds; and in those where more than 65% have the gene, the sounds are well represented. Unfortunately, proposals of this kind have not been followed up, and remain only suggestive. Social explanations of such distributions are currently felt to be far more likely. (After L. F. Brosnahan, 1961.)

9 Ethnic and national identity

Nowhere does the issue of personal linguistic identity emerge more strongly than in relation to questions of ethnicity and nationhood. Ethnic identity is allegiance to a group with which one has ancestral links. It is a general notion, which applies to everyone, and not just to those who practise a traditional rural culture (a current usage of the term 'ethnic'). However, questions of ethnolinguistic identity in fact arise most often in relation to the demands and needs of those who are in an ethnic minority within a community, such as the many groups of immigrants, exiles, and foreign workers in Europe and the USA, or the tribal divisions that characterize several African countries.

Questions of ethnicity are closely related to those of national identity. Once a group becomes aware of its ethnic identity, it will wish to preserve and strengthen its status, and this often takes the form of a desire for political recognition, usually self-government. Political commentators have stressed the subjective element in the idea of a 'nation' – the difficulty of defining the psychological bond that motivates a nationalistic movement, or predicting which elements will contribute most to a group's sense of identity. Religious practices, long-standing institutions, and traditional customs are all important in this respect; but perhaps the most widely encountered symbol of emerging nationhood is language. In the 18th and 19th centuries, in particular, linguistic nationalism was a dominant European movement, with language seen as the primary outward sign of a group's identity (§§10, 61). Today, a comparable concern can be observed in many areas of the world, as part of separatist political demands.

It is important to recognize the extent to which national diversity can give rise to linguistic issues. Political entities that comprise a homogeneous national group are quite rare. A study of the 132 states existing in 1971 found that only 12 were true nation-states; 50 contained a major ethnic group comprising more than three-quarters of the population; and in 39 states, the largest ethnic group comprised less than half the population (W. Connor, 1978). National and state loyalties thus rarely coincide, and when different languages are formally associated with these concepts, the probability of conflict is real.

Linguistic conflicts due to divided ethnic and national loyalties are often bitter and violent. In recent years, there have been major incidents in several countries, such as India (p. 308), Spain, Canada (p. 367), Belgium, Corsica, the USA, South Africa, and the Celtic-speaking areas (p. 303). The reasons for conflict vary greatly: in some cases, the use of a language is declining, and the

reaction is a desperate attempt to keep it, and the community it represents, alive; in others, a minority group may be rapidly growing in numbers, so that its language begins to compete with the established languages of the country for educational, media, and other resources; in still others, the number of speakers may be stable, but there has been an awakening (or reawakening) of cultural identity, with a subsequent demand for recognition and (usually) territorial independence. These situations are discussed further in §61.

Why should language be such a significant index of ethnic or nationalistic movements? One reason is undoubtedly that it is such a widespread and evident feature of community life. To choose one language over another provides an immediate and universally recognized badge of identity. Another reason is that language provides a particularly clear link with the past – often the only detailed link, in the form of literature. This link exists even after ability in the language has been lost; for example, many present-day Italian-Americans and -Australians know very little Italian, but they still see Italian as a symbol of their ethnic identity. There is also a tendency for language to act as a natural barrier between cultural groups, promoting conflict rather than cooperation – as has often been seen in political meetings between opposed groups, when the question of which language to use in the discussion has become a major procedural decision. In bilingual communities, or areas where there is a recognized lingua franca, this factor is less important; but even here, language can focus the sense of political grievance in a clearer way than any other factor. There is no more awesome testimonial to the power of language than the fact that there have been so many people ready to die, if their demands for linguistic recognition were not met (p. 308).

Basque

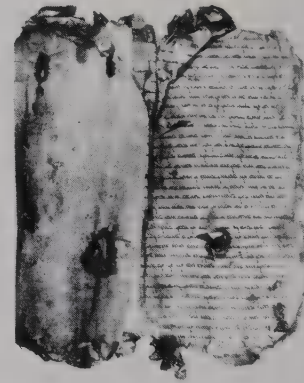
The way language can become a symbol of national identity is very clearly seen in the history of Basque (Euskera), and the attitude towards it of the Spanish government under Franco, from 1937 until the mid-1950s. The teaching of the language in schools was forbidden, as was its use in the media, church ceremonies, and all public places. Books in the language were publicly burnt. Basque names were no longer allowed in baptism,

and all names in the language on official documents were translated into Spanish. Inscriptions on public buildings and tombstones were removed.

By the early 1960s, official policy had changed. Basque came to be permitted in church services, and then in church schools and broadcasts. In 1968, a government decree authorized the teaching of regional languages at the primary level in Spain. By 1979, the Ministry of Education had

Religious identity Perhaps the clearest case of a language fulfilling the need to define a national identity in modern times is Hebrew. When the state of Israel was established in 1948, there was an urgent need to unify its linguistically heterogeneous population. Classical Hebrew was the obvious candidate, in view of its ancient history and continued use as the religious language of Judaism (and even as a secular language for some purposes among eastern European Jews). The complex stages that led to the successful revival of Hebrew provide a particularly clear example of the nature and procedures of language planning (§61).

The picture shows fragments of one of the Dead Sea Scrolls.



accepted responsibility for Basque teaching programmes at all levels of education. In March 1980, the first Basque Parliament was elected, with Euskera recognized as an official language along with Spanish in the Basque provinces. Current discontent, as a consequence, is focussed more on the region's future socioeconomic development, associated with persistent demands for political autonomy.

Ethnic varieties

Varieties of language can also signal ethnic identity. In fact, probably the most distinctive feature of ethnicity in immigrant groups is not their mother tongue (which may rarely be heard outside the home), but the foreign accent and dialect that characterizes their use of the majority language. In the course of time, many of these features have become established, resulting in new varieties of the majority language. Well-known cases include the range of English accents and dialects associated with speakers from the Indian sub-continent, from the West Indies, or from Puerto Rico. A non-regional example would be people with a Jewish background, whose speech has had a distinctive influence on many European languages.

BLACK ENGLISH VERNACULAR

One of the clearest examples of ethnic linguistic variety is provided by the contrast between the speech of black and white Americans. There is no simple correlation between colour and language, because there is considerable linguistic variation within both racial groups, and it is perfectly possible for black speakers to 'sound' white, and vice versa, depending on educational, social, and regional factors (p. 18). The term 'Black English' has been criticized, therefore, because of its suggestion that all blacks use the same variety, and has been replaced in academic study by 'Black English Vernacular' (BEV), referring to the speech of the group most often studied in this context – the non-standard English spoken by lower-class blacks in urban communities.

Some features of BEV are given below. It is not clear just how widespread these features are amongst the black community; nor is it obvious where they come from. In one view, all BEV features can be found in white English dialects (especially those of the southern USA), suggesting that black English historically derived from white. The association with blacks is then explained as a result of their emigration to the northern cities, where these features were perceived as a distinctive marker of ethnic, as opposed to regional, identity. With the development of urban ghettos, the contrast became more marked over time. The alternative view argues that the origins of BEV lie in the use of a creole English (p. 336) by the first blacks in America. This language, originally very different from English as a result of its African linguistic background, has been progressively influenced by white English so that it now retains only a few creole features.

It is often difficult to obtain an objective discussion and evaluation of the linguistic evidence because of the existence of strong emotions around the subject, and the colour prejudice which has promoted the view that black English is necessarily inferior to white – a view that has no linguistic validity (§2). During the early 1970s, there were

fierce arguments surrounding two viewpoints. Some argued that BEV was nothing more than a restricted code (p. 40), the result of verbal deprivation. Others, that the whole thing was a myth devised by white liberals, or an attempt to further discredit blacks. But in the late 1970s, these arguments were largely resolved – at an academic level, at least. Most contemporary linguists who have studied this topic accept a version of the creole hypothesis, because of the striking phonological and grammatical similarities between BEV and other creoles, such as those of the West Indies; but they allow for the probability that some features of BEV may have arisen partly or wholly as the result of white dialects.

There is a continuing need to disseminate the facts about the relationship between standard English and non-standard varieties, such as BEV, because the principle of mutual recognition and respect is constantly being challenged. In particular one has to anticipate the severe linguistic disadvantage that affects children from these dialect backgrounds when they go to school, where the medium of instruction and criterion of successful performance is standard English. These days there is an increasing understanding of the educational issues (§44); but an enlightened approach to the problem is by no means universal.

Some grammatical features of BEV

- No final *s* in the third-person singular present tense, e.g. *he walk, she come*.
- No use of forms of the verb *be* in the present tense, when it is used as a *copula*, or 'linking' verb, within a sentence, e.g. *They real fine, If you interested*.
- The use of the verb *be* to mark habitual meaning, but without changing its grammatical form ('invariant *be*'), e.g. *Sometime they be walking round here*.
- Use of *been* to express a meaning of past activity with current relevance, e.g. *I been know your name*.
- Use of *be done* in the sense of 'will have', e.g. *We be done washed all those cars soon*.
- Use of *it* to express 'existential' meaning (cf. standard English *there*), e.g. *It's a boy in my class name Mike*.
- Use of double negatives involving the auxiliary verb at the beginning of a sentence, e.g. *Won't nobody do nothing about that*.

The Ann Arbor trial

In 1977, an important case was brought by the children of the Martin Luther King Elementary School in Ann Arbor, Michigan, against the Ann Arbor School District Board. The racial balance of children attending the school at the time was 80% white, 13% black, and 7% Asian and Latino. Some of the black children, who came from a local low-income housing area, were found to be doing extremely badly in the school.

The mothers of these children believed that this situation was due to the school's failure to take into account the children's racial and sociocultural background. It was argued that there was a 'linguistic barrier', in the form of BEV, which impeded their academic performance, and that this barrier prevented the children from having the equal educational opportunity that was their right under Title 20 of the U.S. Code. Alternative educational programmes should have been provided to cater for their unique linguistic needs.

The case thus depended on whether BEV was so different from standard English as to constitute a barrier. Other considerations, of a cultural and economic kind, were judged irrelevant. Recordings were played in court of the children's spontaneous speech, which was shown to be similar to the BEV used by black children elsewhere; and a team of linguistics experts testified to the extent of the language differences, and to the creole history of BEV, which indicated that these differences were the result of racial segregation.

The plaintiffs won their case, and the School Board was directed to take steps to help the teachers identify children speaking BEV, and to use that knowledge in teaching the children to read standard English. Since then, several other school districts have developed programmes, influenced by this decision. The Ann Arbor judgment can therefore be seen as a landmark in the slow process towards the public recognition of ethnic linguistic identity. (After W. Labov, 1982.)

GASTARBEITER

There are now over 24 million migrant workers (often called *gastarbeiter* 'guest workers') and their dependants in north-west Europe. They come from several countries, such as Turkey, Yugoslavia, Greece, Italy, Japan, and the Arabic-speaking countries. The demands of their new life require a level of adaptation that transcends language frontiers, and these workers often do not make an issue of their linguistic identity. On the other hand, their communication skills are usually limited, and the social and educational problems of the receiving country are considerable.

In the early 1980s, for example, there were over 700,000 foreign pupils in German schools, and over 900,000 in French schools. In 1981, minority languages being taught in French schools included German, English, Spanish, Italian, Portuguese, Arabic, Hebrew, Russian, Japanese, Dutch, Serbo-Croat, Chinese, and Turkish. Even in a small country, significant minority language problems exist: in Denmark, for example, migrants from Yugoslavia, Turkey, and the Nordic countries have to be catered for; in Luxemburg, there are many Italians and Portuguese. In Britain, there are around 100 minority languages, about a quarter of which are taught in schools to over 400,000 pupils.

The situation is likely to become yet more complex in Europe with increasing international mobility within the European Economic Community, where member-states are still investigating solutions to the problem of language teaching and learning (§62). But at least the problem is now formally recognized. In 1977, the Council of the European Economic Community issued a directive on the education of children of migrant workers in Europe. The directive applied only to member-states, but the Council resolved to extend the measures to include all immigrant children within the Community (over 1½ million). The aim of the exercise was to adapt school structures and curricula to the specific educational needs of these children without losing sight of their cultural and linguistic identity.

Article 2 Member States shall, in accordance with their national circumstances and legal systems, take appropriate measures to ensure that free tuition to facilitate initial reception is offered in their territory to the children ... including, in particular, the teaching – adapted to the specific needs of such children – of the official language or one of the official languages of the host State.

Article 3 Member States shall, in accordance with their national circumstances and legal systems, and in cooperation with States of origin, take appropriate measures to promote, in coordination with normal education, teaching of the mother tongue and culture of the country of origin for the children ...

THE ETHNICITY BOOM

Between the mid-1960s and the mid-1970s, western Europe and North America experienced an 'ethnicity boom'. Considerable progress was made in integrating minority indigenous or immigrant groups within their host communities, and there was a widespread raising of consciousness about ethnicity issues. This was especially noticeable in the USA, where 1970 census data showed that 17% of the American population (over 33 million) claimed a mother tongue other than English – the largest claims relating to Spanish, German, Italian, French, Polish, and Yiddish. This was a dramatic increase of 71% compared with 1960 (though the total population increased by only 13% during that decade) and a marked reversal of the decline seen in the period 1940–60.

However, during the 1970s a further change took place. There was still an overall increase in the number of people claiming a mother tongue other than English, but this increase was largely due to Spanish. For many other languages, especially German, Yiddish, and the Scandinavian languages, there was a notable decline. Evidently, large numbers of the younger generation, from mainly North European backgrounds, were ceasing to claim these languages as their mother tongue. On the other hand, the claims increased for some South European languages (e.g. Greek and Portuguese, as well as Spanish) and for most Asian languages. (After J. A. Fishman, 1984.)

It is perhaps too early for these changes to be given a social interpretation. One analysis has drawn attention to the contrast between the (decreasing) languages of white North and Central European Christendom, which were among the earliest settlers, and the (increasing) non-European languages associated with largely eastern religious groups, whose arrival in the USA is more recent. The former have now become a part of the American mainstream, it is argued, whereas the latter have still to find their identity within that culture. Because they are less accepted, they are more aware of the importance of maintaining traditional linguistic ties.

Mother-tongue claiming

Mother tongues claimed by over 100,000 people in the U.S. in 1970, with an estimate of the percentage increase (+) or decrease (–) in 1979 (after J. A. Fishman, 1984).

English	160,717,113	+6%	Czech	452,812	+15%
Spanish	7,823,583	+46%	Hungarian	447,497	+17%
German	6,093,054	–10%	Dutch	412,627	–6%
Italian	4,144,315	+5%	Japanese	408,504	+30%
French	2,598,408	+7%	Portuguese	365,300	+30%
Polish	2,437,938	+5%	Chinese	345,431	+87%
Yiddish	1,593,993	–24%	Russian	334,615	+17%
Swedish	626,102	–11%	Lithuanian	292,820	+6%
Norwegian	612,862	–2%	Ukrainian	249,351	+6%
Slovak	510,366	+17%	Serbo-Croatian	239,455	+17%
Greek	458,699	+25%	Tagalog	217,907	+75%
			Finnish	214,168	–10%
			Danish	194,462	–10%
			Arabic	193,520	+17%
			Hebrew	101,686	+500%
			Armenian	100,495	+17%

Minority languages in Europe

1. Britain The dramatic increase in immigrant numbers in the 1960s has resulted in over 100 languages being used in Britain by ethnic minority communities. The most widely spoken immigrant languages appear to be Panjabi, Bengali, Urdu, Gujarati, German, Polish, Italian, Greek, Spanish, and Cantonese. For the situation of the Celtic languages, see p. 303.

2. France There are several minority languages indigenous to France – Basque, Breton (p. 302), Catalan, Corsican, Alsatian, Flemish, and Occitan. In a 1978 survey, three-quarters of the population wished to retain this diversity, but only 35% actually understood or spoke one of these languages.

3. Luxembourg Letzebuergesch, related to German, is spoken as a mother tongue, and it is taught in schools, along with French and Standard German. It retains a strong popular appeal as a symbol of national identity.

4. Spain The history of Catalan, centred on the Barcelona area, is similar to Basque (p. 34), with an early history of repression, and the recent acquisition of a degree of autonomy. In the north-west corner of the country, the Galician dialect, closely related to Portuguese, provides a link with the old Kingdom of Galicia.

5. Switzerland German is spoken by nearly 70% of the Swiss population, French by around 19%, and Italian by 10% (most of the latter living in the canton of Ticino). This leaves Romansch, spoken by fewer than 50,000 in the canton of the Grisons (Graubünden). The language is rapidly declining, under the influence of German, though it continues to be the early medium of education in the region, and there has been a recent attempt at cultural revival. The Romansch League looks after all conservation measures relating to the language.

6. Malta Maltese competes with Italian, Arabic and English on the island. It was given official status in 1934, and is widely spoken; but it is seldom written, and television programmes are mainly in Italian and English.

Its status as a symbol of Maltese identity is widespread, and foreigners are sometimes actively discouraged from trying to speak it.

7. Belgium A linguistic and cultural boundary runs across Belgium. In the north and west are the Flemings, descendants of the Franks, who speak dialects of Dutch (known as Flemish, or Vlaams). In the south and east are the Walloons, descendants of the Romano-Celts, who speak dialects of French. There is also a small German-speaking area in the east. The capital, Brussels, is officially bilingual, though predominantly French.

Early Belgian history saw French as the dominant language, and this situation continued until the 1930s, when official status was given to Flemish. Since then, linguistic issues have come to dominate Belgian politics, as efforts were made to establish language frontiers, and to provide satisfactory political representation and educational resources. In 1968 serious rioting over plans to expand the French-speaking section of the University of Louvain (Leuven) brought down the government. The four linguistic areas have now been officially recognized, with each responsible for its own affairs; but the complex social situation is by no means resolved, and several further governments have fallen as a result of linguistic policies.

8. Netherlands Frisian is accepted as an official language in the Netherlands, and it has its own academy. It is used in schools and courts, especially in the Friesland area; but generally its use is diminishing, under the influence of Dutch. The minority population consists mainly of over a million Surinamese, Indonesians, Moluccans, and Frisians – with a sizeable *gastarbeider* group.

9. Germany In North Frisia, Low and High German are used, alongside Danish, Jutish, and Frisian – the latter in several divergent dialects (p. 365). There are both German and Danish Frisians, but the most active group is oriented towards Denmark,

with the result that there is local German concern about future separatist developments. There is also a large *gastarbeiter* population.

10. Sweden Until the 1930s, Sweden was ethnically homogeneous; but following the Second World War, there was a large influx of refugees, mainly from Finland, but also from Italy, Hungary, Austria, West Germany, Greece, and Yugoslavia. Immigration has been controlled since 1967, but there are still around a million people from non-Swedish backgrounds – about 10% of the population. In 1975, Parliament recognized that these groups should have freedom of choice to retain their identity. There is an active bilingualism policy. Foreign children may have some educational instruction

in their mother tongue, if their parents request it; and these classes are growing. By 1980, in comprehensive schools, about 50,000 students were being taught in 60 different languages.

11. Finland There were around 300,000 Swedish speakers in Finland in 1970 – about 7% of the population. Swedish is an official language, alongside Finnish, and education is available in Swedish at all levels; but most Swedish speakers are bilingual, and the language generally seems to be in decline.

12. Lapland Around 35,000 Lapps live in Norway, Sweden, Finland, and the USSR. The Lappish language has no official status in any of these countries, and educational practice is primarily concerned with the majority

languages. However, a Language Board was set up in 1971.

13. Yugoslavia Serbo-Croat, Slovenian, and Macedonian have official status, but others (Albanian, Hungarian) have been given some degree of autonomy in their own provinces. It is government policy to separate linguistic from nationality rights, with only the former being supported.

14. Romania The many minority languages of this country include Hungarian (1½ million), German, Ukrainian, Romany, Russian, Serbo-Croat, Yiddish, Tatar, Slovak, Turkish, Bulgarian, and Czech. The larger languages have media coverage; but all have some official status.



10 Social identity

In addition to the questions 'Who are you?' and 'Where are you from?', which have been addressed from a linguistic viewpoint in §§6–9, there is also 'What are you, in the eyes of the society to which you belong?' It is a complex and multi-faceted question, to which there is no easy answer. People acquire varying status as they participate in social structure; they belong to many social groups; and they perform a large variety of social roles. As a consequence, no single system of classification is likely to do justice to the task of defining a person's social identity in linguistic terms, especially when the vast range of the world's cultural patterns is taken into account. This section, therefore, has to be extremely selective, in order to represent the range of sociolinguistic and ethnolinguistic variables involved.

Social stratification

One of the chief forms of sociolinguistic identity derives from the way in which people are organized into hierarchically ordered social groups, or *classes*. Classes are aggregates of people with similar social or economic characteristics. Within sociology, the theoretical basis of social class has been a controversial subject, and it has not always proved easy to work consistently with the notion, especially when cross-cultural comparisons are involved. Factors such as family lineage, rank, occupation, and material possessions often conflict or are defined with reference to different criteria. But for most sociolinguistic purposes to date, it has been possible to make progress by recognizing only the broadest distinctions (such as high vs low, or upper vs middle vs lower) in order to determine the significant correlations between social class background and language. Examples of some of these correlations are given (below) and also on p. 32.

One does not need to be a sociolinguist to sense that the way people talk has something to do with their social position or level of education. Everyone has developed a sense of values that make some accents seem 'posh' and others 'low', some features of vocabulary and grammar 'refined' and others 'uneducated'. We have a large critical vocabulary for judging other people's language in this way. But one does need to be a sociolinguist to define precisely the nature of the linguistic features that are the basis of these judgments of social identity. And it is only as a result of sociolinguistic research that the pervasive and intricate nature of these correlations has begun to be appreciated.

Castes

Probably the clearest examples of social dialects are those associated with a caste system. Castes are social divisions based solely on birth, which totally restrict a person's way of life—for example, allowing only certain kinds of job, or certain marriage partners (p. 401). The best-known system is that of Hindu society in India, which has four main divisions, and many sub-divisions—though in recent years, the caste barriers have been less rigidly enforced. The Brahmins (priests) constitute the highest class; below them, in descending order, are the Kshatriyas (warriors), Vaisyas (farmers and merchants), and Sudras (servants). The so-called 'untouchables', whose contact with the other castes is highly restricted, are the lowest level of the Sudra caste.

Linguistic correlates of caste can be found at all levels of structure. For example, in Tamil, there are several clear-cut

distinctions between the phonology, vocabulary, and grammar of Brahmin and non-Brahmin speech. The former also tends to use more loan words, and to preserve non-native patterns of pronunciation.

Brahmin		Non-Brahmin
	<i>Vocabulary</i>	
tūngu	'sheep'	orangu
alambu	'wash'	kaļuyu
jalō	'water'	taṇṇi
	<i>Phonology</i>	
krāfu	'haircut'	krāppu
jīni	'sugar'	cīni
vārepparo	'banana'	vāreppolo
	<i>Grammar</i>	
—du	'it'	—ccu
vandudu	'it came'	vanduuccu
paṇra	'he does'	pannuhā

(After W. Bright & A. K. Ramanujan, 1964.)

Speech and silence in Kirundi

In the Central African kingdom of Burundi, age and sex combine with caste to constrain the nature of linguistic interaction in several ways. Seniority (*ubukuru*) governs all behaviour. There are clear caste divisions; older people precede younger; and men precede women. The order in which people speak in a group is strictly governed by the seniority principle. Males of highest rank must speak first, regardless of age. Females do not speak at all, in the presence of outsiders, unless spoken to.

Upper-caste speakers seem never to raise their voices, or allow emotion to show. In group discussion, for the senior person to be silent implies disapproval. As others must then also stay silent, any

further proceedings are effectively negated.

To speak well is considered a mark of good breeding in men. From their tenth year, boys in the upper castes are given formal speech training—how to use social formulae, talk to superiors and inferiors, and make speeches for special occasions. Upper-caste girls do not take part in public speaking, but they do develop effective bargaining skills, for use behind the scenes. They are also trained to listen with great care, so that they can accurately recount to the men of the family what has been said by visitors. (After E. M. Albert, 1964.)

The John Betjeman poem, 'How to get on in society', originally set as a competition in *Time and Tide*, was included in the book *Noblesse Oblige* as part of the U/non-U debate (see facing page).

How to get on in society

Phone for the fish-knives, Norman,
As Cook is a little unnerved;
You kiddies have crumpled the serviettes
And I must have things daintily served.

Are the requisites all in the toilet?
The frills round the cutlets can wait
Till the girl has replenished the cruets
And switched on the logs in the grate.

It's ever so close in the lounge, dear,
But the vestibule's comfy for tea,

And Howard is out riding on horseback
So do come and take some with me.

Now here is a fork for your pastries
And do use the couch for your feet;
I know what I wanted to ask you—
Is trifle sufficient for sweet?

Milk and then just as it comes, dear?
I'm afraid the preserve's full of stones;
Beg pardon, I'm soiling the doilies
With afternoon tea-cakes and scones.

SOME ENGLISH MARKERS OF SOCIAL CLASS

Long before the days of 20th-century linguistics and phonetics, English novelists and dramatists, especially in the 18th and 19th centuries, were observing the relationship between language and social class in Britain and using it as a basis for characterization and social comment.

- George Gissing, about Mrs Yule, in his *New Grub Street* (1891, Chapter 7).

Mrs Yule’s speech was seldom ungrammatical, and her intonation was not flagrantly vulgar, but the accent of the London poor, which brands as with hereditary baseness, still clung to her words, rendering futile such propriety of phrase as she owed to years of association with educated people.

- Mrs Waddy, about Harry Richmond’s father, in George Meredith’s *The Adventures of Harry Richmond* (1871, Chapter 3).

‘More than his eating and his drinking, that child’s father worrits about his learning to speak the language of a British gentleman . . . Before that child your “h’s” must be like the panting of an engine – to please his father . . . and I’m to repeat what I said, to make sure the child haven’t heard anything ungrammatical . . .’

- Pip to Biddy, in Charles Dickens’ *Great Expectations* (1861, Chapter 35).

‘Biddy,’ said I, in a virtuously self-asserting manner, ‘I must request to know what you mean by this?’
‘By this?’ said Biddy.
‘No, don’t echo,’ I retorted. ‘You *used not* to echo, Biddy.’
‘Used not!’ said Biddy. ‘O Mr Pip! *Used!*’

- Elfride Swancourt to Mrs Swancourt, in Thomas Hardy’s *A Pair of Blue Eyes* (1873, Chapter 14).

‘I have noticed several ladies and gentlemen looking at me.’
‘My dear, you mustn’t say “gentlemen” nowadays . . . We have handed “gentlemen” to the lower classes, where the word is still to be heard at tradesmen’s balls and provincial tea-parties, I believe. It is done with here.’
‘What must I say then?’
‘“Ladies and men” always.’

Dropping the g

‘Where on earth did Aunt Em learn to drop her g’s?’
‘Father told me once that she was at a school where an undropped “g” was worse than a dropped “h”. They were bringin’ in a country fashion then, huntin’ people, you know.’

This conversation between Clare and Dinny Cherrel, in John Galsworthy’s *Maid in Waiting* (1931, Chapter 31), illustrates a famous linguistic signal of social class in Britain – the two pronunciations of final g in such words as *running*, [n] and [ŋ]. But it also brings home very well the arbitrary way in which linguistic class markers work. The [n] variant is typical of much working-class speech

today (p. 32), but a century ago this pronunciation was a *desirable* feature of speech in the upper middle class and above – and may still occasionally be heard. The change to [ŋ] came about under the influence of the written form: there was a g in the spelling, and it was felt (in the late 19th century) that it was more ‘correct’ to pronounce it. As a result, ‘dropping the g’ in due course became stigmatized.

U AND NON-U

In 1954, A. S. C. Ross (1907–) published an article entitled ‘Linguistic class-indicators in present-day English’ in a Finnish philological journal. It was read by Nancy Mitford, who wrote an *Encounter* article based upon it. The result was an enormous public reaction, with immediate recognition for the terms *U* and *non-U*. Two years later, Ross’s essay was reprinted, with some modifications and a new title (‘U and Non-U: an essay in sociological linguistics’), in *Noblesse Oblige*, which included contributions on the same subject by Nancy Mitford, Evelyn Waugh, and John Betjeman.

The essay’s aim was to investigate the linguistic demarcation of the British upper class. *U* stood for ‘upper class’ usage; *non-U* stood for other kinds of usage. It looked at distinctive pronunciation and vocabulary, as well as written language conventions, such as how to open and close letters. It was a personal account containing many subjective judgments and disregarding the subtle gradations in usage intermediate between the two extremes; but it was also highly perceptive, drawing attention to a large number of distinctive features. The nature of upper-class language has changed over 30 years later, but the terms *U* and *non-U* are still well known.

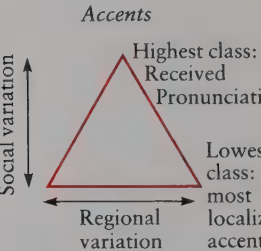
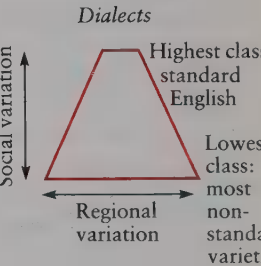
Some of the lexical oppositions proposed by Ross:

U	non-U
have a bath	take a bath
bike, bicycle	cycle
luncheon	dinner
riding	horse riding
sick	ill
knave	jack
mad	mental
looking-glass	mirror
writing-paper	note-paper
jam	preserve
wireless	radio
table-napkin	serviette
lavatory-paper	toilet-paper
rich	wealthy
vegetables	greens
pudding	sweet
telegram	wire
England	Britain
Scotch	Scottish

Social identity and other factors

It is never possible to make a simple statement about language variation and social class because other influential factors are involved, such as the sex of the speaker, and the formality of the situation (p. 42). There is also an important interaction between social and regional factors (§8), as illustrated below for British English.

The two pyramids deal with differences of accent and dialect, and represent the relationship between ‘where’ a speaker is, both socially (the vertical dimension) and geographically (the horizontal dimension). At the top are the speakers of the highest social class: they speak the standard dialect with very little regional variation. Also at the top are those who speak Received Pronunciation (RP), the educated accent which signals no regional information at all (within Britain). The further we move down the class scale, the more we encounter regional accent and dialect variation. And when we reach the lowest social class, we encounter the widest range of local accents and dialects.



Thus, for example, speakers from the top social class will all use the same word *head-ache*, and give it the same (RP) pronunciation, but speakers from the lowest class will use *skullache*, *head-wark*, *head-warch*, *sore head*, and other forms, in a variety of pronunciations, depending on where they are from. (After P. Trudgill, 1983.)

RESTRICTED AND ELABORATED CODES

Do people from different social classes display different abilities in their use of language? This was a much-discussed question in the 1970s, as a result of a theoretical distinction proposed by the sociologist Basil Bernstein (1924–). Bernstein postulated the existence of two varieties of language available to speakers, which he called *elaborated code* and *restricted code*. Elaborated code was used in formal situations, allowed the speaker to be individually creative, had a wide stylistic range, and was characterized by relatively complex linguistic constructions, where meaning did not depend on the accompanying context. Restricted code was used in informal situations, stressed the speaker's group membership, relied a great deal on accompanying context for its meaningfulness, lacked stylistic range, and was characterized by a less complex syntax, and the frequent use of such features as gestures and tag questions (e.g. *isn't it?*). Bernstein argued that middle-class children had access to both of these codes, whereas some working-class children had access only to the restricted code. This, it was felt, could explain the relatively poor performance of the latter in school, because working-class children would be unable or unwilling to use elaborated code, which is required in the formal context of a classroom.

Bernstein's hypothesis was interpreted by some to mean that working-class children were thus linguistically deficient and perhaps, as a result, cognitively deficient – unable to think in the same way as middle-class children (for example, to carry out abstract reasoning). Various positions were taken up over the issue, and especially over what should be done educationally in order to eliminate the problems faced by working-class children – a controversy that still continues. But the view that there is some kind of qualitative difference between the two types of child has now been discredited. For example, William Labov (1927–) has shown that a lower-class speaker can handle abstract concepts in restricted code. In one of his recordings, a black 15-year-old was asked why he thought God would be white. He replied 'Why? I'll tell you why! Cause the average whitey out here got everything, you dig? And the nigger ain't got shit, y'know? Y'un-

derstan'? So – um – for in order for *that* to happen, you know it ain't no black God that's doin' that bullshit.' There is plainly abstract reasoning here, despite the non-standard language, and the restricted code.

The existence of a clear-cut distinction, as implied by the term 'codes', is not now generally accepted. Children from different class backgrounds certainly have different sets of linguistic options available to them, but these do not fall neatly into a choice between two varieties. Moreover, the correlation between the use of these varieties and social class is not a simple one: other factors intervene, such as the context in which learning takes place, and the way a child's family life is structured. But the debate over whether lower-class children are linguistically 'deficient' or merely 'different' rumbles on, continuing to raise questions about educational linguistic practice (§44).

THE LANGUAGE OF RESPECT

Many communities make use of a complex system of linguistic levels in order to show respect to each other. The levels will partly reflect a system of social classes or castes, but the choice of forms may be influenced by several other factors, such as age, sex, kinship relationships, occupation, religious affiliation, or number of possessions. In Javanese, for example, choice of level can in addition be affected by the social setting of a conversation, its subject matter, or the history of contact between the participants. Other things being equal, people would use a higher level at a council meeting than in the street; in talking about religious matters than about buying and selling; and when addressing someone with whom they had recently quarrelled. Similar constraints have been noted for several languages, such as Japanese (p. 99), Korean, Tibetan, Samoan, and Sundanese.

Devices for conveying relative respect and social distance can be found in all languages. What is distinctive about 'respect' languages is the way differences of social level have been so extensively coded in the grammar and vocabulary. In Javanese, the differences between levels are so great that equivalent sentences may seem to have very little in common.

Wolof greetings

Greeting behaviour has a special place among the Wolof of Senegal, and well illustrates the link between language and social identity. Every interaction *must* begin with a greeting.

In the country, a greeting occurs between any two persons who are visible to each other – even if one person has to make a detour to accomplish it. In crowded areas, everyone close to the speaker must be greeted. In a conversational gathering, everyone must be greeted at the outset; and if, in the course of the conversation, someone leaves and then returns, it is often necessary to pause while all are greeted individually again.

Wolof society is divided into several castes, and a person's social identity is involved in every greeting. The most senior people present are greeted before those of lower rank; and in any meeting, those of lower rank must speak first. When two people meet, they must reach a tacit agreement about their relative status: the one who talks first accepts the lower role. Variations in status also occur. For example, an upper-caste person may not wish to adopt the higher-ranking position, because that would oblige him to support the lower-ranking person with a gift at some future point. He would therefore attempt to lower himself by speaking first in a conversation.

A Wolof proverb sums up this principle of social inequality: *sawaa dyi, sawaa dyi, gatyangga tya, ndamangga ca* 'When two persons greet each other, one has shame, the other has glory.' (After J. T. Irvine, 1974.)

Level	are	you	going	to eat	rice	and	cassava	now	Complete
<i>krama inggil</i>	<i>menapa</i>	<i>pandjenengan</i>	<i>badé</i>	<i>dahar</i>	<i>sekul</i>	<i>kalijan</i>		<i>samenika</i>	<i>Menapa pandjenengan badé dahar sekul kalijan kaspé samenika?</i>
<i>krama biasa</i>									<i>Menapa sampéjan badé neda sekul kalijan kaspé samenika?</i>
<i>madya</i>	<i>napa</i>	<i>sampéjan</i>	<i>adjeng</i>	<i>nedā</i>	<i>sega</i>	<i>lan</i>	<i>kaspé</i>	<i>saniki</i>	<i>Napa sampéjan adjeng nedā sekul lan kaspé saniki?</i>
<i>ngoko madya</i>	<i>apa</i>							<i>saiki</i>	<i>Apa sampéjan arep nedā sega lan kaspé saiki?</i>
<i>gnoko biasa</i>		<i>kowé</i>	<i>arep</i>	<i>mangan</i>					<i>Apa kowé arep mangan sega lan kaspé saiki?</i>

Five status levels, in one Javanese dialect (after C. Geertz, 1968), using the sentence *Are you going to eat rice and cassava now?* The names *krama*, *madya*, and *ngoko* refer to 'high', 'middle', and 'low' respectively. In addition, the high and low levels each have two divisions, depending on whether honorific words are used, to produce *krama inggil* vs *krama biasa*, and *ngoko madya* vs *ngoko biasa*.

Social status and role

'Status' is the position a person holds in the social structure of a community – such as a priest, an official, a wife, or a husband. 'Roles' are the conventional modes of behaviour that society expects a person to adopt when holding a particular status. Public roles often have formal markers associated with them, such as uniforms; but among the chief markers of social position is undoubtedly language. People exercise several roles: they have a particular status in their family (head of family, first-born, etc.), and another in their place of work (supervisor, apprentice, etc.); they may have a third in their church, a fourth in a local sports centre, and so on. Each position will carry with it certain linguistic conventions, such as a distinctive mode of address, an 'official' manner of speech, or a specialized vocabulary. During the average lifetime, people learn many such linguistic behaviours.

It is only occasionally that the adoption of a social role requires the learning of a completely different language. For instance, a knowledge of Latin is required in traditional Roman Catholic practice; a restricted Latin vocabulary was once prerequisite for doctors in the writing out of prescriptions; students in some schools and colleges still have to speak a Latin grace at meal-times; and Latin may still be heard in some degree ceremonies. More usually, a person learns a new *variety* of language when taking up a social role – for example, performing an activity of special significance in a culture (such as at a marriage ceremony or council meeting), or presenting a professional image (as in the case of barristers, the police, and drill sergeants). The use of new kinds of suprasegmental feature (§29) is particularly important in this respect. One of the most distinctive indications of professional role is the intonation, loudness, tempo, rhythm, and tone of voice in which things are said.

In many cases, the linguistic characteristics of social roles are fairly easy to identify; but often they are not, especially when the roles themselves are not clearly identifiable in social terms. With unfamiliar cultures and languages, too, there is a problem in recognizing what is really taking place in social interaction or realizing how one should behave when participating in an event. How to behave linguistically as a guest varies greatly from culture to culture. In some countries, it is polite to comment on the excellence of a meal, as one eats it; in others, it is impolite to do so. In some countries, a guest is expected to make an impromptu speech of thanks after a formal meal; in others there is no such expectation. Silence, at times, may be as significant as speech (p. 38).

Ceremonial language

Probably all communities have developed special uses of language for ritual purposes. Distinctive forms are employed by those who have official status in the ceremony, as well as by those who participate. This may extend to the use of totally different languages (without regard for listener intelligibility), or be no more than selective modifications of everyday speech – such as prayers and speeches that are distinguished only by more careful articulation, abnormal prosody, and the occasional use of exceptional vocabulary and grammatical forms.

Among the Zuni, for example, 'sacred words' (*téwusu péna' we*), usually prayers, are pronounced in rhythmical units, resembling the lines of written poetry, with a reversal of the expected patterns of stress and intonation: strongly stressed syllables become weak, and the weakest syllable in the unit is pronounced most strongly. Ceremonial speech among the Kamsá Indians of Colombia also involves distinctive intonation and timing, reminiscent of chant, but in addition

there are grammatical and lexical changes. They use many more Spanish loan words than in everyday speech (60%, compared with 20%), and there is a marked increase in the number of affixes in a word (as many as 11 attached to a root, compared to the six or fewer heard in ordinary use).

Often, ceremonial genres are marked by considerable verbal ingenuity. For example, among the Ilongot of the northern Philippines there is a speech style known as 'crooked language' (*qam-baqan*), used in oratory, play, song, riddles, and public situations, such as debates. It is a style rich in witty repartee, puns, metaphor, elaborate rhythms, and changes in words. In Malagasy, there is a contrast between everyday talk (*resaka*) and oratorical performance (*kabary*), which is used in ceremonial situations such as marriages, deaths, and bone-turnings, and also in formal settings, such as visits. An obligatory feature of *kabary* is 'winding' speech, in which male speakers perform a dialogue in a roundabout, allusive manner, using

many stylistic devices, such as metaphors, proverbs, and comparisons. The genre uses traditional ways of speech, handed down from ancestors. To speak Malagasy well means to be in command of this style; and it is common to hear speakers' abilities discussed and evaluated.

In a marriage request ceremony, for example, the girl's family gather in her village, and await the arrival of the boy's family. Each is represented by a speech-maker. As the boy's family approaches, no official notice is taken of them until their speech-maker makes a series of requests to enter the village. Unless the girl's speech-maker judges that these speeches are performed adequately, according to the traditional standards of the *kabary*, they will not be allowed to proceed to the formal marriage request, and the speech-maker must redouble his efforts. Subsequent steps in the ceremony are evaluated in the same way. (After E. Keenan, 1974.)

Kabary in progress An orator at a Malagasy marriage ceremony.



Social solidarity and distance

One of the most important functions of language variation is to enable individuals to identify with a social group or to separate themselves from it. The markers of solidarity and distance may relate to family, sex (p. 46), ethnicity, social class (p. 38), or to any of the groups and institutions that define the structure of society. They may involve tiny sections of the population, such as scout groups and street gangs, or complete cross-sections, such as religious bodies and political parties. The signals can be as small as a single word, phrase, or pronunciation, or as large as a whole language

DIFFERENT LANGUAGES

Probably the clearest way people have of signalling their desire to be close to or different from those around them is through their choice of languages. Few societies are wholly monolingual, and it is thus possible for different languages to act as symbols of the social structure to which their speakers belong. The test sentence 'If they speak LANGUAGE NAME, they must be —' can be completed using geographical terms (p. 24), but social answers are available as well: the blank can be filled by such phrases as 'my tribe', 'my religion', 'immigrants', 'well educated', 'rich', 'servants', and 'the enemy'.

The use of a different language is often a sign of a distinct religious or political group – as in the cases of Basque, Latin, Welsh, the many official languages of the Indian sub-continent, and the pseudolinguistic speech known as glossolalia (p. 11). Switching from one language to another may also be a signal of distance or solidarity in everyday circumstances, as can be seen in strongly bilingual areas, such as Paraguay. Here, the choice of Spanish or Guaraní is governed by a range of geographical and social factors, among which intimacy and formality are particularly important. In one study (J. Rubin, 1968), bilingual people from Itapuami and Luque were asked which language they would use in a variety of circumstances (e.g. with their spouse, sweetheart, children, boss, doctor, priest, etc.) For most, Guaraní was the language of intimacy, indicating solidarity with the addressee. The use of Spanish would indicate that the speaker was addressing a mere acquaintance or a stranger. Spanish was also the language to use in more formal situations, such as patient–doctor, or student–teacher. Jokes would tend to be in Guaraní. Courtship often began in Spanish, and ended in Guaraní.

The adoption of a local language as an emblem of group identity is well illustrated by the Vaupés Indians of Colombia, who live in more than 20 tribal units, each of which is identified by a separate language. Despite the existence of a lingua franca (Tukano), a homogeneous culture throughout the region, and the small numbers of speakers (around 5,000 in total, in the early 1960s), the Indians all learn at least three languages – some, as many as ten. The identity of the different languages is

sharply maintained – for instance, several places have separate names in all the languages, and the Indians themselves emphasize their mutual unintelligibility. In such circumstances, the languages act as badges of membership of the tribal units. An Indian will often speak initially in his own father language to acknowledge publicly his tribal affiliation. And language acts as a criterion for all kinds of social behaviour. For example, when the investigator asked a Bará Indian about marriage sanctions, she was told: 'My brothers are those who share a language with me. Those who speak other languages are not my brothers, and I can marry their sisters.' On another occasion, when she asked an Indian why they spoke so many languages instead of using the lingua franca, she received the reply: 'If we were all Tukano speakers, where would we get our women?' (After J. Jackson, 1974.)

DIFFERENT VARIETIES

In monolingual communities, a major way of marking factors such as solidarity, distance, intimacy, and formality is to switch from one language variety to another. A Berlin businessman may use standard German at the office and lapse into local dialect when he returns home. A conference lecturer in Paris may give a talk in formal French, and then discuss the same points with colleagues in an informal variety. A London priest may give a sermon in an archaic, poetic style, and talk colloquially to his parishioners as they leave. During the service, he might have used a modern English translation of the Bible, or one which derives from the English of the 16th century.

Languages have developed a wide range of varieties for handling the different kinds and levels of relationship which identify the social structure of a community. These varieties are discussed in other sections (§§11, 63), because they partly reflect such factors as occupation, subject matter, social status, and setting; but it is important to note that they may also be used as symbols of social identity. In English, for example, forms such as *liveth and reigneth, givest, vouchsafe, and thine* have long been distinctive in one variety of religious language; but in the 1960s, as proposals for the modernization of Christian liturgical language were debated, this variety came to be seen as a symbol of traditional practice with which people chose to identify or from which they dissociated themselves. The case is worth citing because the world-wide status of Christianity meant that many speech communities were involved, and over a quarter of the world's population was affected. No other linguistic change can ever have raised such personal questions of linguistic identity on such a global scale.

Avoidance languages

Among Australian aborigines, it is common for a man to 'avoid' certain relatives – often his wife's mother and maternal uncles, sometimes her father and sisters as well. Brothers and sisters, too, may not be allowed to converse freely, once they grow up. In some tribes, avoidance of taboo relatives means total lack of contact; in others, a degree of normal speech is tolerated; but the most interesting cases are those where special languages have developed to enable communication to take place. These are usually referred to as 'mother-in-law' languages, but all taboo relatives are included under this heading.

In Dyirbal (now almost extinct), the everyday language is known as Guwal, and the mother-in-law language is called Dyalnguy. The latter would be used whenever a taboo relative was within earshot. The two languages have virtually the same grammar, but no vocabulary in common. Dyalnguy also has a much smaller vocabulary than Guwal.

In Guugu-Yimidhirr, there is no contact at all with the mother-in-law, and a strong taboo also affects speech to brothers- and fathers-in-law. There are important differences in vocabulary, style, and prosody. Sexual topics are proscribed. One must speak to these relatives slowly, in a subdued tone, without approaching closely or facing them. The style is sometimes described as *dani-manamaya*, 'being soft/slow', or *diili yirrgaalga*, speaking 'sideways'. (After J. B. Haviland, 1979.)

The avoidance languages of Australia illustrate yet another means of marking social distance. The people turn away, linguistically and physically, from their taboo relatives. Similar taboos have also been observed in many other parts of the world, such as among the Plains Indians of North America. These languages can therefore be contrasted with those (in South-east Asia, for example) where social relations are expressed by adding complexity to ordinary speech (p. 40).

Diglossia

Perhaps the clearest use of varieties as markers of social structure is in the case of *diglossia* – a language situation in which two markedly divergent varieties, each with its own set of social functions, coexist as standards throughout a community. One of these varieties is used (in many localized variant forms) in ordinary conversation; the other variety is used for special purposes, primarily in formal speech and writing. It has become conventional in linguistics to refer to the former variety as ‘low’ (L), and the latter as ‘high’ (H).

Diglossic situations are widespread, some of the better-known ones including Arabic, Modern Greek, and Swiss German. These speech communities recognize the H/L distinction and have separate names for the two varieties:

	High	Low
Greek	Katharévousa	Dhimotiki (Demotic)
Arabic	ʿal-fuṣḥā (Classical)	ʿal-ʿammiyyah (Colloquial)
Swiss German	Hochdeutsch (High German)	Schweitzerdeutsch (Swiss German)

The functional distinction between H and L is generally clear-cut. H is used in such contexts as sermons, lectures, speeches, news broadcasts, proverbs, newspaper editorials, and traditional poetry. It is a language that has to be learned in school. L is used in everyday conversation and discussion, radio ‘soap operas’, cartoon captions, folk literature, and other informal contexts.

H and L varieties can display differences in phonology, grammar, and vocabulary. For example, the sound systems of the two Swiss German varieties are strikingly different. Classical Arabic has three noun cases, whereas Colloquial Arabic has none. And in Greek there are many word pairs, such as *ínos* (H) and *krasí* (L) (‘wine’): the H word would be written on Greek menus, but diners would ask for their wine using the L word. All three kinds of distinctiveness are illustrated in the following sentence given first in Hochdeutsch (H) and then in Schweizerdeutsch (L): *Nicht nur die Sprache hat den Ausländer verraten, sondern auch seine Gewohnheiten*; and *Nüd nu s Muul häd de Ussländer verraate, au syni Möödeli*. ‘It was not only his language that showed he was a foreigner, his way of life showed it too.’ (After P. Trudgill, 1983.)

In diglossic situations, the choice of H vs L can easily become an index of social solidarity. A Swiss German speaker who used Hochdeutsch in everyday conversation would be considered snobbish or artificial – and if the context were a political discussion, it could even raise questions of national loyalty, as Hochdeutsch is used as the everyday language by people outside the country. Religious as well as political attitudes may be involved. The

H form is often believed to be the more beautiful and logical, and thus the more appropriate for religious expression – even if it is less intelligible. In Greece, there were serious riots in 1903, when the New Testament was translated into Dhimotiki. And strong views are always expressed by Arabic speakers about Classical Arabic, which, as the language of the Qur’an, belongs to God and heaven (p. 384).

Diglossic situations become unstable in the face of large-scale movements for a single standard – such as might be found in programmes of political unification, national identity, or literary reform. In such circumstances, there are arguments in favour of either H or L varieties becoming the standard. Supporters of H stress its link with the past, its claimed excellence, and they contrast its unifying function with the diversity of local dialects. Supporters of L stress the need to have a standard which is close to the everyday thoughts and feelings of the people, and which is a more effective tool of communication at all levels. ‘Mixed’ positions, setting up a modified H or L, are also supported; and the steady emergence of L-based standards has been noted in Greece, China, Haiti, and several other areas.


A personal column from the Basle daily newspaper *Basler Zeitung* This item shows an interesting contrast between High German and Swiss German. The rest of the newspaper is written in High German, but in the *Perseenlig* column (High German *persönlich*), the last two items are entirely in Swiss German (apart from the words in English). One is a humorous announcement of the opening of a medical practice; the other is a birthday greeting.

Why are the remaining ads not in Swiss German? This is probably because of their content and level: the first item expresses the thanks of an old married couple to their neighbours for all they did at their golden wedding celebration; the second announces the assembly point and time for a meeting of the fire service association. Even so, the second item has one distinctive feature: *Besammlung* (‘meeting’) is an example of ‘Swiss High German’, midway between High German (*Versammlung*) and Swiss German (*Besammli*).

Perseenlig

Herzlichen Dank
für die vielen lieben
Aufmerksamkeiten zur
goldenen Hochzeit von
Theres und Beat Wäger-Biehler
Gross war die Freude über die sehr
einfallsreichen Überraschungen!
Speziellen Dank den lieben Nachbarn
und «Ex-Nachbarn»!
Familie Wäger

65247 44-414946



**Besammlung
Münsterplatz
17.00
beim Brunnen**

651347 03-380755

Juhui!!!
... alli Kinder, d'Jugend derfe freue sich
trotz Pflaschter, Impfig, Noodlestich
dr **Unggle Doggter**
Peter Gordon und sy Babbe
hänn ghisst d'Praxis-Eröffnigs-Flagge
zem grosse Anlass winsche – mer nur's
Bescht
– vill gsundi Kinder – und jedes Joahr e
Fescht
Marguerite, Shari
Primo und Jan
651908 03-383351

**Happy birthday
dear Katrin!**
Alles Gueti wünscht Dir
Dini liebi Familie
651915 03-351574

DIFFERENT WORDS AND PHRASES

We recognize varieties of language as a result of perceiving several distinctive linguistic features being used together in a social situation. But often a single linguistic feature is enough to indicate social distance – such as the particular words or phrases used when people meet, address each other by name, or select pronouns for talking to or about each other.

Modes of address

One of the most significant ways of signalling social intimacy and distance is through the use of a person's name in direct address. In English, the basic choice is between first name (FN) or title with last name (TLN), but several other conventions are possible in certain settings, such as the use of LN only in business or academic settings (*Now look here, Smith...*), or the use of abbreviations (*Is JM in?*). The range of possible forms is easy to state; but the factors that govern the choice of forms are often complex and difficult to summarize. When would two people use FNs or TLNs reciprocally to each other? When would one speaker use FN and the other TLN?

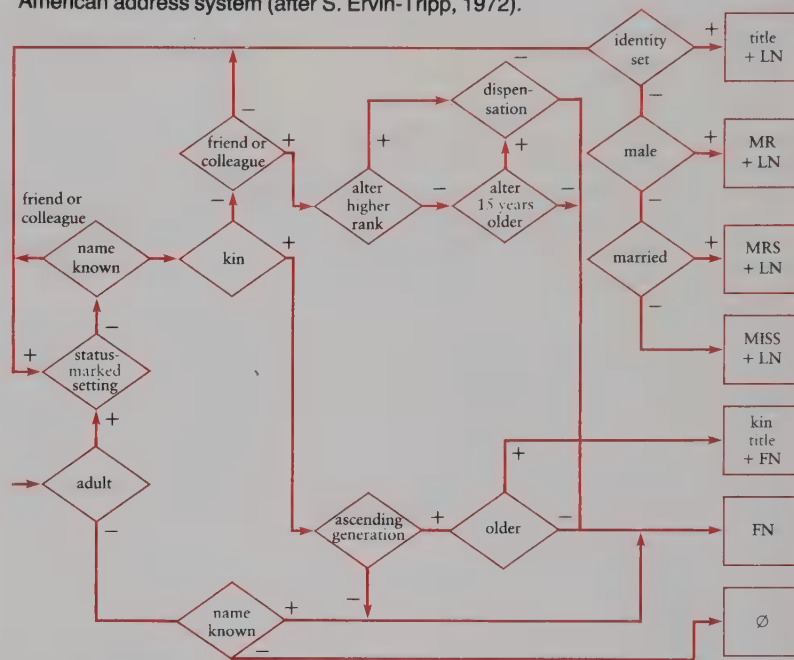
Charting address relationships Several studies have attempted to explicate these factors. The flow-chart (right) was devised by Susan Ervin-Tripp (1927–) as a means of specifying the factors that condition a speaker's choice of address in American English. The chart is simply a logical statement of the various possibilities, given a context such as 'Look, —, it's time to leave'; it is not an account of what goes on in the speaker's mind. The knowledge structure represented is that of an American academic; but dialect differences, idiosyncratic preferences, and other variants are not taken into account.

The entrance point to the diagram is at the bottom left. Each path through the diagram leads to one of the possible modes of address, listed vertically at the right. Alternative realizations of these address modes are not given (e.g. a first name may alternate with a nickname). For example, as one enters the diagram, the first choice which has to be made is whether the addressee is a child (– Adult) or an adult (+ Adult). If the former, one follows the line downwards, where the only distinction drawn is that between name known (+) or not (–). If the child's name is known, one uses the first name; if not, one does not use a name at all (∅). The diagram does not give criteria for deciding when a child becomes an adult.

Along the adult path, several decisions have to be made. 'Status-marked setting' refers to special occasions (such as a courtroom) where forms of address are rigidly prescribed (e.g. *your honour*, *Mr Chairman*). The 'identity set' refers to the list of occupational or courtesy titles that may be used alone to mark social identity (e.g. *Father*, *Doctor*, *Mr*, *Miss*).

In addressing people whose names are known, kinship is a major criterion. If the speaker is related to the addressee ('alter'), two factors are relevant: 'ascending generation' (e.g. aunt as opposed to cousin) and age. If the speaker is not related to alter, the factor of familiarity is relevant: whether or not alter is a friend or colleague. If familiarity applies, the next factor is social rank, here defined with reference to a professional hierarchy. A senior alter has the option of offering or accepting FN, instead of TLN ('dispensation' – *Call me Mike*), though this situation is often ambiguous. Age difference is not significant until there is a gap of nearly a generation.

American address system (after S. Ervin-Tripp, 1972).



Nuer modes of address

Address systems vary greatly from culture to culture. Among the Nuer (Sudan), a system of multiple names and titles marks a person's place in social structure. Every Nuer is given a personal name, shortly after birth, which he retains through life; but as an adult, it is used only by close relatives and friends. These names usually refer to the place of birth, or to events that took place at the time, such as *Nhial* 'rain', *Duob* 'path'. Maternal grandparents often give the child a second personal name, which is used by kinsfolk on the maternal side. Twins are given special personal names, which immediately identify their status, such as *Both*

'the one who goes ahead' and *Duoth* 'the one who follows'.

The social setting is an important factor in the selection of a mode of address. Every child inherits an honorific, or clan name, which tends to be used only in ceremonies or on special occasions (such as a return after a long absence). When a boy is initiated to manhood, he is given an ox, and from the distinctive features of this animal he takes his 'ox-name', which is used only by people of the same or similar ages. There are also 'dance-names' – more elaborate versions of ox-names that are used only at dances.

Kinship roles also play

their part. A man would normally be addressed using the name of his father (his patronymic). But a man visiting maternal relatives will be greeted primarily by his mother's name (his matronymic). The naming of people after their eldest child (teknonymy) is also heard, especially when talking to in-laws. For example, a woman's status in her husband's home is based on her having borne him a child, and this is the link that binds her to her husband's social group. It is therefore natural for that group to address her using the child's name. (After E. E. Evans-Pritchard, 1948).

T or V?

A well-studied example of address is the use of the familiar and polite pronouns found in many languages, as in French *tu/vous*, German *du/Sie*, Welsh *ti/chwi*, and so on. These forms (generally referred to as T forms and V forms, respectively, from Latin *tu* and *vos*) follow a complex set of rules that foreigners never find easy to master. Terms such as 'familiar' and 'polite' capture aspects of their use, but are inadequate summaries of all their social functions, and ignore important differences between languages.

In Latin, the T forms were used for addressing one person, and the V forms for more than one; but from around the 4th century BC, the convention developed of referring to the Roman Emperor using the plural form *vos*. Gradually, this 'royal you' extended to others who exercised power, so that by medieval times, the upper classes were showing mutual respect through the use of V forms only. The historical picture is complicated and not entirely understood, but medieval nobles would generally address each other as V, whether talking to one person or more than one, and would address the lower classes as T. By contrast, the lower classes would use T to each other, and V to their superiors.

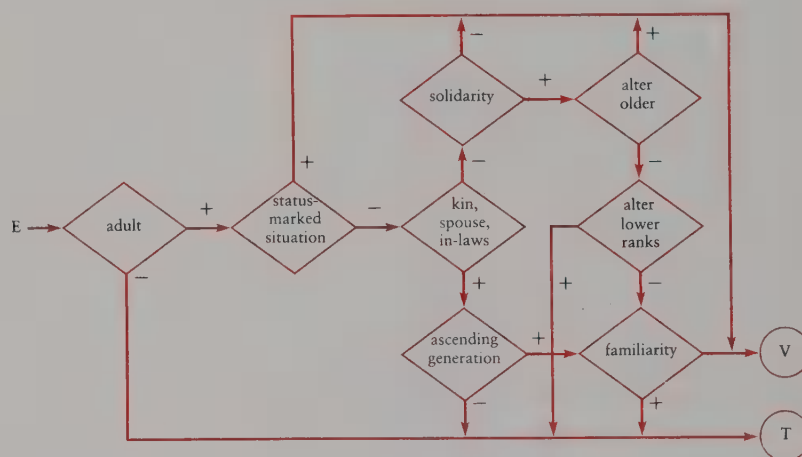
Later the V forms began to be used in other circumstances, not simply as a mark of respect due to those with power but as a sign of any kind of social distance. T forms, correspondingly, began to be used as markers of social closeness and intimacy. Thus, between equals, it became possible to use either T or V, depending on the degree of solidarity one wished to convey. Lower-class friends would address each other as T, and use V to strangers or acquaintances. Upper-class people would do likewise.

In these circumstances, where there is a power relationship motivating one usage (T = lack of respect), and a solidarity relationship motivating another (T = social closeness), situations of uncertainty would often arise. For example, during a meal, should diners address servants as T or V? The diners are more 'powerful' (and so should use T), but they are also socially distant from the servants (and so should use V). Similarly, should children address their parents as T (because they are intimates) or V (because there is a power difference)? By the 20th century, such conflicts had in most cases been resolved by following the dictates of the solidarity dimension: these days, diners address waiters as V, and children address parents as T.

But some fascinating differences remain. In the first systematic T/V study, male students from different linguistic backgrounds were asked about their pronoun preferences. The sample was relatively small, but it clearly emerged that Italians used T more than the French, and the French more than the Germans. There were several interesting points of detail: for example, Germans used T more to distant relations than did the French; Italians were

more likely to use T to fellow female students than either French or Germans. There were psychological as well as geographical differences. Radical students used more T forms than did conservatives. One of the conclusions of the study was that 'a Frenchman could, with some confidence, infer that a male university student who regularly said T to female fellow students would favour the nationalization of industry, free love, trial marriage, the abolition of capital punishment, and the weakening of nationalistic and religious loyalties'. Inferences of this kind are difficult to confirm on a larger scale, partly because of the speed of linguistic change (since the early 1960s, when this study was done, student use of T has become much more widespread). But hypotheses of this kind are well worth following up, as they bear directly on the task of establishing the basis of sociolinguistic identity. (After R. Brown & A. Gilman, 1968.)

Flow-charts These charts provide an opportunity to make hypotheses about naming practice precise, and help to clarify interlanguage differences. For example, this kind of diagram has been used to identify the factors governing the use of T or V forms in Yiddish (S. Ervin-Tripp, 1972).



Farr's Law of Mean Familiarity

... as discovered by Lumer Farr, one of the senior lifemen in Stephen Potter's *One-upmanship* (1952), identifies a well-known inverse naming relationship in the following way:

The Guv'nor addresses:

Co-director Michael Yates as
 Assistant director Michael Yates as
 Sectional manager Michael Yates as
 Sectional assistant Michael Yates as
 Indispensable secretary Michael Yates as
 Apprentice Michael Yates as
 Night-watchman Michael Yates as

Mike
 Michael
 Mr Yates
 Yates
 Mr Yates
 Michael
 Mike

Sexism

The relationship between language and sex has attracted considerable attention in recent years, largely as a consequence of public concern over male and female equality. In many countries, there is now an awareness, which was lacking a generation ago, of the way in which language can reflect and help to maintain social attitudes towards men and women. The criticisms have been directed almost exclusively at the linguistic biases that constitute a male-orientated view of the world, fostering unfair sexual discrimination, and, it is argued, leading to a denigration of the role of women in society. English has received more discussion than any other language, largely because of the impact of early American feminism.

Several areas of grammar and vocabulary have been cited. In grammar, the issue that has attracted most attention is the lack of a sex-neutral, third-person singular pronoun in English, especially in its use after indefinite pronouns, e.g. *If anyone wants a copy, he can have one.* (In the plural, there is no problem, for *they* is available.) No natural-sounding option exists: *one* is considered very formal, and forms such as *he* or *she* are stylistically awkward. As a result, there have been many proposals for the introduction of a new English sex-neutral pronoun – including *tey*, *co*, *E*, *ne*, *thon*, *mon*, *heesh*, *ho*, *hesh*, *et*, *hir*, *jhe*, *na*, *per*, *xe*, *po*, and *person*. None of these proposals has attracted widespread support, but *co*, for example, has been used in some American communes, and *na* and *per* have been used by some novelists. Less radical alternatives include advice to restructure sentences to avoid the use of *he*-forms.

Many other examples of linguistic bias have been given. In the lexicon, particular attention has been paid to the use of 'male' items in sex-neutral contexts, such as *man* in generic phrases (*the man in the street*, *stone-age man*, etc.), and the potential for replacing it by genuinely neutral terms (*chairman* → *chairperson*, *salesman* → *sales assistant*, etc.). Another lexical field that is considered problematic is marital status, where bias is seen in such phrases as *X's widow* (but not usually *Y's widower*), the practice of changing the woman's surname at marriage, and the use of *Mrs* and *Miss* (hence the introduction of *Ms* as a neutral alternative). The extent of the bias is often remarked upon. In one computer analysis of child school books, male pronouns were four times as common as female pronouns. In another study, 220 terms were found in English for sexually promiscuous women, and only 22 for sexually promiscuous men. It is easy to see how sexual stereotypes would be reinforced by differences of this kind.

Maintaining sexual stereotypes in language

This is the list of lecturers from the University of Reading's Department of Linguistic Science in 1983, as printed in the University calendar. Although gender is irrelevant to the job, the women in the Department are clearly identified by the use of a full first name, and/or by the use of *Mrs*. It is not possible to tell if the male members of staff are married.

Lecturers:

C. Biggs, MA, Oxford; PhD, Cambridge; Diploma in Linguistics, Cambridge
 R. W. P. Brasington, MA, Oxford
 A. R. Butcher, MA, Edinburgh; MPhil, London; Dr phil, Kiel
 F. Margaret Davison, BA, Sussex; MA, Reading; Cert T Deaf, Manchester
 P. J. Fletcher, BA, Oxford; MPhil, Reading; PhD, Alberta
 M. A. G. Garman, BA, Oxford; PhD, Edinburgh; Diploma in General Linguistics, Edinburgh
 G. A. Hughes, BA, Montreal; Diploma in English as Second Language, Wales
 K. Johnson, BA, Oxford; MA, Essex
 Carolyn A. Letts (Mrs Letts), BA, Wales; MCST
 K. M. Petyt, MA, Cambridge; MA, PhD, Reading; Diploma in Public and Social Administration, Oxford (Director of Extramural and Continuing Education)
 Marion E. Trim (Mrs Trim), MSc, London; LCST
 Irene P. Warburton (Mrs Warburton), BA, Athens; PhD, Indiana

Sexist language

People would bring their wives, mothers, and children.

Rise Up, O Men of God . . .
 Man, being a mammal, breastfeeds his young.
 Mind that child – he may be deaf!
 Man overboard!

These randomly selected cases of sexist language may provoke ridicule, anger, or indifference, but they would be unlikely to warrant a legal action to determine their meaning. However, there are other examples where a legal decision could hang on the sex-specific vs sex-neutral senses of *man*. In the U.S., for example, there has been legal controversy over the application of the generic male pronoun in cases where it was disputed whether such phrases as 'a reasonable man' could legitimately be applied to women. And in a case heard in 1977, an appeal was made against a woman's murder conviction on the grounds that instructions to the jury were phrased using the generic male form; this, it was argued, could have biased the jury's response, giving them the impression that the objective standard to be applied was that applicable to an altercation between two men. Traditional safeguard phrases such as 'the masculine pronoun shall import the feminine' have turned out to be less than satisfactory in resolving such issues.

Sex-role stereotyping in schoolbooks



Sexual stereotyping has been especially noted in traditional children's reading books and textbooks. There were always more male characters than female, and they took part in a greater variety of roles and activities. In early reading books, it was always the boys who were daring, the girls who were caring. Pictures in science books would show experiments being conducted by boys, while girls looked on. There is now a widespread trend to avoid sex-role stereotypes in children's books, and to prepare children for a more egalitarian society.

THE PROPER STUDY OF MANKIND IS MAN?

What has happened to sexist language, as a result of feminist criticism? So far, the effect has been far more noticeable in writing than in speech. Several publishing companies have issued guidelines about ways of avoiding its use, and several writers and editors, in many important areas, now make a conscious effort to avoid unintentional biases – including such well-known bodies as the American Library Association, and writers such as Dr Benjamin Spock and (for the record) the present author. Legal changes, such as the Sex Discrimination Act in Britain (1975), have caused job titles and much of the associated language to be altered. But is there any evidence of a significant change in practice throughout the language as a whole?

In 1984, an American study investigated the use of *man* and its compounds to refer to all humans, and the use of *he* and its inflected forms to refer to females as well as males, in a selection of publications taken at intervals between 1971 and 1979. The texts were samples of 75,000 running words from American women's magazines, science magazines, several newspapers, and both prepared and spontaneous remarks from the *Congressional Record*; a sample from *The Times Literary Supplement* was used, as a British comparison. The total sample was over half a million words.

The results were dramatic. In the American corpus, the use of these forms fell from 12.3 per 5,000 words in 1971 to 4.3 per 5,000 in 1979. Women's magazines showed the steepest decline, followed

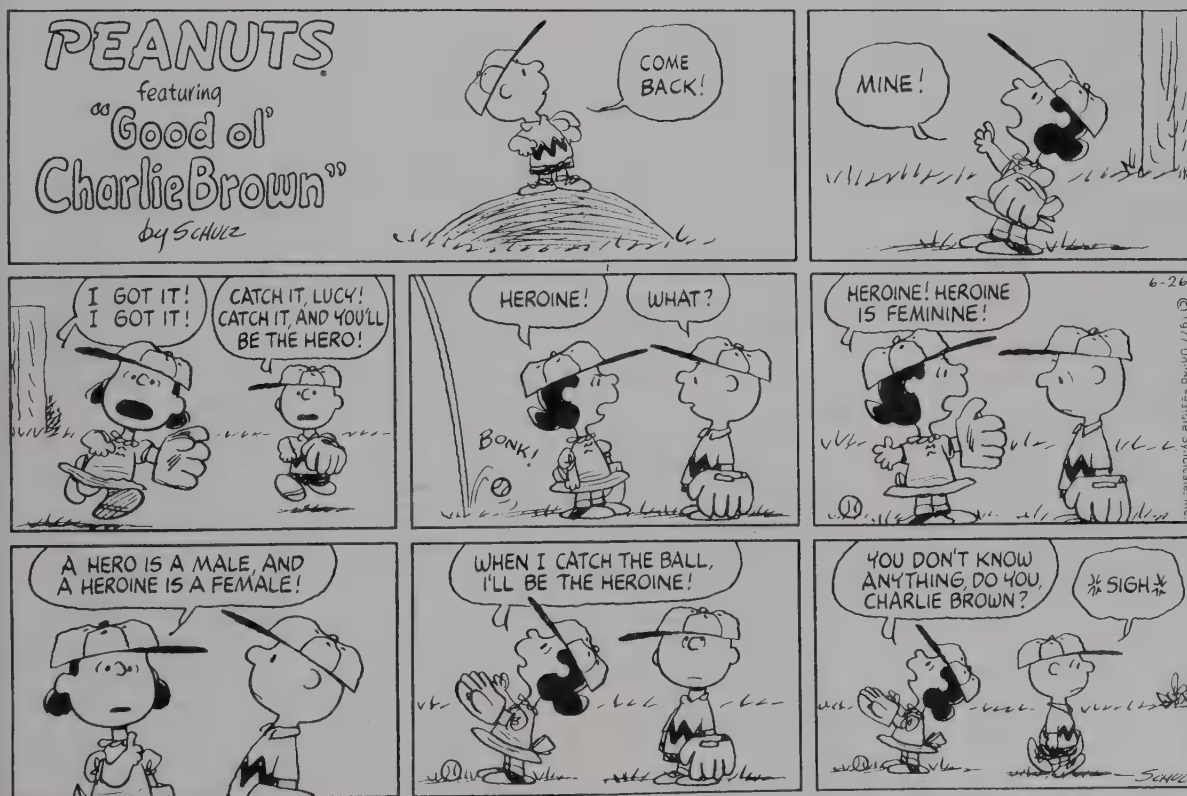
by science magazines. By contrast, results for congressmen showed no decline at all, and results for congresswomen were mixed. There was no clear decline in the British publication, but rates were very low, and little can be deduced from such a small sample. (After R. L. Cooper, 1984.)

What took the place of these forms? There was no evidence that a straightforward replacement by such forms as *he* or *she* was taking place. Rather, it seems likely that people were using alternative linguistic devices to get round the problem, such as *they* along with a plural noun. (This is the solution I have found most congenial in the present work, in fact.)

There is thus clear evidence that the feminist movement had an observable impact in the 1970s on several important genres of written language – publications aimed at general audiences, not solely at women. Plainly, there has been a general raising of consciousness about the issue of linguistic sexism, at least as regards the written language. Whether this same consciousness would be found in everyday speech is unclear, as is the question of how long-term these linguistic effects will be. A great deal of social change has taken place in a decade, and this could be enough to make the associated linguistic changes permanent; but a decade is as nothing within the large time-scale of language change, and it remains to be seen whether the new trends in usage will continue, or whether there will be a reversal, with public opinion reacting against the extreme positions taken by some militant feminists.

Dear God,
Are boys
better than
girls. I know
you are one
but try to
be fair.
Sylvia.

Child's letter from *Children's Letters to God*.



11 Contextual identity

The question 'Where are you from?', which signals geographical identity (§8), can be balanced by another locational question, 'Where are you now?' Many features of language correlate directly with the characteristics of the context, or situation, in which a communicative event takes place. Classifications vary, but most approaches recognize the central role played by the following factors:

- **Setting.** The time and place in which a communicative act occurs, e.g. in church, during a meeting, at a distance, and upon leave-taking.
- **Participants.** The number of people who take part in an interaction, and the relationships between them, e.g. addressee(s), bystander(s).
- **Activity.** The type of activity in which a participant is engaged, e.g. cross-examining, debating, having a conversation.

The interaction between these factors produces a set of constraints on several features of language (discussed in Parts III–VI, and x), notably:

- **Channel.** The medium chosen for the communication (e.g. speaking, writing, drumming) and the way it is used.
- **Code.** The formal systems of communication shared by the participants (e.g. spoken English, Russian, etc., deaf sign languages).
- **Message form.** The structural patterns that identify the communication, both small scale (the choice of specific sounds, words, or grammatical constructions) and large scale (the choice of specific genres).
- **Subject matter.** The content of the communication, both explicit and implicit.

Each of these plays a crucial part in the identification of a communicative event. For example, a sermon (activity) is normally given in a church (setting), by a preacher addressing a congregation (participants), primarily using speech (medium), in a monologue in a single language (code), involving religious forms and genres (message form), and about a spiritual topic (subject matter). This kind of characterization needs immediate refinement, of course. Some sermons permit dialogue as well as monologue; some use chant and song alongside speech; some introduce different languages. But an initial simplified analysis is useful, because it enables a comparison to be made between different kinds of communicative event, which points the way towards a typology of communication. Several contextually distinctive uses of language are illustrated in §63.

Setting

The particular time and place in which people interact will exercise its influence on the kind of communication that may occur – or whether communication is permitted at all. In institutionalized settings, such as a church or a court of law, the effect on language use is clear enough. But in many everyday situations, and especially in cultures we find alien, the relationship between setting and language can be very difficult to discover. At dinner parties, funerals, interviews, council meetings, weddings, and on other occasions, linguistic norms of behaviour need to be intuitively recognized if people are to act appropriately, but they are not always easy to define. For example, how would one begin to define the optimum length of an after-dinner speech, or the proportion of humour its subject matter should contain? In different times and places we may be obliged, permitted, encouraged, or even forbidden to communicate; and the quality or quantity of the language we use will be subject to social evaluation and sanction. The extent to which people recognize, submit to, or defy these sanctions is an important factor in any study of contextual identity.

How to answer the telephone

Telephone conversations provide one of the clearest examples of the influence of setting upon language, because of the lack of visual feedback, and the constraints of time and money. The opening and closing phases of such conversations are particularly distinctive, with rules governing sequences of acceptable and unacceptable utterances. Certain features of the language are universal, but there are also interesting cultural differences, which often make themselves felt whenever one attempts to telephone someone abroad.

In British English, for example, the normal sequence for a call to a private residence is as follows:

1. Telephone rings.
2. Answerer gives number.
3. Caller asks for intended addressee.

By contrast, in French, the

following practice seems to be more usual (after D. Godard, 1977):

1. Telephone rings.
2. Answerer: 'Allo.'
3. Caller verifies number.
4. Answerer: 'Oui.'
5. Caller identifies self, apologizes, and asks for intended addressee.

The different conventions can have several consequences – not least, the possibility (which has been seriously mooted) that French people have greater difficulty remembering their own telephone number, because they do not have to verify it themselves when they pick up their phone! An English caller in France could unintentionally offend, by using the British pattern, which lacks the caller's self-identification and apology for troubling the answerer. And, conversely, English answerers can be

irritated when a French caller checks their number, when they themselves have just said it. Or again, in trying to reach a third party, a French caller would expect French answerers to reciprocate with a self-identification or some degree of small talk, before going to get the third party, whereas an English answerer would have no such expectation. The sequence:

1. Telephone rings.
2. Answerer gives number.
3. Caller asks for third party.
4. Answerer: 'I'll get her.'

(Leaves phone.)

is normal in England, but abnormal in France, where there would be a further interaction before the answerer left the phone. Several such differences exist, which, if not correctly understood, can easily lead to unfortunate stereotypes about foreign attitudes.

Maori greetings

In some cultures, rituals of greeting or leave-taking are marked by elaborate and highly conventionalized forms of expression, often reflecting the social standing of the speakers (§10). Among the Maori, for example, distinctive behaviour and language identify the ritual encounter at the beginning of the ceremonial gathering (or *hui*) which takes place on such occasions as weddings, funerals, and visitations by dignitaries.

There may be as many as seven stages in the encounter ritual, all but two involving language. In each case, accuracy of expression is essential, otherwise evil will result. (After A. Salmon, 1974):

- The *waerea* is a protective incantation chanted upon entry to a gathering. Its words are archaic, and are often not understood.
- The *wero* is a ritual challenge, involving noise and actions, but no language.
- The *karanga* is an exchange of high, chanted calls of greeting, and invocations to the dead, between the old women of the local and visiting parties.
- The *poowhiri* is an action

chant of welcome, using rhythmical actions and loud shouts.

- The *tangi* is a high wailing and sobbing, on a single vowel, uttered for the dead.

■ The *whaikorero* is the oratory that is the main part of the ritual. The locals and each group of visitors have a 'team' of orators. Speeches alternate, each speech beginning with a warning shout, and being followed by an archaic chant, greetings for the dead and living, perhaps a topic for discussion, and concluding with a traditional song by the group as a whole.

- The *hongi*, or pressing of noses, concludes the ritual.

When high-ranking foreigners make an official visit to New Zealand, they are usually greeted by the elaborate leaping and grimacing of a Maori ceremonial challenge (*wero*). Such ritual displays of strength were always customary on the first encounter with strangers – though early settlers often took them for displays of real belligerence, with deadly results!

Maori dancers in ceremonial costume, 1972.

A Maori *karanga* exchange

LOCAL: *Haere mai ra e te mana ariki e, mauria mai o taatou tini aituaa!*

Welcome, prestige of chiefs, bring our many dead!

Haere mai, haere mai!

Welcome, welcome!

VISITOR: *Karanga ra te tupuna whare ki te kaahui pani!*

Call, ancestral house, to those who mourn!

Ki ngaa iwi e, karanga ra!

Call to the tribes!

LOCAL: *Nau mai ngaa karanga maha o te motu!*

Draw near from all corners of the island!

Mauria mai ngaa mate kua ngaro ki te poo!

Bring the dead who have gone into the night!

VISITOR: *Hoki wairua mai raa e koro e!*

Return in spirit, old man!

Ki te karanga ki te poowhiri i taa koutou kaahui pani!

To the call and welcome of those who mourn you!

Hoki wairua mai e Paa e!

Return in spirit, father!



Speech-making in Samoan

A study of formal speech-making in the village of Falefa, in Western Samoa, provides a good illustration of the effect of setting on language. The village council (*fono*) consists of around 100 adults (*matai*), who are chiefs and orators, all with special titles. Meetings of the *fono* are called to discuss crises in village life; but before the main issue is discussed, orators make one or more formal speeches (*lauga*). The *lauga* seems to function as an affirmation of the need for a stable society, at a time when conflict and dissent are present. It contains seven distinct parts (though these may be reduced in number, and their performance varies from one type of social event to another).

- *Kava*: an acknowledgement of the person who has called out the titles of those who were served kava roots in the opening ceremony.
- *Thanksgiving to God*: for allowing the people to gather in this way.
- *Mornings*: a metaphor for important events, which symbolizes the performing of good deeds, and focusses attention on the present meeting.
- *Dignity of the sacred names*: an acknowledgement of the dignity of the *matai* and their titles.
- *Formal greeting*: praise and greeting for all the *matai* titles.
- *Agenda of the fono*: the official reason for the meeting, stated in very general terms.
- *Clearing of the sky*: the speaker wishes a good and long life to all present, using this metaphor, which represents a life with no problems.

As an example of the speech style, part of the *Mornings* section of one *lauga* is given below (from A. Duranti, 1983):

... O ikū i kaeao ...
la 'o kaeao masagi lava
o le aukugu'u
kaeao (o) le Loku
ma kaeao- le Kusi Pa'ia
la ... o kaeao lava ...
Ua kuaga'i ia kaeao
ma kaeao- fo'i sa fa' asilisiliga
i o(u)kou figagalo
ma o kakou fa'amoemoe ...
la 'ae o le kaeao sili a legei
ua kākou aulia maguia
legei kaeao fou
ma legei aso fou ...
fa'akaugu'uiga ai
le- le kōfā ma le fa' aukaga.

Moving on to the mornings, ...
well (they) are very well-known mornings
of our country
the morning of the Church
and the morning (of) the Bible
Yes ... real mornings ...
Those mornings have gone
and the mornings that have been indicated
by the wish of you (chiefs)
and the hope of us (orators) ...
well this is the most important morning
when we meet in good spirit
(on) this new morning
and this new day ...
to accomplish
the decision of the chiefs and of the orators.

Participants

The simple opposition of message 'sender' and message 'receiver' needs considerable refinement if we are to classify communicative events satisfactorily. Normally a single person acts as sender, or addressee; but we have to allow for unison speech, as in the case of liturgical responses in church or other rituals, group teaching (where the whole class may respond together), popular acclamations (such as during a political address, or in a sports arena), and speeches by the players in a theatrical presentation. The linguistic characteristics of such speech (especially the prosody (§29)) will obviously be very different from those found when a person speaks alone.

Similarly, a single person is the usual receiver, or addressee, of a message; but here too we must allow for variations. We may address someone directly, or through an intermediary, such as a secretary, interpreter, or spokesman. A third party may overhear what we are saying, or see what we have written, and we may consider this desirable or undesirable. And speech addressed to a group of people is common enough in everyday conversation, as well as in more formal contexts, such as sermons, toasts, and lectures, and the whole range of circumstances that define the world of spoken and written mass communication (§63).

All of these contexts can influence the language used by the speaker. For example, to know that one is being overheard by one's superior can lead to marked alterations in speech, even to the extent of adopting a completely different stylistic level (as has been observed in Persian). One may need to defer to the broader audience by altering pronoun forms and using various politeness strategies, as well as by modifying non-linguistic behaviour (such as body movements and eye contact). In some circumstances, the knowledge that one is being (or even, is likely to be) overheard may lead to non-fluency or a breakdown in communication, as in patient-doctor conversation, or the well-known effects that take place when people are asked to speak into a microphone.

In multilingual environments, there will usually be language switching (p. 363) when a conversation is joined by a third party who is not at ease in the language being used. However, language switching may not take place if the participants wish to exclude the third party – a common reaction to tourists visiting rural communities abroad. Nevertheless, circumstances vary greatly, and reactions are difficult to predict. One empirical study encountered a group of bilinguals at an inn in Austria who switched from Hungarian to German when asked to do so by people at a nearby table; but the study of a similar situation in Scotland found that a request to switch from Gaelic to English was refused.

Cuna curing ritual

Some cultures introduce unusual participants into the speech event, especially where special powers need to be invoked. For example, in Cuna (Panama), language combines with medicine to help cure disease. There are many speech forms (*ikar*) that are thought to effect cures. These vary according to the nature of the ailment, but all have the same basic structure.

The sick person lies on a hammock, under which is a box of wooden dolls; it is the dolls which are thought

to carry out the curing, and someone who knows the appropriate *ikar* is used to instruct them. The sick are not themselves active participants in the event: they may be asleep, or unaware of what is taking place around them, or even absent. Nor would they (or other onlookers) usually understand the special language of the *ikar*. In several ways, this ritual is similar to the western religious tradition of praying over or for the sick.

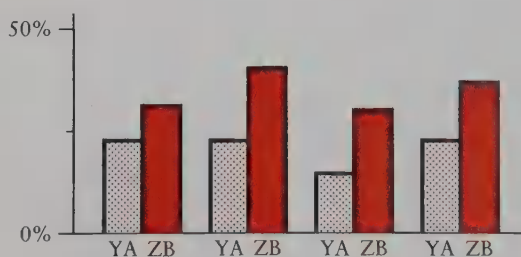
Other objects of medicinal value, such as tree bark

or plants – or even western medicines – can be addressed in this way, as can be seen in the following extract (from J. Sherzer, 1974), in which the *ikar* calls on certain trees to use their strength to help someone suffering from severe headaches. The italicized words are used only in this particular type of *ikar*, whose fixed pattern must be accurately repeated in order to be effective. As curing *ikar* generally last for about 1½ hours, those who speak them need to have great powers of memory.

kurkin ipekantiye olopillise pupawalakan akkuek^wiciye,
kurkin ipekantiye olopillise pe maliwaskakan upoek^wiciye,
kurkin ipekantinaye olopillise pe maliwaskakana pioklekek^wiciye,
kurkin ipekantinaye olopillipiye apikaek^wiciye ...
 'trees, your roots reach the level of gold,
 trees, your small roots are placed into the level of gold,
 trees, your small roots are nailed into the level of gold,
 trees, within the very level of gold you are resisting ...'

READING THE NEWS

The effects of a mass audience on speaker style can be illustrated from studies of variation in the speech of radio newscasters. In New Zealand, for example, the same group of newscasters read the news on a number of different radio stations that share the same suite of studios. In one study, individual newscasters were monitored when they read the news on a higher-status station (YA) and on a lower-status station (ZB). In every case their pronunciation changed in the same direction. For example, /t/ between vowels (as in *butter*) was produced with voicing far more on ZB than on YA, as shown in the diagram (after A. Bell, 1984):



Because the voiced variant is normal in New Zealand, the announcers' use of the alternative must be demonstrating the external influence of a model of acceptable public speech (in this case, Received Pronunciation) – an instance of positive accommodation to an audience (p. 51).

NEW LANGUAGE FOR OLD

Varieties of language can alter completely if there is a change in one's view of audience needs. In recent years, for example, there has been a radical shift in the way theologians have begun to talk about God, in the light of their perception that people have become dissatisfied with traditional images and are searching for new ones. Such images covered a wide area of language, including terms that were highly abstract and mystical (*supreme being, infinite one, the unknowable, essence*), metaphorical and personal (*father, lord, judge, saviour*), psychological and ethical (*forgiveness, love, compassion*).

The dissatisfaction is well illustrated by the success of Bishop John Robinson's *Honest to God* (1963), which sold over a million copies. This book questioned the tradition of talking about God in crude spatial metaphors, as if he were 'up there', or 'out there'. It argued that, to modern audiences, such language was outmoded and acted as a barrier to understanding, whereas images such as 'ground of our being' could more easily be related to current ways of thinking. Several experiments in religious communication followed, in the spirit of this approach, and a new academic discipline has even been proposed to study this area – *theography*, a term coined on analogy with 'geography', which aims to 'draw the map' of language that people use to talk about God.

LINGUISTIC ACCOMMODATION

When two people with different social backgrounds meet, there is a tendency for their speech to alter, so that they become more alike – a process known as *accommodation*, or *convergence*. Modifications have been observed in several areas of language, including grammar, vocabulary, pronunciation, speech rate, use of pause, and utterance length. Everyday examples are the slower and simpler speech used in talking to foreigners or young children; the way technical information is presented in a less complex manner to those who lack the appropriate background; the rapid development of catch phrases within a social group; and the way many people cannot stop themselves unconsciously picking up the accent of the person they are talking to. The process has even been observed with babies 'talking' to adults: at 12 months, they were babbling at a lower pitch in the presence of their fathers, and at a higher pitch with their mothers.

These shifts take place in order to reduce the differences between participants, thus facilitating interaction, and obtaining the listener's social approval (p. 23). It should be noted that linguistic accommodation also has its risks, such as the loss of personal (and sometimes group) identity, or the perceived loss of integrity, such that the listener may react against the speaker's new style. Much depends on how speakers view themselves and the group to which they belong (the 'in group') in com-

God is for real, man

This is the title of a book by Carl Burke, an American prison chaplain, who hoped to make the biblical message meaningful to people from New York's toughest areas, by 'translating' passages into their everyday style of speech. The first three commandments read:

1. *You shall have no other gods before me* ... Means God's the leader – nobody, but nobody, man, gets in the way. This is the top. He is Mr. Big, real big.

2. *You shall not make for yourself a graven image* ... This means no making things that look like God in the craftshop at the settlement house. No worshipping things like rabbits' foots and lucky dice and, damn it, dolls.

3. *You shall not take the name of the Lord your God in vain* ... It means knock off the swearing or you better watch out.

parison with the group to which the listener belongs (the 'out group'). But on the whole, the benefits of convergence seem to outweigh these risks, with several social psychological studies showing that people react more favourably to those who move linguistically closer to them.

Divergence

Speech divergence also takes place when people wish to emphasize their personal, social, religious, or other identity. There may be quite elementary reasons for the divergence, such as a dislike of the listener's appearance or behaviour; or there may be more deep-rooted reasons, such as the deliberate use of a minority language or ethnically distinctive accent or dialect (§9). Threatening contexts readily result in divergence, as has been demonstrated experimentally. In one study, a group of people in Wales were learning Welsh in a language laboratory. During one of the sessions, they were asked to answer some questions about language learning. The questions were presented to them in their individual booths by an English speaker with an RP accent (p. 39), who at one point arrogantly challenged their reasons for learning what he called 'a dying language with a dismal future'. The accents used in their replies were then compared with those used in responding to a previous question that was emotionally neutral. The test sentence replies showed immediate divergence (as well as an aggressive tone of voice): speakers used a broader Welsh accent, and some introduced Welsh words into their speech. In a similar study, in Belgium (p. 37), the divergence took the form of a complete language shift. Here, the aggressive question was spoken by an unsympathetic Walloon (French) speaker to Flemish learners of English. Although replies to other questions were in English, half the learners switched into Flemish in their replies to the question which threatened their ethnic identity.

Activity

The kind of activity in which we engage will directly influence the way we communicate. At one level, our activities reflect the social status we have and the roles we perform (§10). But status and role are very general notions, within which it is possible to recognize a much more specific notion of 'activity type'. For example, priests have a well-defined status and role within a community; but while exercising their role as priests, they engage in a wide range of activities, such as leading a service, giving a sermon, exorcizing spirits, hearing confession, baptizing, and visiting the sick. Many other occupations involve a similar variety; and in all cases there are linguistic consequences of the shift from one activity to another. Linguistically-distinct activities are often referred to as *genres* or *registers*, though these terms are sometimes used to refer to all the contextually influenced varieties presented in this section.

Activity influence is not restricted to occupational environments. We also engage in many kinds of activity in everyday speech and writing, such as gossiping, discussing, quarrelling, petitioning, visiting, telephoning, and writing out lists. Here too there are linguistic norms and conventions, although they are usually more flexible, and the genres are not always as easy to define as those associated with more formal activities.

SPOKEN VARIETIES

Conversation

Everyday conversation is so habitual that it is easy to forget its status as a genre, with its own norms and conventions, often very different from those used in written language (§31).

- The language is often inexplicit, because the participants can rely on context to clarify their meaning, e.g. A: *That's a nice one.* B: *It sure is.*
- There is no careful thematic planning governing the way a conversation proceeds; there are often changes of subject matter, and alterations in level (even, in multicultural contexts, switching between dialects or languages, p. 363).
- A degree of non-fluency is normal, while participants spontaneously construct their sentences; one expects to hear false starts, hesitation noises (*er, um*), pauses, repetitions, and other 'errors' of performance.
- Speech is usually quite rapid, with many of the sounds of careful pronunciation being omitted or altered in the interests of preserving naturalness and fluency; a wide range of prosodic effects (§29) is heard, signalling the diverse emotions which are encountered in conversations.
- The clear-cut sentence patterns known from the written language are often missing; in their place are more loosely-connected constructions, fre-

quently requiring the application of different grammatical rules from those found in good writing or recommended by traditional grammars (§1).

- The vocabulary of everyday speech tends to be informal and domestic, limited and inexplicit, as speakers cope with difficulties of memory, attention, and perception. In extreme (though not uncommon) cases, empty nonsense words may be used, e.g. *thingummajig, whatchamacallit, doo-da.*
- There is a great deal of usage variation on the part of individual speakers, often involving the unconscious use of non-standard or deviant forms.

Certain other features of this activity are included in §31. The subject of 'conversation analysis', which deals with the rules governing turn-taking between speakers, is introduced in §20.

Courtesy expressions

Ritual expressions of politeness are a common feature of social interaction in all forms of spoken and written dialogue, but especially in conversation. They are of considerable importance in accounting for the way people judge each other, and in explaining the success or failure of an interaction. The omission of a politeness formula, when one is expected, or the failure to acknowledge one appropriately, can lead to a tense atmosphere, or even social sanctions – as children who fail to say *please* sometimes find to their cost. In some languages, complex formulaic politeness sequences reflect levels of social structure and long-standing social traditions, as in the case of Wolof or Maori greetings (pp. 40, 49). English has only a small number of expressions, by comparison.

Languages display many differences in politeness expression. For example, phrases such as *good morning* and *good evening* are by no means universal: salutations related to time of day are normal in many languages, but not, say, in Bengali or Wolof; and the distinctions found in English are lacking in French (which uses one expression, *bonjour*, more widely). Foreigners do not always find it easy to work out the pragmatic rules that govern the use of these expressions, for arbitrary conventions are often involved. For example, the 'morning' in *good morning* does not coincide with the chronological period from midnight to noon: in normal use, it does not extend from midnight, but only from waking up; and it may extend beyond midday, until the midday meal. Outside of this period, its use is ironic, as when it is said late at night to someone who was expected earlier, or said mid-afternoon to someone who has overslept. Moreover, it may be used only once to a person during the day (unlike *Hello*), and an echo of the greeting is expected (unlike *Thank you*). But *good morning* is simple compared with *good evening*, where use is affected by variations in social background, habits of work, and the onset of darkness.

Some English politeness formulae

Greetings Good morning, Hello, Hi
Farewells Good night, Bye, See you, Cheers
Introductions How do you do?, How's things? Hi
Thanks Thank you, Ta, Thanks a lot
Toasts Good health, Cheers, Here's to ...
Seasonal greetings Merry Christmas, Happy Birthday
Apologies Sorry, I beg your pardon, My mistake
Responses to apologies That's OK, Don't mention it, Never mind
Congratulations Well done, Right on, Congratulations
Public noises Encore, Hear hear, Goal
Body noises Excuse me, Bless you, Pardon me

An Arabic farewell

The normal exchange of farewells in Syrian Arabic is a three-part sequence. If A is said first, the addressee must reply with B, and the first speaker may then use C; but if B is said first, C is obligatory.

- A. (*b*)*xātrak* 'by your leave'
B. *maʿssalame* 'with peace'
C. *ʾalla ysallimak* 'God keep you'

This language also illustrates the principle of replying to greetings by 'adding' to the original, as in

- A. *marḥaba* 'hello'
B. *marḥabtēn* 'two hellos'
or *mīt marḥaba* '100 hellos'.

The Qur'an in fact says at one point (Surah IV, verse 86): 'If someone greets you, either return the greeting or greet him better, for God takes everything into account.' (After C. A. Ferguson, 1976.)

PROVERBIAL EXPRESSIONS

In every culture there are nuggets of popular wisdom, expressed in the form of succinct sayings. These are usually referred to as *proverbs*, though several other terms are also used (e.g. *adage*, *maxim*, *precept*). Proverbs are not commonly encountered in everyday speech in English, but in many cultures (e.g. in most parts of Africa), they are an important and frequent element in ordinary conversation.

Several extensive collections of proverbs have been made, which provide evidence for considerable similarities across cultures – similarities that are largely due to the universality of human experience (though there are often signs of linguistic borrowing). For example, many languages have parallels for such proverbs as the Somali *Kaadsade ma kufo* 'He who takes his time does not fall.' Structurally, also, proverbs display interlanguage similarities with their reliance on vivid images, domestic allusions, and word play. One of the most interesting features is the way many can be divided into two parts that balance each other, often displaying parallel syntax and rhythm, and links of rhyme and alliteration.

- *English*: Least said, soonest mended.
- *Maori*: *Ka whakaiti koe i te manuhiri, ka whakaiti koe i a koe*. 'In demeaning the visitor, you lower yourself.'
- *Latin*: *Praemonitus, praemunitus*. 'Forewarned is forearmed.'
- *Somali*: *Beeni marka hore waa malab, marka dambe na waa malmal*. 'Lies are honey at first, later they are myrrh.'
- *Chinese*: *ái wǒ jī wǒ*. 'if you love a house, you love its crows.' (cf. 'Love me, love my dog.')
- *Samoan*: *E mafuli le ului, ae tupu le sulí*. 'The parent tree has fallen over, but one of its saplings is growing.'
- *Welsh*: *Cenedl heb iaith, cenedl heb galon*. 'A nation without a language is a nation without a heart.'

THE CHIEF USE OF SLANG ...

Is to show that you're one of the gang! In fact, slang has so many uses that it is difficult to choose one as central. Eric Partridge (1894–1979) was able to distinguish as many as 15 different reasons for the use of slang:

for the fun of it
as an exercise in wit or ingenuity
to be different
to be picturesque
to be arresting
to escape from clichés
to enrich the language
to add concreteness to speech
to reduce seriousness
to be colloquial
for ease of social interaction

to induce intimacy
to show that one belongs
to exclude others
to be secret

But one theme recurs among all these reasons: the use of slang as a means of marking social or linguistic identity. In Partridge's book *Slang: Today and Yesterday* (1933), the group-identifying function in fact provides the basis for most of the detailed illustrations, which come from a wide range of geographical areas and occupational activities. Slang is, by definition, a colloquial departure from standard usage; it is often imaginative, vivid, and ingenious in its construction – so much so that it has been called the 'plain man's poetry'. It thus especially attracts those who, for reasons of personality or social identity, wish to be linguistically different – to be 'one of the gang', whether the 'gang' in question be soldiers, nurses, actors, footballers, prisoners, warders, linguists, gays, or pop singers (see also pp. 56, 59).

Slang samples

Cockney rhyming slang
Cain and Abel table
cows and kisses the missus
Gawd forbids kids
Hampstead Heath teeth
lean and lurch church

U.S. hospital slang
crispy critter severe burn patient
pre-stiff close to death
prune old, dehydrated patient
Zorro belly someone with surgical scars on abdomen
(From D. P. Gordon, 1983.)

British prison slang
filth detectives
LTI long-term inmate
nick prison
screw prison warder
snout tobacco

But remember ...
The slang of one generation can be the standard English of the next:
bus from *omnibus*
zoo from *zoological garden*
piano from *pianoforte*

From speech to poetry

In many speech situations, contextual factors combine with the skill of the speaker to produce genres that display many of the characteristics of poetry. The main comparison is with the techniques used in the oral formulaic poetry of early European culture (in the Homeric epics, in particular), and still found earlier this century in the singing of oral epics by the Serbo-Croatian *guslars*. The rhythm and intonation changes from that of normal speech, so that prosodic 'lines' can be heard. The speech contains many memorized formulae, which can be embellished or modified as occasion arises.

Sermons

An example of this intermediate stage between speech and oral poetry is in the spontaneous sermons of black preachers in the southern United States. The text below has been transcribed in lines (from B. A. Rosenberg, 1970), identified by the preacher's own rhythms and the oral response of the congregation (*Amen*, *Hallelujah*, etc.). The heavy use of for-

mulae is clear.
Keep your hand in God's hand,
And your eyes on the star-posts in glory.
Lord said he would fight your battles,
If you'd only be still.
You may not be a florist.
Am I right about it?
But you must tell them, that He's the Rose of Sharon.
I know that's right.
You may not be a geologist.
But you must tell them, that He's the Rock of Ages.
I know that's right.
You may not be a physician.
But you must tell them, that He's the Great Physician.
Am I right about it?
You may not be a baker.
But you must tell them, that He's the Bread of Life.
Am I right about it? ...

Auctioneer speech

Auctioneers all over the world impress lay audiences with their fluent verbal skills; but much of their performance is based on the use of linguistic formulae, uttered in a distinctive prosodic form. Repeated phrases and an absence of pauses contribute to an impression of rapid speech – though in fact their speed (as measured in syllables

per second) only occasionally exceeds that found in a normal conversation on a familiar topic. The special prosody has been studied, for example, in the monologues of New Zealand livestock auctioneers. During the opening phase of the auction, the stock is described using a loud, high-pitched drone. When the bids begin, many of the speaker's rhythm units start with a stylized shout. The last bid generally has its own tune – a prosodic warning that the auction is about to end. Then the gavel falls, and the auctioneer's speech returns to a normal mode. Extracts from one auction illustrate its formulaic character (from K. Kuiper & D. Hago, 1984):
What do you think, Sir?
Sell 'em Sir?
Are they on the market, Sir? ...
I'll sell 'em.
Right, I'll sell 'em.
Right, I'll sell.
We'll sell 'em.
Right, we'll sell 'em.
I'm gonna sell 'em ...
I got twenty dollar twenty bid twenty bid twenty got twenty bid forty twenty dollar forty twenty forty I'm bid ...

VISUAL VARIETIES

Ethnographers of communication have largely focused on the study of *speech* events in a wide range of cultural contexts, because of a previous lack of research in these domains. But it must not be forgotten that the various activities of the *written* language also display the influence of context – often in a highly distinctive manner, because of the visual contrasts available in the written medium, especially in print (§31). With thousands

of stylistically distinct varieties available in a literate culture, there is space here to select only a tiny fraction, in order to illustrate the range of variability and some of the linguistic features involved. Further illustration of contextually influenced visual language activities will be found in §63, in relation to advertising, law, science, the press, and other specialized fields, and in §32, in relation to the field of typography.

Information materials

This is an enormous field, including works of reference (dictionaries, catalogues, almanacs, government leaflets, etc.), instructional material (phrase books, recipe books, do-it-yourself manuals, etc.), newspapers, documents, reports, teletext, and all kinds of academic publication. Some of these materials are so wide ranging and diverse that it is impossible to make simple generalizations about their linguistic distinctiveness. Newspapers, for

example, constitute a clearly identifiable linguistic variety but one that is made up of a large number of 'sub-varieties' such as news reports, letters, editorials, and crosswords (p. 388). But at the opposite extreme, there are many informational linguistic activities that are limited in scope and fairly homogeneous in content and structure – some so severely constrained that they fall within the category of 'restricted language' (p. 56) – as with cooking recipes, phrase books, and commercial advertising.

CREOLE OYSTER GUMBO

- | | |
|--------------------------------|----------------------------------|
| 4-pound young chicken | 1 small can tomatoes |
| 1/4-inch slice of ham | 1 teaspoon curry powder |
| 6 tablespoons butter | Salt and freshly ground pepper |
| 3 tablespoons flour | 1/4 teaspoon, red pepper |
| 2 cups chopped onions | 2 teaspoons each thyme and basil |
| 1 large green pepper, sliced | 1 pound fresh shrimp |
| 2 cloves garlic, crushed | 1 pound okra |
| 1 cup sliced celery and leaves | 2 dozen oysters |
| 2 quarts chicken stock | 1 tablespoon gumbo file |

Be sure to get a young chicken. Quarter the chicken and cut the ham into 1/4-inch cubes. Melt 3 tablespoons of the butter in a heavy pan and heat the flour in it to a dark brown without burning it. Put the browned flour in a large pot, rinsing out the browning pan with a little stock. Put in the chicken and ham. Sauté the onions and pepper in the other 3 tablespoons of butter for 5 minutes, and add them to the pot with the garlic, celery and leaves, sliced very thin, the chicken stock, tomatoes, curry powder, salt, pepper, thyme, and basil. Simmer 1/4 hour. Meanwhile wash the shrimp and cook 4 minutes in 1 cup of water. Let cool, peel, and set aside. Return the stock to the shrimp broth and simmer 15 minutes; then strain the broth into the stewing kettle. When the chicken is tender, remove it, cut all the meat from the bones, and return the meat to the pot. Clean okra, removing the ends, add it to the pot, and simmer another half-hour. When ready to serve, reheat, and when hot add the shrimp and oysters and stir in the file powder. Do not cook further but serve immediately. The file is crushed dried sassafras, a thickening agent, and is not to be cooked. Serve with bowls of steaming rice. Serves 10 or 12.

English.	Polish.	Pronunciation.
Give me my medicine	Proszę mi dać moje lekarstwo	proshen mi dahch moie lekhahstvo
What is the matter with you?	Co panu brakuje?	co pahnoo brakhoh-ich
Is your digestion all right?	Czy trawisz pan dobrze?	chi trahvish pahh dolzhch
Are you cold?	Czy panu zimno?	chi pahnoo zimno
Are you warm?	Czy panu gorąco?	chi pahnoo goronco
Cover yourself well	Proszę się przykryć dobrze	proshen sien pzhichrich dobzhch
Where do you feel pain?	Gdzie pan czujesz ból teraz?	gdzieh pahh chouchesh bol' tehrach
How long have you been ill?	Jak długo był pan chory?	yahk dwoogo biw pahh hori
You have a slight attack of fever	Masz pan lekki atak gorączki	mahsh pahh lehkki ahtahk goronchki
Can you account for it?	Czy może mi pan dać przyczynę?	chi mohzh mi pahh dahch pzhichinen
He is not going on very well	Jego zdrowie się nie polepsza	yehgo zdrovieh sien nieh polepahh
Call the doctor	Proszę zawiadzić lekarza	proshen zahvohach pielehngahnrhkon
Lie down	Proszę się położyć	proshen sien powozhich
Are you comfortable?	Czy panu wygodnie?	chi pahnoo vigodnieh
I do not feel well	Nie czuję się dobrze	nieh chooien sien dolzhch
I am hot	Gorąco mi	goronco mi [ken
I have got a headache	Ja mam czkawkę	yah mahm chkahv-

Ceremonial materials

Some of the most ornate forms of visual language will be found in materials intended for use on religious and ceremonial occasions, such as in books of religious significance, memorial plaques, certificates (examination, birth, marriage, etc.), and

inscriptions. Formal and often archaic language is usual, reflecting the special significance society attributes to these activities. A birth certificate, a tombstone inscription, and part of a religious service leaflet illustrate this.

This certificate is to be used only by the Superintendent Registrar, Deputy or Interim Superintendent Registrar for the district of LISBURN

CERTIFICATE OF BIRTH

BIRTHS AND DEATHS REGISTRATION ACTS (NORTHERN IRELAND).

Name and Surname: David Wright

Sex: M

Date of Birth: 12th July 1941

Place of Birth: Registrar's District of Lisburn

I HEREBY CERTIFY that the foregoing particulars have been compared with the Register of Births in my custody.

Office: Lisburn

Date: 12th July 1941

Signature: W. J. Wright Registrar.

GAUTION: This person who (1) receives any of the provisions on this certificate, (2) signs it, (3) signs it, (4) signs it, (5) signs it, (6) signs it, (7) signs it, (8) signs it, (9) signs it, (10) signs it, (11) signs it, (12) signs it, (13) signs it, (14) signs it, (15) signs it, (16) signs it, (17) signs it, (18) signs it, (19) signs it, (20) signs it, (21) signs it, (22) signs it, (23) signs it, (24) signs it, (25) signs it, (26) signs it, (27) signs it, (28) signs it, (29) signs it, (30) signs it, (31) signs it, (32) signs it, (33) signs it, (34) signs it, (35) signs it, (36) signs it, (37) signs it, (38) signs it, (39) signs it, (40) signs it, (41) signs it, (42) signs it, (43) signs it, (44) signs it, (45) signs it, (46) signs it, (47) signs it, (48) signs it, (49) signs it, (50) signs it, (51) signs it, (52) signs it, (53) signs it, (54) signs it, (55) signs it, (56) signs it, (57) signs it, (58) signs it, (59) signs it, (60) signs it, (61) signs it, (62) signs it, (63) signs 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Dialogue materials

There are many linguistic activities where the identity of the visual variety is partly dependent on the active participation of the user. Either space is left for the users to fill in, or opportunity is given for them to reply in their own terms. Included in the first category are questionnaires, official forms, diaries, and various kinds of stationery; in the second are postcards, circulars, letters, and graffiti.

In the illustration (right), typographical design, technical vocabulary, and reduced syntax provide an unmistakable linguistic identity for a German income tax form, which is little different from its counterparts in other languages, and which would doubtless provide its taxpayers with a commensurate degree of difficulty. In recent years, government departments in several countries have tried to make such forms easier to use, with some success (§63). It is possible to make progress in clarifying layout and question structure, but there is a limit to the degree of simplification one can introduce when one is dealing with such a complex area of human activity.

1985

Grüne Felder nur vom Finanzamt auszufüllen

71 10 02 85

An das Finanzamt Zutreffende weiße Felder bitte ausfüllen oder ☒ ankreuzen

Antrag auf Lohnsteuer-Jahresausgleich **Einkommensteuererklärung**
Ich rechne mit einer Einkommensteuererstattung

Lohnsteuer-Nr. lt. LStJA-Bescheid 1984 Steuernummer

99 10 **Allgemeine Angaben** Telefonisch tagsüber erreichbar unter Nr.

11 **Steuerpflichtiger (Stpfl.)**, bei Ehegatten: **Ehemann**

2 **Familiennamen** 68 **Keine Steuernachzahlung**

3 **Vorname** 69 **Zurückzahlung**

4 **Geburtsdatum** Tag Monat Jahr Religion 14 **Für das Stpfl./Ehemann**

5 **Straße und Hausnummer** 18 **Für den Ehegatten**

6 **Postleitzahl** 10 **Anzahl des Stpfl.**

7 **Anschrift wie 1984?** Von Zeilen 5 und 6 abweichender Wohnsitz am 31. 12. 1985 40 **Anzahl der Postleitzahlen**

8 **Verheiratet seit dem** **Verwitwet seit dem** **Geschieden seit dem** **Dauernd getrennt lebend seit dem**

9 **Ehefrau (Vorname)** **ggf. abweichender Familienname**

11 **Geburtsdatum** Tag Monat Jahr Religion **Ausgeübter Beruf**

12 **Straße und Hausnummer, Postleitzahl, derzeitiger Wohnort** (falls von Zeilen 5 und 6 abweichend)

13 **Von Zeile 12 abweichender Wohnsitz am 31. 12. 1985**

14 **Nur bei Einkommensteuererklärung von Ehegatten ausfüllen:** **Ja, und zwar**

Zusammenveranlagung **Getrennte Veranlagung** **Wir haben einen besonderen Güterstand vereinbart** **Nein**

99 11 **An der Steuererklärung**

10 **Zurückzahlen** **A** **B** **A** **B**

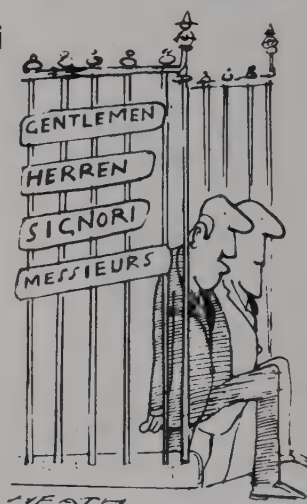
11 **Zurückzahlen** **A** **B** **A** **B**

Identifying materials

Probably the most widely encountered variety of visual language is that used for identifying persons, places, and objects. This includes street names, public signs, name tags, compliment slips, publication titles, identity cards, product labels, house numbers, registration plates, letter headings, tickets, shop facias, and much more. Typographical clarity and distinctiveness are the main characteristics, along with considerable grammatical abbreviation and the use of specialized vocabulary. There are marked linguistic similarities between languages. Internationally used symbols, such as numerals and trade marks, are routinely involved. A bilingual (Welsh/English) membership card, road signs, and car registration plates illustrate several of these features.

Some linguistically distinctive graffiti

Scots rule, och aye!
French diplomats rule, au quai.
Oedipus was a nervous rex.
Mort au Shah – et aux souris (Paris).
Town criers rule, okez, okez, okez.
Ave Maria – I don't mind if I do.
Synonyms govern, all right.
Roget's Thesaurus dominates, regulates, rules, OK, all right, agreed.



"I suppose it makes a change to see all that foreign graffiti."

CYNGOR BWRDEISTREF

YNYS MÔN
ISLE OF ANGLESEY

BOROUGH COUNCIL

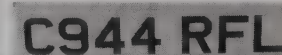
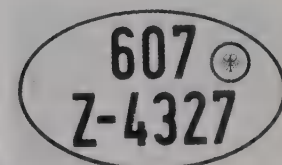
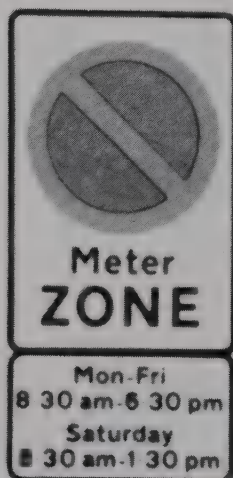
CERDYN
AELODAETH
Canolfannau Hamdden

MEMBERSHIP CARD
Leisure Centres

TEULU - FAMILIES, 1986-87

Nº 1743

Ffôn/Phone :
LLANGFNI 722966
CAERGYBI/HOLYHEAD 4111
AMLWCH 830060



Restricted languages

The British linguist J. R. Firth (1890–1960) introduced the phrase ‘restricted language’ to refer to a severely reduced linguistic system used for a special activity. The language is so tightly constrained by its context that only a small degree of linguistic variation is permitted. These ‘languages’ are both spoken and written, and can be found in everyday as well as specialized contexts. They usually consist of routinely used formulaic constructions, with a conventionalized prosody or typographical layout, and a limited vocabulary.

Broadcasting scores

The reporting of sports scores and stages of play is always a highly stereotyped activity. For example, in American baseball, there is the ‘count’ routine, which specifies first the number of balls (0–4) and then the number of strikes (0–3) of a player at bat, as in the following sequence:

One and one.

Count of one and one to M.

One and oh.

Two and oh.

Oh and one.

It’s one and one.

Nothing and one count ...

This can be compared with the equivalent reporting in Japanese sportscasts, where the English vocabulary continues to be used, although in Japanese pronunciation (e.g. *three* is *surii*, *strike* is *sutoraiku*). The conventions are different (the order is strikes before balls, and there are no plural endings or connecting words), but the stereotyped nature of the language is maintained:

Two strike two ball.

No strike two ball.

Two strike nothing.

Two nothing.

Two two.

(After C. A. Ferguson, 1983.)

In reporting final scores, the convention in America, Japan, and many other countries is to read the higher score first; whereas in such countries as Britain and Germany, the home team is read first, with intonation being the signal of which team has won. Another common convention is for the two team names to be read together, followed by the two scores.

Language boundaries

Two knitting pattern extracts, one English, one Swedish, illustrate the way in which the features of restricted language cut across linguistic boundaries.

1st row—(K.1, P.1) twice, * K.1, w.f., K.3, w.f., sl.1, K.1, p.s.s.o., K.1, K.2 tog., w.f., K.3, w.f., (K.1, P.1) 4 times, rep. from * to last st., K.1.
2nd row—K.1, P.1, * (K.1, P.1) 3 times, P.16, rep. from * to last 3 sts., K.1, P.1, K.1.
3rd row—(K.1, P.1) twice, * K.1, w.f., sl.1, K.1, p.s.s.o., K.1, K.2 tog., w.f., sl.1, K.2 tog., p.s.s.o., w.f., sl.1, K.1, p.s.s.o., K.1, K.2 tog., w.f., (K.1, P.1) 4 times, rep. from * to last st., K.1.

Lägg upp 90 (98) 106 m på st 3½. Byt till st 2 och sticka 8 cm resår 2 am, 2 rm. Första v är avigsida. Byt till st 3½, sticka rätst (= alla v stickas räta) och öka jämnt över första v till 99 (107) 115 m. När arb mäter 46 (47) 48 cm avmaskas den mittersta m för v-ringn och var sida stickas för sig. Minska 1 m för v-ringn = på höger sida stickas 2 rm tills. och på vänster sida stickas 2 rm tills. bakifrån. Denna hoptagn görs vartannat v 21 ggr = 28 (32) 36 m kvar för axel.

Heraldry

The description of the symbols used on shields, flags, seals, and other objects involves an archaic grammar and vocabulary, much influenced by French, to produce phrases such as ‘three bars gemel sable surmounted of a lion rampant gules, armed and langued azure’. Heraldic glossaries often contain around 800 terms, but only

a few of these are in frequent use.

The distinctive terminology can be illustrated from some of the main features of a shield. The ground of the shield can be a colour, metal, or fur, involving contrasts such as *argent* (silver), or (gold), *gules* (red), *azure* (blue), *sable* (black), *vert* (green), *purpure* (purple), and *vair* (squirrel). The device on a

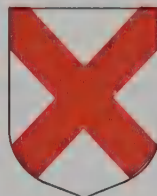
shield is known as a *charge*, traditionally an animal or geometric shape, but these days an increasing set of modern objects is used, as new coats of arms come to be devised. The main shield positions have their own terms (such as *chief* = top third; *dexter* = right side, as seen by the bearer; *pale* = vertical centre), and some of the patterns are drawn below.



(a)



(b)



(c)



(d)



(e)

Indexing

Alphabetical organization is a crucial feature of indexing style, but there are two competing principles in regular use—letter-by-letter and word-by-word. The difference can be seen by comparing two small sections of an index:

dialect 16, 42, 70–90

 accent vs 3

 dialectic 40

 dialect mixture 80–1

 dialectology 36

 dialect standards 65, 84–5

 research into 77

dialect 16, 42, 70–90

 accent vs 3

 dialect mixture 81

 dialect standards 65, 84–5

 research into 77

 dialectic 40

 dialectology 36

These samples show some of the idiosyncratic features of grammar that characterize this style, especially the inverted and telegraphic syntax.

Trucker talk

The jargon of American truck drivers using citizen band (CB) radio has been widely publicized since the medium became available in 1958.

The language contains a large number of stereotyped phrases for communicating routine messages, using a special numerical code (the CB-10 system). More complex messages use everyday English, peppered with CB slang, which makes it attractive to initiates and largely unintelligible to outsiders. In this special lexicon are such items as: *affirmative* (yes), *bears* (police), *anklebiters* (children), *doughnuts* (tyres), *eyeballs* (headlights), *five-finger discount* (stolen goods), *grandma lane* (slow lane), *handle* (CBer nickname), *mobile mattress* (caravan), *motion lotion* (fuel), *rubber duck* (the first vehicle in a convoy), *smokey* (policeman), and *super cola* (beer). Some of the main CB-10 codes are given below.

- 10-1 Poor reception
- 10-2 Good reception
- 10-3 End transmission
- 10-4 Message understood
- 10-5 Relay message
- 10-6 Stand by
- 10-7 Leaving air
- 10-8 In service
- 10-9 Repeat
- 10-10 Monitoring without transmitting
- 10-20 My position is
- 10-100 Stop at lavatory
- 10-200 Police needed

SEASPEAK

There have been major changes in modern sea transport in recent years. Larger and faster ships pose greater navigational hazards. Shipping routes alter and present fresh problems of traffic flow. VHF radio permits direct communication between ship, shore, and aircraft, and satellite systems extend a ship's communicative range indefinitely. In such circumstances, mariners need to make their speech as clear and unambiguous as possible. Bridge officers, however, come from a variety of language backgrounds.

Although English is already recognized as the international language of the sea, it is essential that the language should follow clear rules, so as to reduce the possibilities of ambiguity and confusion in the sending and receiving of messages. In 1980, a project was set up to produce Essential English for International Maritime Use (referred to as Seaspeak) in Britain. The recommendations relate mainly to communication by VHF radio, and include procedures for initiating, maintaining, and terminating conversations, as well as a recommended grammar, vocabulary, and structure for messages on a wide range of maritime subjects. The language thus has considerable expressive power, though it is far more restricted than everyday language.

Call-signs

When sending call-signs in Seaspeak, as in air-traffic control, police communication, and other radio contexts, the NATO phonetic alphabet is used to spell a word or speak out individual letters. Each letter has its own name and pronunciation (italics mark the stress), which is given as follows in the Seaspeak manual.

In addition to the equipment required for routine radio communications, several special-function aerials can be seen on this Batch 2 type 42 destroyer. They are used for short- and long-range surveillance, target identification, helicopter navigation, and missile control.

A Alpha	AL-FAH	N November	NO-VEM-BER
B Bravo	BRAH-VOH	O Oscar	OSS-CAH
C Charlie	CHAR-LEE	P Papa	PAH-PAH
D Delta	DELL-TAH	Q Quebec	KEY-BECK
E Echo	ECK-OH	R Romeo	ROW-ME-OH
F Foxtrot	FOKS-TROT	S Sierra	SEE-AIR-RAH
G Golf	GOLF	T Tango	TANG-GO
H Hotel	HOH-TELL	U Uniform	YOU-NEE-FORM
I India	IN-DEE-AH	V Victor	VIK-TAH
J Juliet	JEW-LEE-ETT	W Whiskey	WISS-KEY
K Kilo	KEY-LOH	X Xray	ECKS-RAY
L Lima	LEE-MAH	Y Yankee	YANG-KEY
M Mike	MIKE	Z Zulu	ZOO-LOO

Similarly, some numbers change their pronunciation, so that they will be more clearly received. Large numbers have their own grammar.

0 zero	ZERO	8 eight	AIT
1 one	WUN	9 nine	NINER
2 two	TOO	15 one-five	WUN-FIFE
3 three	TREE	215 two-one-five	TOO-WUN-FIFE
4 four	POWER	1,000 thousand	TOUSAND
5 five	FIFE	24,000 two-four-thousand	TOO-POWER-TOUSAND
6 six	SIX		
7 seven	SEVEN		

A conversation in Seaspeak

Western Sky (WS) is approaching Singapore (SPO).

ws: Singapore Port Operations. *This is Western Sky.*

Information: My ETA* position: East Johore pilot station is time: one-three-four-five UTC.† *Over.*

SPO: Western Sky. *This is Singapore Port Operations.*

Mistake. Time is: one-four-three-zero UTC now. *Stay on. Over.*

ws: Singapore Port Operations. *This is Western Sky.*

Correction. My ETA is one-five-four-five UTC. *Over.*

SPO: Western Sky. *This is Singapore Port Operations.*

Information-received: Your ETA position: East Johore pilot station is time: one-five-four-five UTC.

Instruction: anchor in the General Purpose

Anchorage, reason: your berth is occupied. *Over.*

ws: Singapore Port Operations. *This is Western Sky.*

Instruction-received: anchor in the General Purpose Anchorage. *Nothing more. Over.*

SPO: Western Sky. *This is Singapore Port Operations. Out.*

* ETA = estimated time of arrival.

† UTC = coordinated universal time.

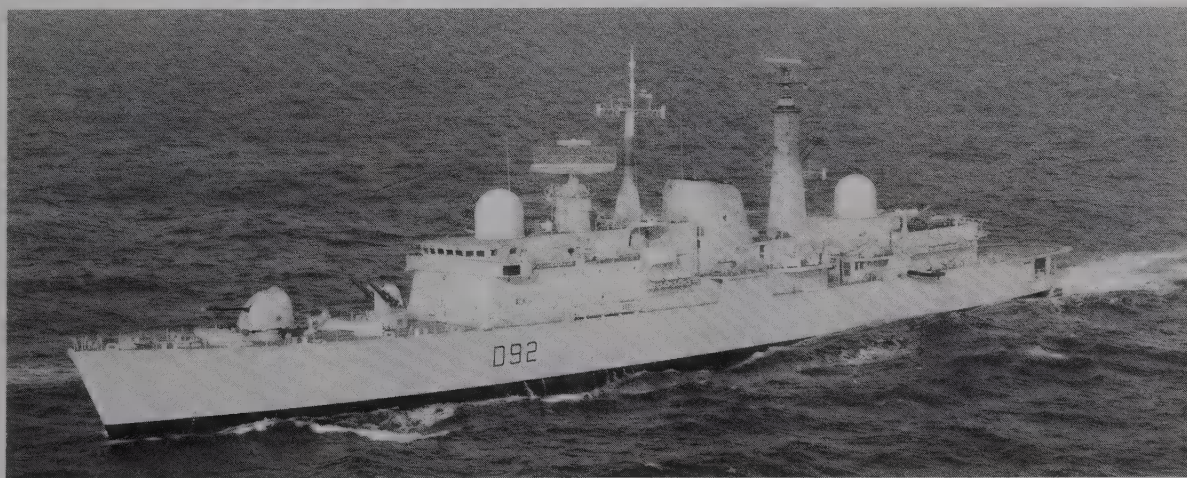
Some rules of Seaspeak

■ A set of standard phrases is recommended, to avoid the many alternative ways there are in everyday language of expressing the same meaning. For example, *Say again* means 'What did you say?', 'I can't hear you', 'Would you repeat that?' These phrases are italicized in the transcribed conversation below.

■ There are fixed syntactic and lexical routines for giving information. For example, bearings and courses using the 360-degree figure notation must give three-figure values: *009 degrees*, not *9 degrees*, etc. Dates are signalled using prefixes, e.g. 'day one-three, month zero-five, year one-nine-eight-five'. Days of the week are never used. When giving reasons, sentence construction is simplified. Everyday English has such connectives as *since*, *because*, *so*, *that*, *in order to*, and *as*, but in Seaspeak, only *reason* is used, e.g. 'I intend to enter stern first, reason: my port thruster is damaged'.

■ Everyone knows *Mayday* is the marker word for Distress; but there are also marker words for Urgency (*pan-pan*) and Safety (*Se-cu-rity*, say-cure-e-tay), the latter being used when sending a message containing an important navigational or meteorological warning. Initial distress messages are repeated three times, and take priority over all other communications.

● Special markers indicate message type. The opening word is spoken aloud, e.g. *Question*, *Instruction*, *Advice*, *Warning*, *Intention*, and each has its own reply marker, e.g. *Answer*, *Instruction-received*, *Advice-requested*. Each form has its own rules. For example, only certain question-forms are allowed: rising intonations and tag questions (e.g. *isn't it?*) are not permitted. Use is also made of turn-taking devices, to check or correct messages, mark speaker-change, and so on, e.g. *Understood*, *Mistake*, *Over*, *Out*.



Hidden and secret language

Why should people deliberately use language that is unintelligible to all but a few initiates? There are three general reasons: to mark a person's membership of a group, to provide a pastime, and to ensure secrecy when performing a particular activity. When viewed as linguistic games, they are often seen as a creative form of play (e.g. by the Cuna of Panama), or even as a means of improving competence in speaking and language learning (as in Thai). Genres of secret language can thus be found in many cultures and in a wide range of human contexts, especially those where there is a concern to avoid detection (as in criminal argot, or cant), or to keep something hidden from lay people (as in magical formulae). Apart from the cases presented below, therefore, reference should also be made to several other instances of hidden language described in this book: glossolalia (p. 11), in-law taboos (p. 42), trucker talk (p. 56), whistle speech (p. 400), and various forms of slang (p. 53).

CRIMINAL CODES

There have been few studies of the secret languages used by underworld groups – for obvious reasons: it is not difficult to imagine the problems faced by academic researchers who have entered dens, parlours, and red-light areas, armed only with a tape recorder and an innocent smile! And even if they can extricate themselves safely, the risk continues. One scholar, who studied an underworld language in a city in India, was severely beaten at a later date for publishing something its speakers did not like.

In a study of the Vanarasi *Pandas* (those who look after Hindu pilgrims to the city), it was found that they use an argot alongside Sanskrit and Hindi during transactions with the pilgrims. A great deal of code-switching (p. 363) takes place, as can be seen in this sequence where a *Panda* talks to both an associate and a pilgrim about to bathe:

To associate (in argot): Martī jabrī hō. Khalag thilāv.
(‘The client is rich. Make him sit separate.’)

To client (in Hindi): Hān, hāth joriye. (‘Yes, fold your hands.’)
(Sanskrit verses are then said, while the client takes his bath.)

The argot words are sometimes of unknown origin (e.g. *ragul* ‘thief’, *khotar* ‘policeman’), but often they are distortions of everyday words (e.g. *mandir* ‘temple’ → *jhandir*, *ghar* ‘house’ → *ragha*) or common words that have been given a special meaning (e.g. *bājā* ‘musical instrument’ is used for ‘gun’).

Secret names for numbers are especially common because of their role in financial transactions. Within a radius of one kilometre around the Vishwanath temple in Vanarasi, one investigator found several distinct sets of secret number-names, used by such people as diamond dealers (A), silk merchants (B), fruit and vegetable merchants (C), and *Pandas* (D). Numbers 1–5 are given here, with Hindi numbers for comparison (after R. R. Mehrotra, 1977):

No.	A	B	C	D	Hindi
1	airan pā	sāng	nimā	sāng	ek
2	thāl pā	swān	jōr	javar	do
3	bābar pā	ikwāi	rag	singhārā	tin
4	āirvan	fok	fok	fok	cār
5	sūt pā	bud	bud	pānro	pānc

The most noticeable kinds of criminal argot, or ‘speech disguise’ as it is sometimes called, are those where utterances are totally or partially unintelligible to the outsider because of the distinctive sounds, grammar, or vocabulary. But a great deal of argot occurs that appears to be in ordinary language, though in fact the utterances have a special meaning. An example of the latter was recorded in another study in India when the sentence *Jāo katori manj lo* ‘Go, clean the bowl’ was used by a murderer to an associate in front of his victim. The intended sense was: ‘Prepare a grave’!

A ciphering machine (the Typex Mark III) used in Britain around 1945. The lid of the machine is raised, showing the rotors that control the letter permutations.



Cryptology

It is a short step from the secret languages of children and the underworld to the world of secret intelligence, with its dual concern to preserve the military, commercial, and scientific security of one side, and to penetrate the corresponding security systems of the other. Cryptology is essentially a two-part science. One branch of the subject, *cryptography*, deals with the task of making messages secure, so that they cannot be understood by an enemy. The other branch, *cryptanalysis*, is concerned with extracting the meaning from enemy messages that

have been intercepted.

The two branches are often referred to as ‘code-making’ and ‘code-breaking’; but these popular names are inadequate, because they fail to distinguish the special sense of ‘code’ in this field. In cryptology, *code* has to be distinguished from *cipher*. A code is a system of phrases, words, syllables, or letters, each of which has an associated ‘code word’ or ‘code number’; it may be ‘decoded’ using a ‘code book’. A cipher, by contrast, is a system in which a message is ‘enciphered’ by transforming its letters in

various ways, by substitution or transposition; it may be ‘deciphered’ using a ‘key’. For example, the message *Crystal escape planned Friday* could be encoded as follows:

182 636 24 812
where each code number would correspond to the words as listed in a code book. It could also be enciphered as follows:
NLGHCZM YHNZPY
PMZEEYV SLAVZG
using a simple ‘cipher alphabet’ in which each letter has been substituted ($a = z$, $b = d$, etc.).

The history of cryptology illustrates the many in-

genious methods that have been devised to maintain secrecy. Cipher alphabets, for example, can be made more complex by using several equivalents for a letter (‘homophones’), as when *c* is replaced by *dx*, *re*, or *pj*. Several such alphabets can be used at once: a message can be enciphered using alphabet A, and the result further changed using alphabet B, and so on; or certain letters of the message can be enciphered using A, others using B. Modern cipher machines can produce these ‘polyalphabetic’ ciphers using millions of such

transformations. It is also possible to use codes and ciphers simultaneously. The result of all this ingenuity is the secret message, or *cryptogram*.

These days, there are several other aspects to signal security and intelligence, such as altering radio and radar frequencies, radio silence, and *steganography* – the use of techniques that conceal the existence of a message, such as invisible inks, microdots, or the use of electronic devices which hide a message in a signal. But these are of more interest to spies than linguists!

PLAYING WITH SOUNDS AND LETTERS

There are several 'languages' in which words are systematically altered, through the addition, subtraction, substitution, or transposition of sounds. Some are purely phonetic changes; others require a knowledge of spelling and alphabet order. Even in the more complex cases, practitioners can teach themselves to talk at great speed.

Records of some of the languages go back over 100 years in many parts of Europe. They have mainly been found among children, but there are also reports of their use among adults, especially in contexts where secrecy is required (e.g. in front of customers or small children).

- In *back slang*, words are spelled backwards, and then the new arrangement of letters is given a plausible pronunciation. It has been observed in the UK among soldiers, barrow-boys, shopkeepers, thieves, and public school pupils. First World War examples include *kew* 'week', *neetrith* 'thirteen', *tekrām* 'market', and *tenip* 'pint'. In French, *parler a l'envers* ('speaking backwards') is found in several variants, e.g. *copains* 'friends' → *painsco*, *mari* 'husband' → *rima*, *l'envers* 'backwards' → *verlen*. The same game also appears in Javanese, e.g. *Bocah iku dolanan asu* 'The boy is playing with a dog' → *hacob uki nanalod usa*. In Thai, there are several variants involving consonants, vowels, and even tones, e.g. *kràb bàan* 'return home' → *kàan bàb*, *yàak kin khâw* 'I'd like to eat' → *yâw kin khàak*.

- In what is sometimes called *centre slang*, the central vowel of a word, along with its following consonant, is placed at the beginning, and a nonsense syllable added, e.g. *eeckcher* 'cheek', *hoolerfer* 'fool', *ightri* 'right'.

- In *eggy-peggy* or *aygo-paygo* speech, an extra syllable is added, e.g. *Pugut thagat begook dōwgun*. Similar are cases where an extra vowel or consonant is inserted between each syllable: using *f*, for example, *Where are you going* becomes *Wheref aref youf gofing*. In Cuna (Panama), there is a form in which *pp* or *r* is inserted, along with the vowel of the preceding syllable, e.g. *ua* 'fish' → *uppuappa*, *tanikki* 'he's coming' → *taranirikkiri*. In another Cuna game, *ci* is prefixed to every syllable, e.g. *maceret* 'man' → *cimaciceciret*. In Javanese, games using an inserted *f* or *p* plus vowel repetition have been recorded, e.g. *Aku arep tuku klambi* 'I want to buy a dress' → *afakufu afarefep tufukufu klafambifi* (after J. Sherzer, 1974).

- In *Pig Latin*, the first consonants are put at the end of the word, and *ay* or *e* added, e.g. *Utpay atthay ookbay ownday* 'Put that book down'. In a variant of this, last consonants are put at the beginning of the word, with extra sounds to aid the pronunciation, e.g. *Tepu tatha keboo nadaw*. A similar phenomenon has been studied in Cuna, where it is known as *arepecunmakke* (from Spanish *al revés* 'backwards' and Cuna *sunmakke* 'to speak'). Here, the first syllable is placed at the end, e.g. *takke* 'to come' → *ketak*, *ipya* 'eye' → *yaip*.

- In another form, there is a switch of initial and final consonants, and of initial consonants and consonant clusters of successive syllables, e.g. in a French version, *parler* 'speak' → *larper*, *boire* 'drink' → *roib*. Not all classes of words are affected, however, e.g. *Je bouffe pas* 'I'm not eating' → *Je foub pas*. A similar game has been found in Javanese, e.g. *rupiah* 'rupees' → *puriah*, *nduwe* 'have' → *wunde*.

- Some secret languages involve sound substitutions that resemble written language codes. One Javanese game is based on the order of the 20 consonant letters of the alphabet. The first ten letters (*h, d, p, m, n, t, q, g, c, s*) are matched against the second ten (*j, b, r, w, y, k, l, ñ, ŋ*), in reverse order; and the members of each pair are made to substitute for each other (*h* for *ŋ* and vice versa, *d* for *ñ* and vice versa, and so on). Thus the sentence (*h*)*aku gawe layan* 'I'm writing a letter' emerges as *ŋamu rade patan*. It is reported that some speakers develop great skill in producing such forms at speed.

- 'T-ing in i' (talking in initials) has been reported, in which certain words are replaced by their first letters. A case from a school in Texas showed examples such as *Some p l-ed the m* 'Some people liked the movie', *She's a v p g* 'She's a very pretty girl'. Parents also sometimes use this form of abbreviation in front of their young children, along with the other spelling conventions, such as *It's time for b, e, d*.

Mystical letters

In the Middle Ages, there arose a Jewish (later a Christian) system of mystical practices based on an esoteric interpretation of Old Testament texts, known as the *Kabbala* (from Hebrew *qabbalah* 'something received'). It was thought that language in general, and biblical language in particular, contained coded secrets about God and the world, based on the way the letters of the text were arranged, and the numerical values which could be assigned to them. Some books, such as the 13th-century *Sefer ha-zohar* (Book of Splendour), viewed by many as a sacred book, went into the Torah texts in minute detail, in a search for mystical values. Every word, letter, vowel point, and accent mark was evaluated, to determine its hidden meaning. The method lost its religious popularity by the 18th century.

One exegetical technique, which can be traced

back to the early Christian era, was known as *gematria*. Here, numbers were substituted for letters, and values compared in order to provide fresh insights into the meaning of texts. In the most commonly used system, the first ten letters of the Hebrew alphabet are numbered from 1 to 10; the next eight are given the values 20, 30, etc.; and the last four letters have the values 100, 200, 300, and 400. In English, the 26 letters are valued 1 to 26, in order. On this basis, all kinds of curious and (some still believe) significant correlations can be obtained. Linguists take note: *tongue* and *lexicon* = 82. *sibilant* and *hissing* are adjacent numbers. *etymology*, *Indo-European* and *West Germanic* all = 137. Those interested in deeper matters will note that: *man* and *Eden* = 28. *Bible* and *Holy Writ* are separated by 100. *Mount Sinai* and *the laws of God* = 135.

Jesus, Messiah, son, God, cross, and gospel all = 74. Gematria is also occasionally practised outside of the religious context. For example, in deciding whether one should carry out a certain activity at a certain time, believers may look to see whether the numerical value of their name and that of the day or date correspond in any way.

Mystical sums

Part of the arithmetic used by those who argue for the validity of gematria.

Bad	Hide
+ Language	+ Listen
Profane	Eavesdrop
Arm	All
+ Bend	+ Vote
Elbow	Democracy
Not	King
+ Same	+ Chair
Different	Throne
Good	Keep
+ Deeds	+ Off
Scout	Grass

Verbal art

SPEAKING IN PAIRS

The use of parallelism to mark certain kinds of speech activity is widely known. Semantic couplets are found extensively in the Indian languages of Middle America, such as Nahuatl and Yucatec, as part of formal speech genres. In Rotinese (eastern Indonesia), for example, parallel speech (or *bini*) is used as a form of ritual language, in which past events are recounted following a fixed ancestral pattern. *Bini* involves speaking in pairs of formu-

laic phrases, which may be in sequence or separated by several other 'lines'. The genre includes proverbs, songs, and chants and is used in relation to many formal activities, such as greetings, farewells, petitions, courtship, funerals, negotiations, and ceremonies of all kinds. *Bini* varies in length from two to several hundred 'lines'. The example below is of a 'succession' *bini*, in which imagery of renewal is used to express the continuation of lineage. The numbers refer to the lines that are in parallel. (After J. J. Fox, 1974.)

Oe No Dain biin	The goat of Oe No from Dai	1
Na biin ma-pau henuk	The goat has a yellow-necklaced beard	2
Ma Kedi Poi Selan manun	And the cock of Kedi Poi from Sela	1
Na manun ma-kao lilok.	The cock has gold-stranded tailfeathers	2
De ke heni pau biin	Cut away the goat's beard	3
Te hu ela lesu biin	Leaving but the goat's throat	4
De se lesun na pau seluk.	That throat will beard again	5
Fo na pau henu seluk;	And the beard will be a yellow necklace again;	6
Ma fea heni koa manun	And pluck out the cock's tailfeathers	3
Te sadi ela nggoti manun	Leaving only the cock's rear	4
Fo nggotin na koa seluk	That rear will feather again	5
Fo na koa lilo seluk.	And the tailfeathers will be gold strands again.	6
Fo bei teman leo makahulun	Still perfect as before	7
Ma tetu leo sososan.	And ordered as at first.	7

Flying

Among the Germanic peoples, ritual cursing and boasting, known as *flyting*, often took place between poets or chiefs. One of the earliest exchanges of this kind is recorded between the English and Viking leaders in the Anglo-Saxon poem *The Battle of Maldon* (AD 991). The form is also found in Gaelic tradition, being best developed among the Scottish poets (*makaris*) of the 15th and 16th centuries. Their ferocious exchanges of extravagant invective are well illustrated in *The Flyting of Dunbar and Kennedie* by William Dunbar (1460–1521?). The exact meaning of some of the words is uncertain, but there is no doubting their malicious intent!

*Mauch muttoun, byt buttoun,
peilit gluttoun, air to Hil-
hous;*

*Rank beggar, ostir, dregar,
foule fleggar in the flet;*

*Chittirlilling, ruch lilling, lik
schilling in the milhous;*

*Baird rehator, theif of natur,
fals tratour, feyndis gett . . .
(ll. 145–8)*

VERBAL DUELLING

Informal linguistic contests, in which people attack each other through their forceful or ingenious use of language, can be found in all parts of the world, and in all kinds of social settings. In everyday conversation there are numerous occasions where people have to fight to speak first, avoid interruption, and have the last word. The subject matter ranges from subtle forms of intellectual sarcasm and humour to the crudest possible attacks on a person's courage, sexual prowess, or relatives. At one level, attacks may be subtle and indirect, involving allusion and figurative speech; at another, there may be explicit taunts, boasts, name calling, and jokes at the other's expense.

Often these duels take the form of set sequences of challenges and replies according to certain rules. They involve a great deal of skill, as participants have to master special techniques of sentence construction, remember a large number of fixed phrases, and be able to modify them in ingenious ways as they come under verbal attack. These duels have been studied in places as far afield as Africa, the Near East, Greenland, and the Americas. They seem to function as a means of discovering the rules governing the social structure of the peer group. One can discover and test the dominance of others, without recourse to fighting and bloodshed.

Politeness duels and boasting contests have been

recorded in early Chinese and Germanic languages. Among the Eskimo there are song duels, in which all forms of insults are exchanged. The West Indian calypso was originally a type of verbal insult directed at political figures. Among black American youths in ghetto areas, various kinds of exchange are known as 'sounding', 'signifying', 'woofing', or 'playing the dozens' – a sequence of ritual insults (or 'raps') followed by replies ('caps'). Among Turkish boys, from around ages 8 to 14, the exchanges are phonologically linked: the retort must rhyme with the insult, and each new insult must be linked in some way with a previous part of the sequence. The exchanges are all to do with virility and homosexuality. They are delivered with great fluency and speed, and may continue for some time. A fragment from one exchange illustrates the rhyming pattern:

A: Üstiüne binek	Let me ride you
B: Halebe gidek	Let's go to Aleppo
A: Halep yikildi	Aleppo was flattened
B: İcine tikildi	It was crammed inside (you)

In such sequences, A can win only if B fails to reply with an appropriate retort. If B succeeds, A must continue with more taunts. The more rhymes B has memorized, the more he is safe from sudden verbal attacks. He loses the contest if he answers without rhyme, or fails to answer at all. (See further, riddles, p. 63.)



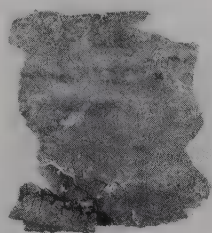
Exchanging angry words in the playground.

CURSING AND SWEARING

A remarkable variety of linguistic forms can be considered as cursing and swearing. At one extreme there are the complex and sophisticated expressions that may be found in religious, legal, and other formal contexts. At the other, there are the many daily examples of taboo speech, usually profanities or obscenities, that express such emotions as hatred, antagonism, frustration, and surprise. The most common utterances consist of single words or short phrases (though lengthy sequences may occur in 'accomplished' swearers), conveying different levels of intensity and attracting different degrees of social sanction. English examples range from 'mild' expletives, such as *heck* and *dash*, to the two maximally taboo words, *fuck* and *cunt*.

The functions of swearing are complex. Most obviously, it is an outlet for frustration or pent-up emotion and a means of releasing nervous energy after a sudden shock (§4). It has also been credited with various social functions as a marker of group identity and solidarity (§10), and as a way of expressing aggression without resort to violence. In these social contexts swearing can become a dominant linguistic trait, with sentences often containing many taboo words.

Sex, excretion, and the supernatural are the main sources of swear-words. One important class of items deals with words to do with body parts and functions that society considers taboo, such as *merde*, *balls*, and other 'four-letter' words. The



Roman tablet of 50 BC Cursing tablets were commonplace among the ancient Greeks and Romans. A curse would be inscribed on a tablet, which would then be buried or thrown into deep water. The lengthy inscription on one such tablet begins (after W. Sherwood Fox, 1919):

Good and beautiful Proserpina (or Salvia, shouldst thou prefer), mayest thou wrest away the health, body, complexion, strength and faculties of Plotius and consign him to thy husband, Pluto. Grant that by his own devices he may not escape this penalty. Mayest thou consign him to the quartan, tertian and daily fevers to war and wrestle with him until they snatch away his soul ... I give thee his ears, nose, nostrils, tongue, lips, and teeth, so he may not speak his pain; his neck, shoulders, arms, and fingers, so that he may not aid himself ...

and the curse continues comprehensively through the whole anatomy of poor Plotius, in a most comprehensive way.

A similar curse was levelled against a Parisian woman, and published in a Nancy newspaper, as recently as 1910!



Punch cartoon of 2 April 1913 Old Lady: I shouldn't cry if I were you, little man.
Little Boy: Must do sumping; I bean't old enough to swear.

other class deals with the names of gods, devils, sacred places, the future life, and anyone or anything that holds a sacred place in the belief systems of the community: *God*, *Dear Lord*, *By the beard of the prophet*, *By the holy sacrament*, *Heavens*, *Hell* ... Sometimes expressions from other belief systems are used (e.g. *by Jove*). In the course of time, euphemistic forms of words can obscure their original meaning (*hell* → *heck*, *bloody* → *blooming*, and such ingenious distortions as *Geraniums* and *Gee Whiskers* from *Jesus*). In fact, it can be argued that the real meaning of the expressions used in swearing is rarely a factor governing their use (thus allowing a contrast to be drawn with blasphemy, where the speaker has a definite intention to vilify religious matters).

It is never possible to predict the range of experience a culture will use to curse or swear by. It may be the name of a dead relative, a ruler or famous person, symbols of power, natural forces (*Donnerwetter*), a part of the body (*Stap me vitals*), an animal (*Rats*), or even a plant. One of the most famous oaths of ancient Ionia was *ma tin krambin* 'By the cabbage!' – an expression that seems to have originated in the special status of this vegetable as an antidote to hangovers! Baudelaire swore by *Sacré-Saint-Ciboire* 'Sacred Saint Onion'; Socrates swore *ni ton kuna* 'By the dog'; and Pythagoras is said to have sworn *ma tin tetrakton* 'By the number four'. Even nonsense words can be invoked: Robert Southey (1774–1843) swore by the great decasyllabon *Aballiboozobanganovribo*. Some languages, such as Arabic and Turkish, are famous for the range and imagination of their swearing expressions ('You father of 60 dogs', 'You ride a female camel', etc.). By contrast, several peoples, such as the Amerindians, Polynesians, and Japanese, swear very little, or not at all.

Four letters and the law

In 1936, Eric Partridge (1894–1979) included *fuck* in his *Dictionary of Slang and Unconventional English*. Despite his use of an asterisk for the vowel, the result was a storm of complaints to schools, libraries, and the police. Even today, the book is not always available on the open shelves of public libraries.

An even greater furore took place in 1959, when Grove Press of New York published the unexpurgated edition of D. H. Lawrence's *Lady Chatterley's Lover*, which contained several instances of the word. The edition was banned on grounds of obscenity, and court cases followed, first in the U.S., then in Britain. The trial of the British publishers, Penguin Books, at the Old Bailey, took place in October 1960, and a verdict of not guilty was returned. As a result, the word quickly appeared in the daily press, and it has since become widespread in literary work. In the context of public speech, however, strong prohibition remains.

Despite the development of liberal attitudes, there is still strong antagonism to the use of four-letter words in public speech; and they are still not always to be found in dictionaries. There is nothing between *fuchs* and *fucoid* in *Webster's Third New International Dictionary* (1962), for example; but it would be surprising if the gap were not filled in the next edition.

Rabelaisian curses

Gargantua and Pantagruel (both 1532), by François Rabelais (c. 1495–1553), contain swearing performances that have never been surpassed. In the 1694 English translation by Peter Motteux (1660–1718), Book IV begins:

Ods-bodikins. What a devil. Codzooks. By the mass. With a pox to them. I vow and swear by the handle of my paper lantern. Ad-zookers. Zwoons. A pox on it. A murrain seize thee for a blockheaded booby ... By the worthy vow of Charroux. By St Winifred's pocket. By St Anthony's hog. By St Ferreol of Abbeville. By St Patrick's slipper. By our Lady of Riviere ...

Language and humour

The story is told of a man who was carrying out research into the language of jokes in the Reading Room of the British Library but who had to be expelled for laughing too loud. The story is improbable. Nothing is more likely to kill a good joke than a linguistic analysis. The examples in this section, therefore, are not offered by way of entertainment but solely to illustrate some of the conventions that make the expression of humour one of the most distinctive of all linguistic contexts.

The choice of funny or silly words, grammatical patterns, pronunciations, and tones of voice is a normal part of informal conversation. In one study of an evening's conversation, the participants 'tampered with' several linguistic features, for humorous effect: one person talked of climbing 'an Ande'; another coined a false gender, saying 'a customs officer-ess'; and a third speaker, talking about football, adopted a mock-American accent, commenting 'We wuz robbed.' In a recent conversation between several teenage boys, this kind of word- and pronunciation-play proved to be a dominant motif, acting more as a marker of solidarity than of humour – for the linguistic changes *per se* provoked little laughter.

JOKES

Modifications of these kinds happen so often that we hardly notice them; but they use the same principle, of deviating from language norms, as is found in more structured forms of humour, such as jokes and riddles, where the 'punch-line' frequently relies on breaking the linguistic expectations of the listener. This can be observed even in jokes that are (fortunately) quite short, especially those with highly stereotyped openings:

What do you get if you cross ...
an elephant with a mouse?
Large holes in the skirting board.

Where is Felixstowe?
On the end of Felix' foot.

It is important that jokes have some degree of initial stereotyping, in everyday contexts, for otherwise it would not be clear what the speaker's intentions were. Common markers in English are such phrases as 'Did you hear the one about ...' and 'There was this man ...' Often, a sub-genre of joke is established through the use of a specific opening, such as 'There was an Englishman, an Irishman, and a Scotsman ...', or 'Waiter, there's a fly in my soup.' Children's jokes in particular rely on a small number of set openings, or fixed internal structures, which permit a large number of follow-up sequences – witness the traditional success of such patterns as 'What's the difference between a NOUN and a NOUN?', 'What did the NOUN say to the NOUN?', 'Why did the NOUN VERB?', and, above all, the 'Knock knock' jokes

with their fixed sentence sequence and final-line word play:

A: Knock, knock!
B: Who's there?
A: NAME. (*Fred*)
B: NAME who? (*Fred who?*)
A: NAME + EXTENSION. (*Fred (= afraid) I can't tell you!*)

A classification of the types of linguistic deviation and incongruity would be hard to achieve, for probably all aspects of language structure have been used as the basis of an effect at one time or other. Further examples would include effects based on word-structure and word-class (e.g. 'Can the match box? No, but the tin can.'), idiomatic shifts (e.g. 'A: Who's that at the door? B: The invisible man. A: Tell him I can't see him.'). Incongruous themes (such as the 'elephant' jokes, which must now number thousands), as well as the many puns and riddles, which are discussed on the facing page. For the *cognoscenti*, there are even jokes that cross the boundary between languages, such as 'Pas de deux. Father of twins', and 'Coq au vin. Chicken on lorry.' A good joke classification would also have to deal with the contexts in which jokes are used (or not used), the attitudes and expectations of the people who use them, and the conventions that listeners have to follow while a joke is being told – such as not interrupting, not anticipating the punch-line, and (if the joke is truly 'awful') making a disparaging remark when it is all over.

Comic alphabets

There are hundreds of poems and puns based on reciting the letters of the alphabet. Widely known in the 19th century, they seem to have originated as an adult reflex of the rhyming alphabets that came to be used in schools ('A for an Apple, an Archer, and Arrow; B for a Bull, a Bear, and a Barrow', etc.). One of the alphabets reproduced in Eric Partridge's *Comic alphabets* (1961) runs as follows:

A	for 'orses.	N	for mation.
B	for mutton.	O	for the rainbow.
C	for yourself.	P	for soup.
D	for dumb. (i.e. 'deaf or dumb')	Q	for the bus.
E	for brick. (i.e. 'heave a brick')	R	for mo'. (i.e. 'half [ˈɑrf] a mo[ment]')
F	for vescence.	S	for you. (i.e. 'as for you')
G	for police. (i.e. 'chief of police')	T	for two.
H	for beauty. (i.e. 'age before ...')	U	for me.
I	for Novello.	V	for la compaignie.
J	for oranges. (i.e. 'Jaffa oranges')	W	for a quid. (i.e. 'double you' in betting)
K	for teria. (i.e. 'cafeteria')	X	for breakfast.
L	for leather.	Y	for mistress. (i.e. 'wife or mistress')
M	for sis. (i.e. 'emphasis')	Z	for the doctor. (i.e. 'send for ...')

Universal jokes?

Many cultural differences exist in joke telling and subject matter. It is a fairly common experience not to see why a foreign language joke is funny. On the other hand, certain themes are found in many languages. An example is the way certain social or regional groups are stereotyped as stupid, so that merely by saying 'There was this man from X', the listener knows that a foolish action is to follow. 'Irish jokes' illustrate the tradition in England, but the Irish should not take this personally, for they too have Irish jokes. In Dublin, such jokes are often made about people from Cork; and in Cork, the jokes are often made about people from Galway. (I have no data on who Galway people joke about!)

Similarly, in Tonga, such jokes are made about people from Ena, an island off the coast of Tongatapu. In Jordan, there are jokes about people from the village of Al-Sareeh. Several Central African tribes refer to pygmy groups in this way. What is interesting is the way in which the same joke turns up in very different cultures. For example, there's the one about the Sareehi boy who chased a bus all the way home, then boasted to his mother that he had saved 20 pence. But his mother called him foolish, saying that if he had followed a taxi, he would have saved over a pound! Of course, the joke was originally told in Arabic, and the monetary units were in local currency, but the same joke is familiar in English, and is heard, with minor variants, in several other languages.

RIDDLES

Riddling is a kind of intellectual linguistic game or contest, which in some ways is similar to verbal duelling (p. 60). It is found in many cultures, in all continents, and throughout history, but it is not universal (observers have reported no riddles in Manus, Miao, and Pukapuka, for example). A satisfactory definition encompassing the whole of the genre is difficult to achieve because riddles come in several linguistic forms and are used for a variety of purposes. It is also not easy to draw a clear distinction between riddles and other kinds of linguistic game, such as puns, and 'catch' questions. But essentially, riddles are traditional utterances intended to mystify or mislead: objects, animals, people, and events are deliberately described in such a way that their description suggests something quite different. The task of the listener is to resolve the ambiguity and arrive at an appropriate interpretation.

In Europe, riddles usually take the form of short questions, generally with humorous intent. In English, the genre is found largely in children's games and conversation, from around 7 to 10 years of age, and there are few things that make more demands on parental patience than learning to cope with the persistent riddle. In Africa, by contrast, riddles are widely used by adults: they are often cryptic statements, of a poetic or philosophical character, which do not contain any question element. In the ancient world, riddles had a serious purpose, being used by kings, judges, oracles, and others to test a person's wisdom or worthiness.

Riddles vary greatly in grammatical and phonological form. They may be single phrases, or have several short lines. They may be introduced by special formulae, such as *What is it?*, *A noun*, *A four-letter word*. They may display rhymes, parallel rhythms, and other special effects, often (as during the Renaissance) involving intricate and sophisticated forms of expression. This three-line Persian riddle from Teheran has an equivalent number of syllables in each 'line' (after C. T. Scott, 1965):

/dóta bæradæxænd/hærcē bedævænd/behæm
némiræsænd/ 'They are two brothers. However much
they run, they do not reach each other.'
/čærxáye dočærxé/ 'Wheels of a bicycle.'

Examples such as this also illustrate the way in which riddles can cut across linguistic boundaries, for the same subject matter will be found in the riddle collections of many languages.

IN THE BEGINNING WAS THE PUN

This heading is a quotation from *Murphy* (Samuel Beckett) and represents one view about the importance of puns; John Dryden's comment, that they are 'the lowest and most grovelling kind of wit' represents the other. There is truth in both. Puns have always been known, and some have achieved great fame – notably the *Peter/rock* play on words in the New Testament (clearer in French, where

pierre is used for both), or the puns used by the oracle at Delphi (such as the ambiguous reply to the general who wished to know whether he should go on a journey: *Domine, stes* vs *Domine stes* 'Master, stay' vs 'At home do not stay'). Shakespeare was one of the greatest users of puns. In France, one of the most famous punsters was the Marquis de Bievre, in whose never-acted play *Vercingentorixe* (1770) there is an italicized pun in every line.

Puns are a feature of many linguistic contexts, such as black comedy, sick humour, T-shirts, lapel badges, car stickers, trade names, book titles, and graffiti (p. 55). The world of advertising (p. 390) makes great use of the economical impact and freshness of a pun (e.g. the slogan for a new kind of adhesive, 'Our word is your bond'). But the best and worst of them are found in everyday conversation. Puns that have been justly lauded include the response of the disappointed recipient of a gift of poor quality flowers ('With fronds like these, who needs anemones?'), the comment made by the circus manager to the human cannonball who wanted to leave ('Where will I find another man of your calibre?'), and the comment about the Spanish girls in a certain town, that they are 'senoreaters'.

Puns have been called verbal practical jokes, and are either loved or hated according to temperament. Their popularity varies greatly between languages and cultures, though the reasons for this are unclear; it has been said, for example, that they are far more popular in Britain than in the USA, and in France than in Germany. But punning is not without its dangers. The Gnat, in Lewis Carroll's *The Hunting of the Snark*, dies of a pun. And punsters should beware the phenomenon of compulsive punning, first recorded by a German surgeon in 1939, and now known as 'Förster's syndrome'.

The oldest English riddles

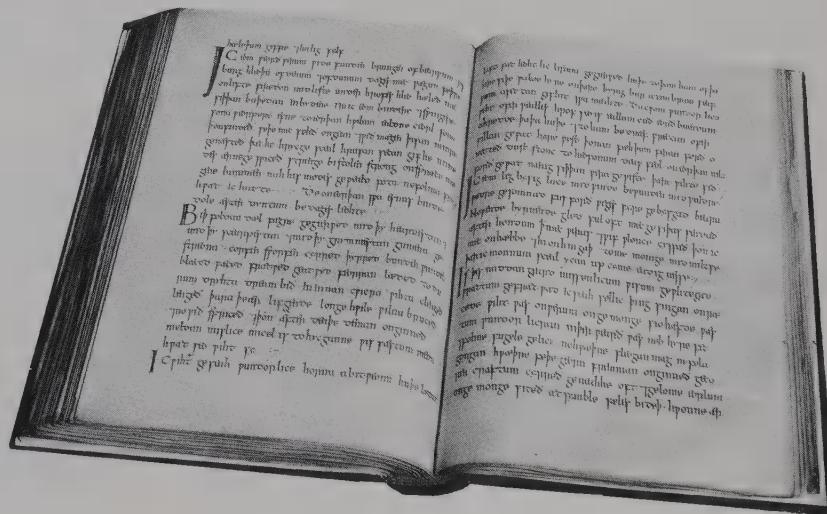
In the oldest collection of Anglo-Saxon poetry, the Exeter Book, there are 95 riddles, which probably date from the 8th century. The riddles are generally in the first person, as illustrated by the opening lines of the 'Book' riddle (translation R. K. Gordon):

A foe deprived me of life,
took away my bodily
strength; afterwards wet me,
dipped me in water, took me
out again, set me in the sun
where I quickly lost the hairs
I had. Afterwards the hard
edge of the knife cut me ...

The riddle ends:

Ask what is my name, useful
to men; my name is famous,
of service to men, sacred in
myself.

A page from the Exeter Book



Word games

Playing with words is a universal human activity, but it is particularly noticeable in the way literate societies have devised word games, based largely on the written language. People delight in pulling words apart and reconstituting them in a novel guise, arranging them into clever patterns, finding hidden meanings inside them, and trying to use them according to specially invented rules. Word puzzles and competitions are to be found in newspapers, at parties, in schools, on radio and television, and in all kinds of individual contexts – as when an adult completes a crossword, or a child plays a game of Hangman. Something of the enormous diversity of the ‘ludic’ function of language is illustrated in this section (see also pp. 59, 62–3).

Acrostics

These are compositions, usually in verse, in which certain letters within the text form a word, phrase, or special pattern. Some are written as puzzles; in others, there is no attempt to conceal the ‘answer’. Generally the initial letter of each line provides the clue, but sometimes it is based on the last letter of the line (a ‘teletich’), combinations of first and last letters (a ‘double acrostic’), or more complex sequences.

A ‘triple acrostic’ The solution is based on initial, medial, and final letters in each clue word.
Left, middle, and right
Give us a choice of a light.

1. The kind of glance which he who’s lost his heart
Bestows on her who wears the latter part.
2. Here is one
With a gun.
3. This is bound
To go round.
4. Simplify taste
And eliminate waste.
5. My meaning is made plain
By my saying it again.

Ado	Rin	G
Musk	Etee	R
Ban	Dag	E
Econ	Omiz	E
Reite	Ratio	N

Chronograms

A date is hidden in a series of words, by using the letters for Roman numerals, C, D, I, L, M, V (used for U), and X. The significant letters are usually written in capitals, producing an odd graphic appearance to the line. Chronograms were often used on medals, tombstones, foundation stones, bells, and title pages of books, to mark the date of an event.

In the chronogram used in the tower vaulting of Winchester Cathedral, the verse of scripture reads: ‘sint DoMVs hVIVs pll reges nVtrItll, reglInae nVtrICes plae’ (Isaiah 49:23, ‘Kings shall be the nursing fathers and queens the nursing mothers of thy house’).
MDCVVVVVIIIIII = 1635, the date of completion of the roof.

Grid games

There are now innumerable games that all operate on the principle of building up words on a predetermined grid. Some are intended for individual use, such as Word Search (a large letter-grid in which words have to be found by moving from one square to the next, in any direction). Others are for several players, such as Lexicon, Kan-U-Go, and Boggle. In Scrabble – the most famous game of this type – points are assigned based upon how many letters are used, with higher points for the rarer letters, and with certain squares in the grid more valuable than others. This game now has its own national championships, in which expert players display rare feats of lexical awareness to achieve high scores. Clement Wood’s *Death of a Scrabble Master* cleverly portrays some of the special knowledge required to keep on winning:

*This was the greatest of the game’s great players:
If you played BRAS, he’d make it HUDIBRASTIC.
He ruled a world 15 by 15 squares,
Peopled by 100 letters, wood or plastic.*

*He unearthed XEBEC, HAJI, useful QAID,
Found QUOS (see pl. of QUID PRO QUO) and QUOTHA,
Discovered AU, DE, DA all unitalicized
(AU JUS, DA CAPO, ALMANACH DE GOTHA).*

*Two-letter words went marching through his brain,
Spondaic-footed, singing their slow litany:
AL (Indian Mulberry), AI (a sloth), EM, EN,
BY, MY, AX, EX, OX, LO, IT, AN, HE...*

*The day his adversary put down GNASHED,
He laid – a virtuoso feat – beneath it GOUTIER,
So placed, that six more tiny words were hatched:
GO, NU, AT, SI, then (as you’ve seen, no doubt) HE,
ER.*

Decoding crossword clues

The crossword is undoubtedly the most popular of all word games. Its origins are unclear, but it became widely known in 1913, when a U.S. journalist, Arthur Wynne, devised a newspaper puzzle, called a ‘word cross’, which quickly became a craze. But for anyone who has tried it, writing a good puzzle turns out to be far more difficult than solving it. The construction of the interlocking words within the puzzle is not the issue: the main problem is devising clues which are ingeniously ambiguous, but do not unintentionally mislead.

The more difficult puzzles make use of cryptic clues, which require the solver to understand several special conventions. An anagram might be signalled by a figure of speech expressing disorder, such as ‘A youth is all mixed up...’ ‘Used in’ may mean that the required word is hidden within a phrase forming part of the clue. If the clue contains a parenthetical phrase such as ‘we hear’, two similar-sounding words are involved. Punning clues often end with an exclamation or question mark. And a large number of conventional expressions are used to symbolize certain letters, such as ‘left’ (=l), ‘north’ (=n), ‘a sailor’ (=ab), or ‘a thousand’ (=m).

In the specialized world of the ‘serious’ crossword compilers, the rules governing the construction of clues are strictly adhered to, and much pleasure is obtained by making them really difficult and ingenious. In Britain, the symbol of this state of mind has been the choice of pseudonyms of some of the great compilers: Torquemada, Ximenes, and Azed (Deza in reverse) – all names of leaders of the Spanish Inquisition!

Word-squares

A square of letters is constructed, using words of equal length, which read in horizontal, vertical, and occasionally diagonal directions. Usually the words are the same in each direction, but in ‘double word-squares’, they read differently, as in:

O	R	A	L
M	A	R	E
E	V	E	N
N	E	A	T

A famous Roman word-square was part acrostic, part palindrome. It may be read in four directions.

S	A	T	O
A	R	E	P
T	E	N	E
O	P	E	R
R	O	T	A

Its literal translation is ‘The sower, Arepo, guides wheels with care’, but it may well have had special significance to Christians of the time: the middle lines form a cross, and the letters can be rearranged to form several significant messages, like

A
P
A
T
E
R
O
S
T
E
R
O

A PATERNOSTER O

(where A and O stand for ALPHA and OMEGA).

Other intriguing word-shapes have been invented, such as diamonds, pyramids, and half-squares. Also of interest is the maximum size of such shapes. In English, nine-word squares have been completed, containing several rare words and places, but so far no ten-word squares using ten different words have been completed – even with the help of a computer.

A nine-word square:

Q	U	A	R	E	L	E	S	T
U	P	P	E	R	E	S	T	E
A	P	P	O	I	N	T	E	R
R	E	O	M	E	T	E	R	S
E	R	I	E	V	I	L	L	E
L	E	N	T	I	L	L	I	N
E	S	T	E	L	L	I	N	E
S	T	E	R	L	I	N	G	S
T	E	R	S	E	N	E	S	S

Anagrams

The letters of words and phrases are rearranged to make new words – a procedure which at one time was thought to disclose significant information about a person's character or future, and even to carry mystical meaning or magical power (p. 59). People would sometimes live according to the 'real' meaning of their names, and in post-Renaissance Europe, it was common place to work out laudatory anagrams from the names of the famous. Louis XIII of France even had an official anagrammatist within his court. Jonathan Swift, on

the other hand, was one of many who ridiculed the pomposity and superstition of those who dealt in anagrams. In *Gulliver's Travels*, natives of Tribnia (=Britain) discover plots using the 'anagrammatic method': By transposing the letters of the alphabet in any suspected paper, they can lay open the deepest designs of a discontented party. So, for example, if I should say, in a letter to a friend, 'Our brother Tom has just got the piles', a skilful decipherer would discover that the same letters that compose that sentence, may

be analysed into the following words, 'Resist – a plot is brought home – the tour'.

As a game, however, anagrams can provide a great deal of fun, especially when an anagram relates to the meaning of the original in some way: astronomers → moon-starrers conversation → voices rant on Margaret Thatcher → Meg, the arch-tartar mother-in-law → woman Hitler parishioners → I hire parsons revolution → to love ruin sweetheart → there we sat total abstainers → sit not at ale bars

Lipograms

These are compositions which contain no instances of a particular letter of the alphabet. An early master of the genre was the 5th-century BC Greek poet Tryphiodorus, who wrote an epic of 24 books, each omitting a different letter of the Greek alphabet. One of the most famous lipograms of recent times is *Gadsby* (1939), a 50,000-word novel by Ernest Wright, that makes no use of the most frequent letter of the English alphabet, *e*. A tiny extract from this remarkable work illustrates how it can be done:

Upon this basis I am going to show you how a bunch of bright young folks did find a champion; a man with boys and girls of his own; a man of so dominating and happy individuality that Youth is drawn to him as is a fly to a sugar bowl. It is a story about a small town...

Palindromes

There are words or phrases – and sometimes much larger units of language – that read the same in both directions. Simple examples are found in such everyday examples as *madam* and *Eve*; but the real challenge is to construct long sequences that make sense, such as:

Draw, o coward!
Sex at noon taxes.
Eh, ça va, la vache?

or the palindrome attributed to Napoleon:

Able was I ere I saw Elba.

Longer sequences tend to deteriorate into nonsense, though there are exceptions:

Doc, note, I dissent. A fast never prevents a fatness. I diet on cod.

The longest palindrome is reputedly over 65,000 words.

Tongue twisters

One of the few word games that relate purely to the spoken medium. Words that contain the same or similar sounds are juxtaposed, and the exercise is to say them as rapidly as possible, as in:

The Leith police dismisseth us.
The sixth sheikh's sixth sheep's sick.
She sells sea-shells on the sea-shore.

This fine Italian specimen is worth recording:

Se l'Archivescovo di Costantinopoli si volesse disarcivescoviscostantino politannizzare, vi disarcivescoviscostantino politannizzereste voi per non fare disarcivescoviscostantino politannizzare lui?

(If the Archbishop of Constantinople wished to give up his archbishopric, would you do the same in order that he may not give up his archbishopric?)

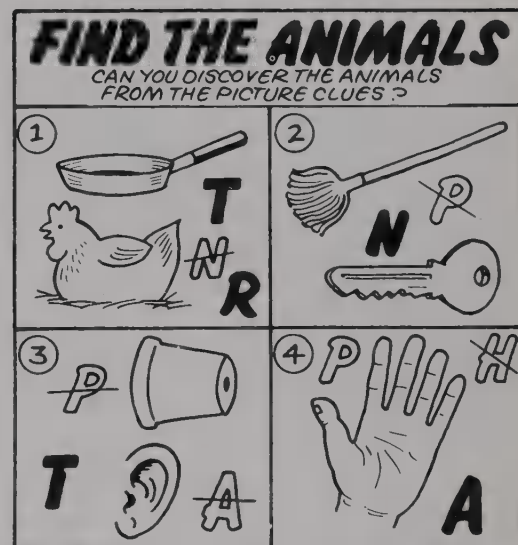
Rebuses

A rebus mixes letters, pictures and logograms (p. 200) to make words and sentences. Often, the sentences make sense only when read aloud in a certain way, as in this famous rebus:

YY U R Too wise you are.
YY U B Too wise you be.
I C U R I see you are.
YY 4 ME Too wise for me.

Other conventions are shown in H& (=hand), XQQ (=excuse), and in such ingenious forms as *timing* (=split-second timing) and *FECpoxTION* (=smallpox infection).

A typical rebus game from a children's annual



Univocalics

By contrast with lipograms, univocalics are compositions that use only one vowel. The possibilities for expression are much more limited, but several clever poems have been constructed in this way, as is illustrated by this couplet from a 16-line work by C. C. Bombaugh (1890):
*No cool monsoons blow soft on Oxford dons,
Orthodox, jog-trot, book-worm Solomons!*

Doublets

One word is changed into another in a series of steps, each intervening word differing from its neighbours in only one letter. The challenge is both to form the chain of linked words, and to do so in as few steps as possible.

The game was invented by Lewis Carroll, who gave as one of his first examples, 'Drive pig into sty.' His answer involved five steps: *pig-wig-wag-way-say-sty*.

Pangrams

These are sentences that contain every letter of the alphabet – ideally, a single instance of each. The typist's sentence *The quick brown fox jumps over the lazy dog* satisfies the first criterion, but has several duplications. A 26-letter pangram devised in 1984 is *Veldt jynx grimps Waqf zho buck* (all words to be found in a large dictionary). In French, the shortest pangram is listed as *Whisky vert: jugez cinq fox d'aplomb*, but there are three duplications.

Sign outside The Plough at East Hendred, Oxfordshire. Hiding words within other words, or spreading them across the words in a sentence (e.g. *maniac* within *the man I accuse*) is a well-known feature of cross-word puzzle clues, and it can become a game in its own right. Altering word boundaries can also lead to initially confusing results, as is shown by this sign.

HERESTO PANDS PEN D ASOCI
AL HOU R INHAR M (LES SMIRT)
HA ND FUNLET FRIENDS
HIPRE IGN BE JUSTAN DK
INDAN DEVIL SPEAKOF NO NE

12 Stylistic identity and literature

The way people use language gives us information about their physical type, their geographical, ethnic, and social background, and the type of context in which they are communicating (§§6–11). In each case, the distinctive features mark someone as belonging to a group, or performing a particular type of activity along with others – ‘female’, ‘upper class’, ‘from Glasgow’, ‘black’, ‘praying’, and so on. But in addition, a person’s language use conveys information of a purely idiosyncratic kind. We observe the language and conclude that it is ‘William Brown’ communicating – or, of course, William Wordsworth, or William Shakespeare.

In everyday life, unless cognitive faculties are impaired, people have an ability to recognize individual voices and handwriting style, and this facility has prompted a great deal of research into voiceprints (p. 20) and graphology (§33). But adult voice quality and handwriting are relatively permanent, background features of communication – general physiological and psychological reflexes over which there is little conscious control. They therefore contrast with those personal linguistic characteristics that are relatively temporary, in the foreground, changing and changeable as people make conscious choices about what they want to express and the way they want to express it. It is these characteristics that provide the subject matter of this section, often referred to cumulatively under the heading of *style*.

Style

Style is one of the thorniest concepts to be dealt with in this encyclopedia. To Samuel Wesley, it was ‘the dress of thought’; to Jonathan Swift, it was ‘proper words in proper places’; to W. B. Yeats, it was ‘high breeding in words and in argument’. And so we could continue, through several hundred definitions and characterizations. It is a remarkable career for a word that originally meant no more than a ‘writing-implement’ – a pointed object, or *stilus*, for inscribing wax.

The many senses of style can be classified into two broad types: the *evaluative*, and the *descriptive*. Under the first heading, style is thought of in a critical way: the features that make someone or something stand out from an ‘undistinguished’ background. In this sense, it implies a degree of excellence in performance or a desired standard of production, as when someone is complimented for ‘having style’, or condemned for writing ‘without style’. The second sense lacks these value judgments and simply describes the set of distinctive characteristics that identify objects, persons,

periods, or places. In this sense, we talk of ‘Shakespearean style’, the ‘house style’ of an institution, and all the variations in expression that relate to psychological or social states (‘informal style’, ‘legal style’, etc.).

Both these general senses are widely used in language study. Evaluative notions are an essential part of aesthetic approaches to language, and are implicit in such areas as elocution, oratory, and literary criticism. Descriptive approaches are found more in scientific studies, such as the various branches of linguistics, where there is a concern for objective identification without evaluation. But there is a common strand running through these various traditions: style always involves an appreciation of *contrast* between alternative locations, periods, appearances, or behaviour. As language observers, we distinguish ‘Shakespearean’ from ‘not Shakespearean’, ‘formal’ from ‘informal’, ‘scientific’ from ‘religious’, and so on. And as producers of language ourselves, we can to a large extent *choose* the linguistic ‘guise’ in which we wish to appear.

This concept of choice is central to stylistic study, whatever our approach. Style is seen as the (conscious or unconscious) selection of a set of linguistic features from all the possibilities in a language. The effects these features convey can be understood only by intuitively sensing the choices that have been made (as when we react to the linguistic impact of a religious archaism, a poetic rhyme scheme, or a joke), and it is usually enough simply to respond to the effect in this way. But there are often occasions when we have to develop a more analytical approach, as when we are asked our opinion about a particular use of language. Here, when we need to explain our responses to others, or even advise others how to respond (as in the teaching of literature), our intuition needs to be supplemented by a more objective account of style. It is this approach which is known as *stylistics*.

The notion of stylistic choice could be used to explain many of the effects used in the expression of social and contextual identity (§§10, 11); and indeed, several stylisticians do adopt this wider approach. For them, ‘style’ is *any* situationally distinctive use of language – a characteristic of groups as well as individuals. In the present volume, however, a narrower definition is used: ‘style’ is viewed as the set of language features that make people distinctive – the basis of their personal linguistic identity.

Who’s who?

The importance of personal linguistic identity is often recognized in the study of literature, where an author’s expression may be analysed in detail by literary critics to determine its specific effect, meaning, and significance. But critics are not the only professionals involved in the study of language individuality.

■ Lawyers have a particular interest in the language of their clients, especially when questions of libel, slander, perjury, and mistaken identity are raised. In recent years there have been several stylistic analyses of speech samples, where the aim has been to establish the similarities between an accused person’s language and that heard in a tape recording (p. 69). However, such ‘forensic linguistic’ enquiries are persuasive only when the stylistic features are particularly clear-cut.

■ Psychiatrists, especially those practising psychotherapy, spend a great deal of their professional lives attempting to understand the idiosyncratic linguistic behaviour of their patients – an approach that stems from the detailed analyses of Sigmund Freud (1856–1939). By studying patients’ favourite words and sense associations, their errors, and the words they avoid, analysts may draw up a linguistic picture of the disorder and use it as a basis for treatment. Psychotherapy, indeed, has been called the ‘talking cure’.

STATISTICS AND STYLE

The recognition and analysis of all forms of linguistic variation depends on the making of comparisons. We intuitively sense that individuals and groups differ and develop, and we seek to explain our intuition by systematically comparing the way in which they make use of specific linguistic features. If we wish to make our account objective, sooner or later we need to count the frequency of these features, plot their distribution in controlled samples, and quantify the extent of the difference – at which point, we would be engaging in *stylo-statistics*, or *stylometrics*. Such studies comprise a major part of the field of *statistical linguistics* (§15) – a field which investigates not only the differences between samples or texts, but also the properties that samples (and, ultimately, whole languages, and all languages) have in common, as part of the search for linguistic universals (§14).

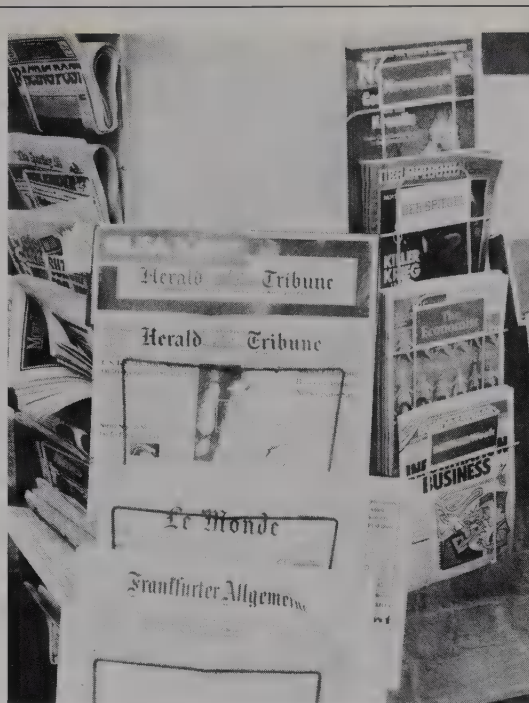
Nobody can count everything; and even if modern computers printed out comprehensive accounts of the linguistic structure of texts, there would not be enough time available to analyse them. On the other hand, the larger the sample of data analysed, the more confident our conclusions will be. Stylostatistical studies thus tend to use a small number of carefully chosen textual features and to search for these in as large a body of text as is practicable. Where possible, comparisons are made with statistical data available for the whole language (such as large-scale counts of word frequency). In this way the language acts as a 'norm' against which the idiosyncratic features are made to stand out.

Typically, stylostatistics investigates matters of frequency and distribution in three main areas:

- formal characteristics that do not relate directly to the meaning of a text, such as parts of speech, source of vocabulary (e.g. Romance vs Germanic), and the length of words, sentences, or lines;
- characteristics that relate directly to meaning, such as the size and diversity of an author's vocabulary; and
- the detailed study of single words, or small sets of words, such as *and*, or the use of *on* vs *upon*; particular attention is paid to words that occur only once in a text, in the works of an individual author, or in the language as a whole (*hapax legomena*).

Quantitative studies using these variables date from the 19th century. Much effort was devoted to devising measures that were statistically satisfactory as well as stylistically interesting.

Stylostatistics would not normally analyse those features over which individuals have little or no control because they are part of the obligatory structure of a language – such as the letter sequence *q + u* in English, or the use of the article before the noun. Where there is no choice, there is no basis for making a stylistic contrast. Style is thus seen as an author's regular selections from the *optional* features of language structure.



Institutions, as well as people, need to be considered in relation to the definition of style as 'individual identity'. There are certain distinctive linguistic characteristics of newspaper language, for example, which will be found in all instances of the genre (p. 388); but each paper has its own linguistic identity too, which makes it different from the others. The same principle applies to the study of banks, commercial products, broadcasting channels, and any organization which requires an identity and public image. House styles, letter-heads, newspaper titles, advertising slogans, and many kinds of trade mark illustrate some of the ways in which institutions rely on stylistic features as a means of promoting corporate identity.

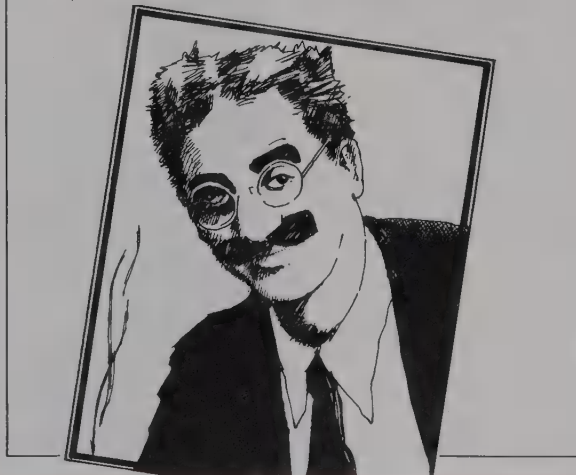
Yule's Characteristic

George Udny Yule (1871–1951) was a Cambridge statistician who pioneered several important stylostatistical measures. His main concern was to devise a criterion which would apply largely independently of sample size. 'Yule's Characteristic' (*K*) is a measure of the chance that any two nouns selected at random from a text will be identical. It is thus a means of measuring the repetitiveness of a work's vocabulary, expressed as a single value.

George Udny Yule



Groucho Marx The success of a public entertainer may depend on linguistic idiosyncrasy. Public recognition can come from the clever use of a single catch phrase. In many cases, the image involves an entire way of speaking, a well-known example being the professional tone of voice of Groucho Marx.



Authorship identification

One of the most important applications of stylistic studies has been in relation to cases of disputed or unknown authorship. The frequency and distribution of a small number of linguistic features in a problem text is compared with the corresponding features in texts where the authorship is known. Given a judicious selection of features for comparison, it is often possible to make an identification, though with varying levels of confidence. In this way, several important authorship questions have been illuminated or solved.

Sometimes a conclusion can be reached using a very small number of variables. For example, in one study (E. L. Moerk, 1970), as few as 20 grammatical features proved enough to distinguish between 1,000-word samples of six Greek and Roman writers (Herodotus, Thucydides, Xenophon, Tacitus, Caesar, Livy). The measures included counts of main and subordinate clauses, certain types of connecting word, nouns in various cases, and several other parts of speech. However, it is often necessary to use much larger textual samples (samples of over 10,000 words are common), where special attention has to be paid to their homogeneity; sophisticated statistical measures may have to be used; and a wider range of linguistic criteria may need to be involved, and given a precise definition.

There are several technical problems. If we are counting parts of speech, then it is important to use clear criteria of identification (are *London*, *boy*, and *the rich* all called nouns? (p. 91). If a word count is being made, a precise definition of 'word' is of paramount importance (how are hyphenated forms to be handled? are *bear* 'carry' and *bear* 'animal' counted as one word or two? is *The Hague* one word or two?) (p. 104). Certain kinds of data may need to be excluded from the sample (e.g. quotations, translated forms, proper names). And a decision must be made about the range of stylistic variation to be permitted within the supposedly 'homogeneous' sample (e.g. how to take account of different levels of intimacy and formality, or dialect mixing?). Above all, the basic question must be addressed: is the text too small to warrant any kind of stylistic study – as is often the case with poems, letters, or police statements?

It is difficult to take account of all these technical factors, and even more difficult to anticipate the range of external factors that interfere with linguistic judgments. A text might have been written by more than one person. It might be a deliberate imitation or forgery. And there may be a large number of potential candidates for authorship, all of whom need to be systematically compared. But with meticulous care and a great deal of motivation, it is possible to reach reliable conclusions, and several fascinating and successful studies have been carried out. Moreover, there is well-founded optimism for the future, now that several specially designed com-

puter programs are becoming available for the study of stylistic differentiation.

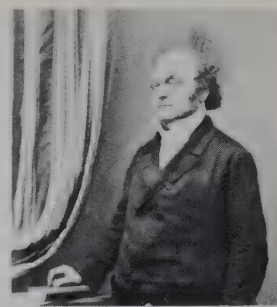
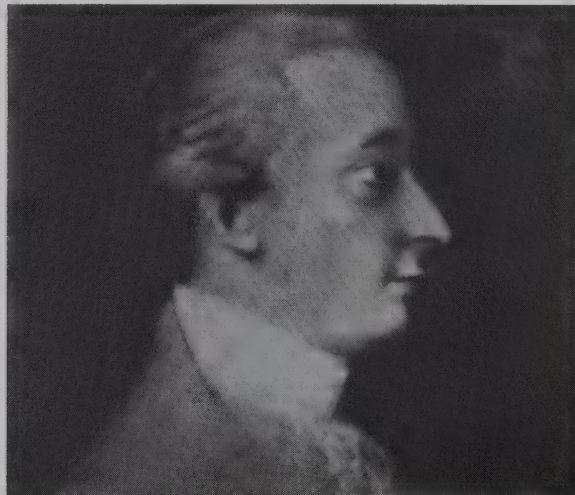
WHO WAS JUNIUS?

If we see them [the people] obedient to the laws, prosperous in their industry, united at home, and respected abroad, we may reasonably presume that their affairs are conducted by men of experience, abilities and virtue. If, on the contrary, we see an universal spirit of distrust and dissatisfaction, a rapid decay of trade, dissensions in all parts of the empire, and a total loss of respect in the eyes of foreign powers, we may pronounce, without hesitation, that the government of that country is weak, distracted and corrupt.

This is an extract from a series of political letters written under the pseudonym Junius, which appeared in the London daily newspaper, *The Public Advertiser*, between 1769 and 1772. The letters were much appreciated and were reprinted in pamphlet form several times. During the years that followed, and throughout the 19th century, hunting for the identity of Junius became a popular sport, with several well-known names being proposed.

An investigation in 1962 by the Swedish linguist, Alvar Ellegård (1919–) counted the words in the letters (over 80,000) and compared them with a million-word norm of political literature from the same period. Some words were found to be more common in the letters than in the norms, and some were found to be less common. Altogether, 458 lexical features were used, along with 51 synonym choices (such as whether Junius used *on* or *upon*, *commonly* or *usually*, *till* or *until*, *know not how* or *do not know how*). For example, Junius preferred *until* to *till* in 78% of possible instances – a feature shared by only one in seven contemporary writers in Ellegård's sample. These features were then compared with a sample of over 230,000 words taken from the known works of the most likely contender for authorship, Sir Philip Francis. The similarities were so significant that Ellegård was able to conclude with confidence (p. 15), 'We have identified Junius with Francis.'

Junius



Augustus de Morgan

Mind, I told you so!

Augustus de Morgan (1806–71), British mathematician and logician, who first saw the possibility of stylistic authorship identification, wrote in a letter in 1851: 'I should expect to find that one man writing on two different subjects agrees more nearly than two different men writing on the same subject. Some of these days spurious writings will be detected by this test. Mind, I told you so.'

The letter was not published until 1882, when it was read by the American geophysicist, T. C. Mendenhall (1841–1924). He likened the frequency distribution of words of different lengths to the spectrum of light, and began to search for word-length profiles in several English authors – 'word spectra', which he thought could be as specific as metallurgical spectrograms. He made several pioneering contributions to authorship studies, including the Bacon/Shakespeare controversy.

FORENSIC LINGUISTICS

Most stylistatistical studies are of literary works; but the same techniques can be applied to any spoken or written sample, regardless of the 'standing' of the user. In everyday life, of course, there is usually no reason to carry out a stylistic analysis of someone's usage. But when someone is alleged to have broken the law, stylisticians might well be involved, in an application of their subject sometimes referred to as 'forensic' linguistics.

Typical situations involve the prosecution arguing that incriminating utterances heard on a tape recording have the same stylistic features as those used by the defendant – or, conversely, the defence arguing that the differences are too great to support this contention. A common defence strategy is to maintain that the official statement to the police, 'written down and used in evidence', is a misrepresentation, containing language that would not be part of the defendant's normal usage.

Arguments based on stylistic evidence are usually very weak, because the sample size is small, and the linguistic features examined are often not very discriminating. But in several cases they have certainly influenced the verdict; and in one well-known case subsequent analysis definitely supported the contention that there had been a miscarriage of justice.

10 Rillington Place

In 1950, Timothy Evans was hanged for the murder of his wife and child at this address in London. Three years later, following the discovery of several bodies at the house, John Christie was also hanged. After considerable discussion of the case, a public enquiry was held, which led to Evans being granted a posthumous pardon in 1966.

A central piece of evidence against Evans was the statement he made to the police in London on 2 December 1949, in which he confessed to the murders. Evans was largely illiterate, so the statement was made orally, and written down by the police. At the trial, he denied having anything to do with the murders, claiming that he was so upset that he did not know what he was saying, and that he feared the police would beat him up if he did not confess.

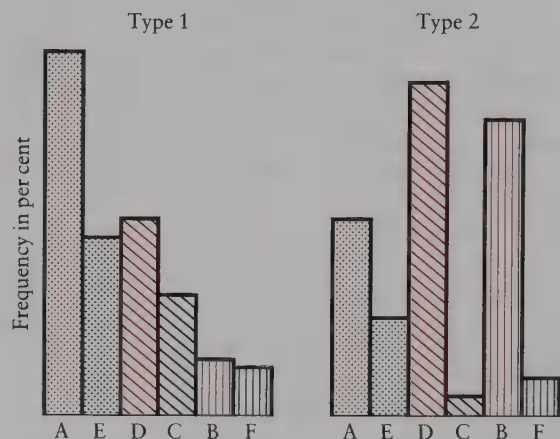
In an analysis of the Evans statements, amounting to nearly 5,000 words, it proved possible to show that the language contained many conflicting stylistic features, such as those italicized below:

Type 1: I *done* my day's work and then had an argument with the *Guvnor* then I left the job. He *give* me my wages before I went home.

Type 2: She was *incurring* one debt after another and I could not stand it any longer so I strangled her with a piece of rope and took her down to the flat below the same night *whilst* the old man was in hospital.

The incriminating statement was analysed in five sections, three of which contained background information (Type 1), two of which contained the details of the murders (Type 2). Six grammatical

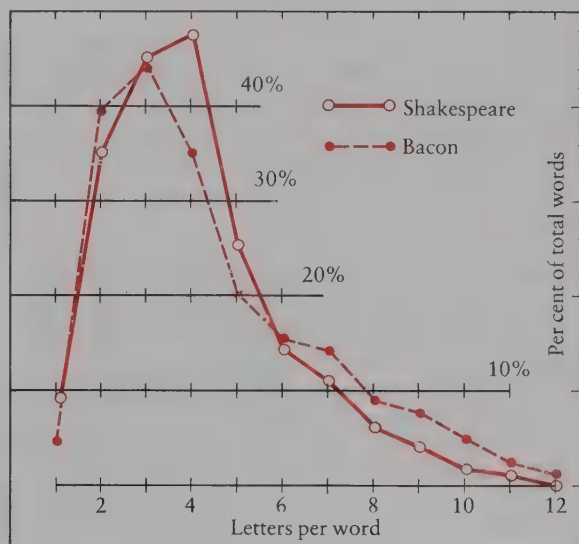
features were examined, all to do with the way Evans connected his clauses: (a) clauses lacking any formal linkage; and clauses linked by (b) words like *and*, (c) words like *then*, (d) ellipsis, (e) words like *if*, and (f) words like *which*. The results were as follows (after J. Svartvik, 1968):



	Type 1		Type 2	
	No.	%	No.	%
(a)	92	(37.1)	10	(20.0)
(b)	17	(6.9)	15	(30.0)
(c)	30	(12.1)	1	(2.0)
(d)	50	(20.2)	17	(34.0)
(e)	45	(18.1)	5	(10.0)
(f)	14	(5.6)	2	(4.0)
Total	248		50	

The differences turn out to be highly significant.

With so few criteria, and a small sample, conclusions must be tentative; but the analysis undoubtedly corroborates Evans's denial: from a linguistic point of view, the paragraphs that he later claimed were untrue are very different indeed from the rest of his statement, which to the end he continued to assert was the truth.



Histographic presentation of Type 1 and Type 2 sentences in the Evans statements.

Shakespeare – or Bacon?

The question of whether the works of Shakespeare could be attributed to Bacon attracted particular interest towards the end of the 19th century. T. C. Mendenhall (p. 68) counted the lengths of about 400,000 words from Shakespeare's plays, and an unspecified but large sample from the writings of Bacon. These large totals were made up of a number of separate counts, based on single works. He found that in each single count from Shakespeare there were more four-letter than three-letter words, whereas the reverse was the case with Bacon. Bacon also had a much higher proportion of longer words than Shakespeare. The graph (left) shows the frequency distributions, using data derived from Mendenhall's original graphs (after C. B. Williams, 1970).

However, statistical evidence convinces only those who wish to be convinced. As one sceptic remarked, in 1901, following the publication of Mendenhall's findings: if Bacon could not have written the plays, 'the question still remains, who did?'

Stylistic distinctiveness

How do we set about the task of isolating and identifying the linguistic features that constitute a person's style? Traditionally, this activity was carried out as part of the field of *rhetoric*, the study of persuasive speech or writing (especially as practised in public oratory). Several hundred 'rhetorical figures' were introduced by classical rhetoricians, classifying the way words could be arranged in order to achieve special stylistic effects. Many were restricted to the patterns found in Latin or Greek, but some achieved a broader currency, especially after the Renaissance, in studies of poetry.

The traditional classification of rhetorical figures distinguished between *schemes* and *tropes*. Schemes (such as alliteration) were considered to alter the formal structure of language to create stylistic effects, without altering the meaning. Tropes (such as metaphor) were thought to alter the meaning of the language in some way. However, the theoretical principle on which this distinction relies (the relationship between form and meaning, §13) is not straightforward, and its application to the vast range of literary effects led to controversy, especially over the extent to which changes of form inevitably result in changes of meaning.

In present-day stylistic analysis (e.g. in schools), the distinction is usually not made; inventories or simple classifications of 'figures of speech' are used instead. Also, only a tiny number of the traditional labels (alliteration, simile, hendiadys, homoioteleuton, epanalepsis, etc.) continue to be taught. It is recognized that the task of mastering long lists of labels can alienate readers and encourage them to go in for mechanical 'figure spotting' ('Ah, I can see three similes in that poem'), without pausing to reflect on the role the figures play in the meaning of a text. But a selective and sensitive introduction to figures of speech retains its value, in helping students of style to see the many ways in which a text is linguistically distinctive.

FIGURES OF SPEECH

Metaphor and simile are the most widely recognized figures of speech, being commonly used in many everyday varieties of language as well as in rhetorical and literary contexts. Some analysts consider metaphor, in particular, to be the core of linguistic (and especially poetic) creativity. Both

categories are illustrated here, along with a selection of other kinds of figurative expression.

- **metaphor** Two unlike notions are implicitly related, to suggest an identity between them:

When I have seen the hungry ocean gain
Advantage on the kingdom of the shore
(William Shakespeare, *Sonnet 64*)

- **simile** Two unlike things are explicitly compared, to point a similarity, using a marker such as *like* or *as*:

I wandered lonely as a cloud
That floats on high o'er vales and hills
(William Wordsworth, *Daffodils*)

- **personification** A type of metaphor in which an object or idea is represented in human terms:

And all the little roofs of the village bow low, pitiful,
beseeching, resigned ...
(D. H. Lawrence, *End of Another Home Holiday*)

- **paradox** A statement that is contradictory or absurd on the surface, which forces the search for a deeper level of meaning:

War is peace. Freedom is slavery. Ignorance is strength.
(George Orwell, 1984)

- **metonymy** The use of an attribute in place of the whole, e.g. *the stage* (the theatrical profession), *the bench* (the judiciary).

- **oxymoron** Two semantically incompatible expressions are brought together, thus forcing a non-literal interpretation, e.g. Emerson's *delicious torment*, Milton's *living death*.

- **apostrophe** Objects, ideas, places, dead or absent people are directly addressed:

Milton! Thou should'st be living at this hour
(William Wordsworth, *London*, 1802)

- **chiasmus** A balanced structure, in which the main elements are reversed:

Love's fire heats water, water cools not love
(William Shakespeare, *Sonnet 154*)

- Combinations of figurative effects are also common, especially in literary writing.

The silted flow
Of years on years
Is marked by dawns
As faint as cracks on mud-flats of despair
(Stephen Spender, *The Prisoners*)

Classical rhetoric

Rhetorical ability was prized in classical times, when several major works were written on the art of public speaking, including Aristotle's *Rhetorica*, Quintilian's *Institutio Oratoria*, and Cicero's *De Oratore*. Five steps were thought to be involved in successful rhetorical composition, identified here with their Latin and (in parenthesis) Greek labels.

- **inventio** (*heuresis*) Relevant subject matter is brought together (a process of 'invention').

- **dispositio** (*taxis*) The material is organized into a structural form appropriate for oratory ('disposition').

- **elocutio** (*lexis*) Language is chosen to suit the subject matter, speaker, and occasion ('style' or 'elocution').

- **memoria** (*mneme*) The various elements of the discourse have to be retained in memory.

- **actio** (*hypocrisis*) The speech is delivered using the most effective techniques ('delivery' or 'pronunciation').

In the middle ages, the study of rhetoric became part of the scholastic *trivium*, along with grammar and logic (§65). Post-Renaissance theorists reduced the five parts to two, 'style' and 'delivery', and the subject, as a result, became particularly associated with techniques of verbal expression, especially in relation to reading aloud (the concern of 'elocution'). Because of this influential tradition, many people think of rhetoric as essentially a matter of 'verbal ornament'.

The modern academic view of the subject, however, involves far more than the special effects of language production. It deals with the whole study of creative discourse, in both speech and writing, including the use of language in the mass media, and the way in which audiences react to and interpret communications directed at them (p. 393). In effect, it is the analysis of the theory and practice of techniques of argumentation, involving listeners as well as speakers, readers as well as writers. In its broadest sense, therefore, modern rhetoric studies the basis of all forms of effective communication.

Emotional appeals

The complex universe of traditional rhetoric is clearly illustrated from this small selection of classical terms which described the types of emotional appeal.

- **amphidiorthosis** modifying a charge made in anger;

- **anacoenosis** asking the opinion of listener or reader;
- **asphalia** offering oneself as surety for a bond;
- **bdelygma** expressing abhorrence;
- **cataplexis** threatening punishment or disaster;
- **comprobatio** complimenting one's listeners or judges;
- **diabole** predicting or

- denouncing future events;
- **diasyrmus** disparaging the arguments of one's opponent;
- **ecphonesis** using an emotional exclamation;
- **eucharistia** giving thanks;
- **eulogia** commending or blessing a person or thing;
- **hypocrisis** mocking an opponent by exaggerating

- speech or gestures;
- **mempsis** complaining against one's injuries;
- **ominatio** prophesying evil;
- **paramythia** consoling those who grieve;
- **peroration** summarizing in an impassioned manner;
- **thaumasmus** exclaiming in wonder.

LITERARY VS NON-LITERARY LANGUAGE

In principle, a detailed stylistic study could be made of a press report, a television commercial, or any other 'everyday' use of language, and examples of this 'general' approach to stylistics can be found in §§11 and 63. In practice, most stylistic analyses have attempted to deal with the more complex and 'valued' forms of language found in works of literature ('literary stylistics'). Moreover, it is possible to see in several of these studies a further narrowing of scope, with analysts concentrating on the more striking areas of literary language. Poetic language has attracted most attention, and within this there has been a marked predilection to investigate authors who make use of highly abnormal or 'deviant' features of language (such as Dylan Thomas or e. e. cummings). The bias is less obvious in contemporary stylistic work, but it is still present.

This concentration on the more distinctive forms of literary expression is not difficult to explain. It reflects the fact that linguistic analytic techniques, as developed during this century, are more geared to the analysis of the detailed features of sentence structure than of the broader structures found in whole texts or discourses (Part III). The more compact and constrained language of poetry is far more likely to disclose the secrets of its construction to the stylistician than is the language of plays and novels, where the structuring process is less evident, and where dialogue and narrative is often indistinguishable from the norms of everyday speech. Most work, accordingly, has been in the area of poetic language.

Bottom up vs top down

A more balanced account of the language of literature is gradually emerging in contemporary stylistics, with two main approaches to the subject plainly in evidence. The first approach begins by identifying the smallest features felt to be distinctively used in a work – minimal contrasts of sound, grammar, or vocabulary – and proceeds to build up more complex patterns of use. The second moves in the opposite direction, beginning with the broadest possible statements about an author's style, then studying particular aspects of the language in detail.

In the first approach, we might start by considering the distinctive way in which a novelist, for example, favours certain adjectives, varies tenses, or coins idiosyncratic words. We might count the frequency with which these features are used in a particular novel, and contrast them with the frequencies found in other works, by the same or different authors. In the second approach, we might start by discussing the structure of the novel as a whole, with reference to plots and sub-plots, favourite themes, and the way characters inter-relate. In due course, we might proceed to look more closely at how particular linguistic features

signal the author's intentions, and again make comparisons with other works.

The two approaches – sometimes referred to as the 'bottom up' and 'top down' (or 'micro' and 'macro') approaches – can both be illuminating, and neither excludes the other. Quite often, micro- and macro-stylistic procedures are simultaneously used in investigating the same work. To some extent, the approaches are complementary, and it might be thought that they would meet 'in the middle'. In practice, because of the multifaceted nature of stylistic analyses, and the different theories used by stylisticians, this hardly ever happens.

A linguistic perspective

Linguistic approaches to the study of literary style stress the importance of seeing an individual author's use of language in the context of the language as a whole. It is pointed out that this language cannot be studied in isolation from other varieties. Literature reflects the whole of human experience, and authors thus find themselves drawing on all varieties of language (or even on different languages) as part of their expression. In a single work, they might make considerable use of a non-literary variety, or allude to several such varieties. This happens most markedly in drama and the novel, as can be readily observed from the vast linguistic range of Shakespeare or Molière, or the regional and class varieties found throughout the writing of Dickens or Hardy. But the tapping of language varieties can be found in poetry too, as in *The Waste Land*, where T. S. Eliot draws on linguistic features belonging to conversational, religious, medieval, and musical varieties, as well as a wide range of literary forms. Indeed, this work clearly illustrates the way literature knows no linguistic bounds, for it also includes lines in French, German, Italian, and Sanskrit (p. 73).

Nor can literary language be isolated from the least situationally specific language variety of all – conversation (p. 52). When an author uses language ingeniously, we instinctively relate the special features to our own spoken norms, and any explanation of the effect ultimately depends on our awareness of these norms, and of how the features relate to them. To use modern stylistic terms, we see how the features have been 'foregrounded' – made to stand out from the background of normal, unremarkable usage. Robert Graves recognized the importance of this principle when he said that a poet should 'master the rules of grammar before he attempts to bend or break them'. So too critics – and indeed all who enjoy literature – need to be aware of the normal constraints on language use before they can explain the effects authors achieve when rules are bent or broken.



T. S. Eliot (1888–1965)

THE EDGES OF LANGUAGE

Authors take risks when they push language to its limits. If they break too many rules, they can fall over the edge of language into unintelligibility. Even well-known authors, such as James Joyce and Dylan Thomas, have been criticized for verbal excesses – for sacrificing meaning to the seductive patterns of sound or graphic form. Is it possible to arrive at a satisfactory explanation of all the distinctive graphic features in e.e. cummings's *Four III*, for instance?

The move from centre to edge of language is a gradual one. We can take an everyday construction, and manipulate its use to show increasing levels of inventiveness – and thus increasing difficulties of interpretation. One construction that has been well studied from this point of view is the use of *ago* with a noun phrase to express various temporal meanings. It is possible to construct a continuum that has mundane uses at one end and bizarre uses at the other, as in this example (from G. N. Leech, 1969):

several hours ago
many moons ago
ten games ago
several performances ago
a few cigarettes ago
three overcoats ago
two wives ago
a grief ago (Dylan Thomas)
a humanity ago

MUNDANE



ABNORMAL

We might dispute the particular ordering of items on this scale, but the general move away from literal meaning is clear enough, as is the growing difficulty we encounter as we attempt to provide a plausible context for each use. It would also be possible to construct even more bizarre examples (*an incompleteness ago*), and thus to suggest how, with the more deviant kinds of poetic language, a reader might simply give up the struggle to decode its meaning. There is nothing more likely to crush the desire to read poetry than having to resort to cryptanalysis.

Poets are not the only ones who push language beyond its normal limits. All who engage in literary or quasi-literary activity, from novelists and dramatists to journalists and commentators, face similar problems. Nor is the wrestle with words restricted to literature. Humourists, both amateur and professional, are another group who constantly tease new effects out of old words, in their search for good punch-lines. And a further example is provided by the heading of the present section, which is the title of a book by the German theologian, Paul van Buren, about how people use the word 'God' as part of religious discourse (p. 384). In his view, theistic language is 'a case of walking language's borders' – an attempt to express insight at the very edge of the 'platform of language', where, if we try to go further, 'we fall off into a misuse of words, into nonsensical jabbering, into the void where the rules give out'. Theologians, like poets, it seems, are continually striving to say what cannot be said.

Bending the rules

Dylan Thomas's poetry repeatedly illustrates the way in which some poets bend grammatical rules as they strive to express their insights. A feature of his stylistic technique is the use of unexpected associations between words (p. 105) – as well as *a grief ago*, examples (from *Fern Hill*) include *happy as the heart was long*, *all the sun long*, and *once below a time*. Such effects can be formally identified only by drawing attention to the everyday meaning of the underlying phrase. In such cases, usage norms provide a relevant perspective for the discussion of stylistic effects, and often act as a stimulus to critical thinking.

Dylan Thomas



e. e. cummings' *Four III*

here's a little mouse) and
what does he think about, i
wonder as over this
floor (quietly with

bright eyes) drifts (nobody
can tell because
Nobody knows, or why
jerks Here &, here,
gr(oo)ving the room's Silence) this like
a littlest
poem a
(with wee ears and see?
tail frisks)
(gonE)
'mouse',
We are not the same you and
i, since here's a little he
or is
it It
? (or was something we saw in the mirror)?

therefore we'll kiss; for maybe
what was Disappeared
into ourselves
who (look). ,startled.

Literary genres

Genres of literature are established categories of composition, characterized by distinctive language or subject matter. The most widely recognized are poetry, drama, and the novel, but several other categories exist, such as the short story, autobiography, and essays. Each major category can be further classified – for example, epic, lyrical, and narrative genres within poetry; comedy, tragedy, and farce within drama; and romance, crime, and science fiction within the novel.

Poetry

There has always been controversy over the nature of poetic language. To some, poetic language should be special, removed from the language of everyday (thus, Thomas Gray's dictum, 'The language of the age is never the language of poetry'). To others, it should be closely in touch with everyday, or, perhaps, be 'current language heightened' (Gerard Manley Hopkins). To Ralph Waldo Emerson, the whole of language is in any case 'fossil poetry'.

Statements of this kind to some extent miss the point, which is to stress the enormous range of linguistic expression that is found under the heading of poetry. At one extreme, there are poems that are as far removed from everyday speech as it is possible to imagine; at the other, there are poems that, if it were not for the division into lines, would closely resemble prose. Poetic movements often swing between these poles, as people respond to the competing linguistic influences of old traditions and contemporary realities. It is not possible to make simple general statements about the form of poetic language, therefore; all one can do is identify a number of recurrent notions that are part of the traditional image of poetic language, and that enter into what is often called 'poetic licence'.

The creativity poets seek takes many forms. It may involve the invention of totally new linguistic features, as in the neologistic vocabulary of James Joyce, or the typographical design of a poem by e.e. cummings. But it more often takes the form of a fresh use of familiar language, as when John Donne compares himself and his mistress to the legs on a pair of compasses, or T. S. Eliot's Prufrock compares the evening laid out against the sky to a 'patient etherised upon a table'. Above all else, poets fear banality. Whatever the literary era or tradition in which they find themselves, they are concerned to avoid what is linguistically boring or predictable, and to discover ways in which words can come alive, to convey fresh worlds of meaning. T. S. Eliot's phrase vividly captures the essence of their predicament: 'the intolerable wrestle with words and meanings'.

GRAMMAR AND VOCABULARY

■ **archaisms** The use of grammar and vocabulary no longer current is a well-established feature of poetry (though not so common today). Examples include the use of grammatical forms such as 'twas and quoth, words such as e'en, fain, and wight, and spellings such as daunsynge and olde.

■ **neologisms** The invention of new words is perhaps the most obvious way to go beyond the normal resources of a language: completely fresh creations, such as Shakespeare's *incarnadine*: new constructions, such as Hopkins's 'widow-making unchilding unfathering deeps' (*The Wreck of the Deutschland*); and new parts of speech, as in Othello's verb *lip* (= kiss), 'To lip a wanton in a secure couch.'

■ **poetic diction** In a narrow sense, this term refers to vocabulary that is typically poetic, and that would rarely be used in other contexts; more broadly, it can mean any use of words thought to be effective by the poet, whether or not it occurs elsewhere. The traditional sense can be illustrated by *nymph*, *slumber*, *woe*, and *billows*, or many lines from 18th-century poetry, such as the opening of Thomas Gray's *Elegy in a Country Churchyard*:

The curfew tolls the knell of parting day,
The lowing herd winds slowly o'er the lea

For the broader sense, there is the beginning of Stephen Spender's *The Exiles*:

History has tongues
Has angels has guns – has saved has praised –
Today proclaims
Achievements of her exiles long returned.

■ **word order** Abnormal word order is common, as when adjectives are placed after nouns (e.g. Milton's 'Anon out of the earth a fabric huge / Rose like an exhalation' (*Paradise Lost*)), or the normal order of elements in a clause is reversed (e.g. Hamlet's 'I might not this believe . . .').

Multilingual poetry

Lexical effects may even cross language boundaries. In Verlaine's *Sonnet boiteux*, English words heard in a London fog are interspersed within the French text:

Tout l'affreux passé saute,
piaule, miaule et glapit
Dans le brouillard rose et
jaune et sale des sohos
Avec des indeed et des all
rights et des haôs.

(The whole hideous past
jumps, whines, mews and
yelps in the pink and yellow
and dirty fog of the sohos,
with indeeds and all rights
and hey-o's.)

But one of the best-known examples is the cluster of foreign language elements in the closing lines of T. S. Eliot's *The Waste Land*:

I sat upon the shore
Fishing, with the arid plain
behind me
Shall I at least set my lands
in order?
London Bridge is falling
down falling down falling
down

Poi s'ascose nel foco che gli
affina

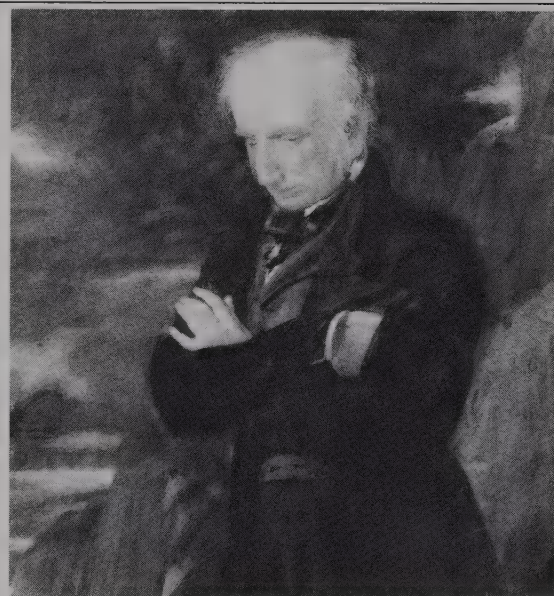
Quando fiam uti chelidon –
O swallow swallow

Le Prince d'Aquitaine à la
tour abolie

These fragments I have
shored against my ruins
Why then Ile fit you.

Hieronymo's mad againe.
Datta. Dayadhvam. Dam-
yata.

Shantih shantih shantih



The very language of men

William Wordsworth, who made a strong statement about the relationship of poetry to prose. In the Preface to the *Lyrical Ballads* (1800), he wrote:

My purpose was to imitate, and, as far as is possible, to adopt the very language of men . . . There will be found in these volumes little of what is usually called poetic diction; as much pains has been taken to avoid it as is ordinarily taken to produce it . . . It may be safely affirmed that there neither is, nor can be, any essential difference between the language of prose and metrical composition.

SOUNDS AND RHYTHMS

For many people, it is the sound or 'music' of poetry that chiefly identifies the genre – the distinctive use of vowels, consonants, cadences, and rhythms. Several different phonetic and phonological stylistic features contribute to the total effect, which is often studied under the separate heading of *phonostylistics*.

- Individual sounds can be used in an onomatopoeic or symbolic way (§30) for expressive purposes. Poetry sometimes uses vowels and consonants to reflect the noises of real life, or to symbolize other sensory or abstract notions, such as colour, texture, character, or mood (e.g. Milton's 'The serpent subtlest beast of all the field'). Poetic rhythms, too, can directly evoke real world sounds and events, as in

I sprang to the stirrup, and Joris, and he;
I galloped, Dirck galloped, we galloped all three.

(Robert Browning, *How They Brought the Good News from Ghent to Aix*)

- A network of associations can be built up between sounds. By repeating vowels or consonants at different points, words and phrases can be formally linked, sometimes to achieve a purely aesthetic effect, sometimes to force the listener to consider their possible relationships of meaning. Three cases are usually recognized, involving the repetition of initial consonants (*alliteration*, as in *fine friend*), vowels (*assonance*, as in *roll/moan*), and final syllables (*rhyme*, e.g. *gladness/madness*). But other effects are possible, such as the repetition of initial syllables, as in *state/stayed* (*reverse rhyme*), or the simultaneous repetition of initial and final consonants, as in *bend/bound* (*pararhyme*). The opening lines of Coleridge's *Kubla Khan* illustrate the overlapping use of several of these effects.

- The language is organized into rhythmical units, which appear in print as lines. In European poetry, the traditional study of versification, or *prosody*, was based on the rules of Latin scansion, and many generations of schoolchildren have had to learn to scan verse on the assumption that poetry in their language used similar rhythms to those of Latin. But the quantitative metrical system of Latin, based on a classification of syllables into long and short durations, is by no means universal. English and German use an accentual system, in which heavy and light syllables alternate. Classical Chinese used a tonal system, which alternated classes of even and changing tones. Sometimes only the number of syllables in a unit is critical, regardless of their pitch, loudness, or duration, as in Mordvinian. And several 'mixed' metrical systems have been found, such as French, where syllable number and accentuation combine.

Traditional analyses of English metre divide poetic lines into combinations of stressed (') and unstressed (v) syllables known as 'feet'. Four types are prominent in English verse: the *iamb* (v'), *trochee* ('v), *anapaest* (vv'), and *dactyl* ('vv). A line

is classified on the basis of the number of stressed syllables it contains, such as the *monometer* (1), *dimeter* (2), *trimeter* (3), *tetrameter* (4), *pentameter* (5), and *hexameter* (6). Combinations of foot-type and line-length produce such designations as 'iambic pentameter' – the so-called 'backbone' of English metre.

I come not, friends, to steal away your hearts

(William Shakespeare, *Julius Caesar*)

The rising world of waters dark and deep

(Milton, *Paradise Lost*)

Many famous studies (such as G. Saintsbury's three-volume *A History of English Prosody*, 1906–10) have been devoted to plotting the metrical norms in a language's poetry, and evaluating the kinds of deviations from these norms that poets use. As systems of description, they work quite well in analysing the regular lines of traditional poetry. But they have been criticized on several points. They tend to be applied in too mechanical a way; it is often difficult to decide which analysis to assign to a line containing an abnormal rhythm; and they break down completely when they encounter the markedly irregular lines of modern 'free verse':

What is the use of talking, and there is no end of talking,
There is no end of things in the heart.

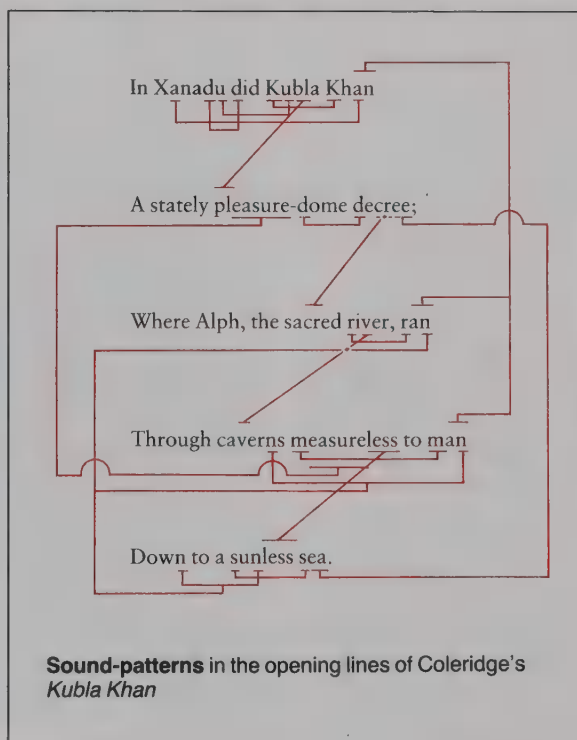
I call in the boy,
Have him sit on his knees here

To seal this,

And send it a thousand miles, thinking.

(Ezra Pound, *Exile's Letter*)

In such cases, it is necessary to devise alternative metrical models, using different analyses of stress, and introducing other prosodic notions, such as tempo, pause, and intonation (§29), to identify the patterns that emerge when readers utter the lines.



The sound of silence

Lateral consonants (p. 157) are used by poets in several languages to suggest softness and silence:

Wi/d thyme and valley- lilies
whiter still

Than Leda's /ove, and
cresses from the rill
(Keats, *Endymion*)

Les souff/es de /a nuit flot-
taient sur Ga/ga/a.
(Victor Hugo, *Booz Endormi*)
'The breezes of the night
floated over Galgala.'

Dir in Liedern, /eichten,
schnell/en,
Wal/et kühl/e F/uth.
(Goethe, *West-östlicher Divan*)

'For you the cool waves lap
in songs light and nimble.'

Ah! Lágyan kél az éji szél
Milford öbö/felé.'
(János Arany, *A Walesi bárdok*)

'Oh! The night breeze rises
softly towards Milford
Haven.'
(After S. Ullmann, 1964.)

The poet's struggle

T. S. Eliot's lines, in *East Coker*, sum up what for many is the essence of the linguistic task facing the poet.

So here I am, in the middle
way, having had twenty
years...
Trying to learn to use words,
and every attempt
Is a wholly new start, and a
different kind of failure
Because one has only learnt
to get the better of words
For the thing one no longer
has to say, or the way in
which
One is no longer disposed to
say it. And so each venture
Is a new beginning, a raid on
the inarticulate
With shabby equipment al-
ways deteriorating
In the general mess of impre-
cision of feeling,
Undisciplined squads of
emotion.

Concrete poetry

This 1950s movement produced a form of poetry, variously known as 'shaped', 'pattern', 'concrete', or 'Cubist' poetry, which blurred the boundary between literature and the visual arts. In concrete poems, the primary consideration is the way in which letters and words are arranged on the page, so that they visually reinforce, or act as a counterpoint to, the verbal meaning.

Shaped poems can in fact be traced to classical Greek times, and they emerge over the centuries in the work of several western writers, such as Apollinaire (p. 11), Mallarmé, Mayakovsky, Dylan Thomas, and Cummings (p. 72), as well as being very popular in eastern literature, where they may have originated. One of the best-known examples is *The Altar*, by the 17th-century poet George Herbert. Representative of the more recent movement is *Au Pair Girl* by Ian Hamilton Finlay.

Ian Hamilton Finlay's
Au Pair Girl

pair g.
rl au pair
pair girl au
au pair girl
au pair girl a
rl au pair girl a
pair girl au pair gir
girl au pair girl au pair
pair girl au pair girl au pa
air girl au pair girl au pair
pair girl au pair girl au pa
u pair girl au pair girl a
irl au pair girl au pair
irl au pair girl ~

George Herbert's *The Altar*

A broken ALTAR, Lord, thy servant rears,
Made of a heart, and cemented with tears;
Whose parts are as thy hand did frame;
No workman's tool hath touch'd the same.

A HEART alone
Is such a stone,
As nothing but
Thy pow'r doth cut.
Wherefore each part
Of my hard heart
Meets in this frame,
To praise thy name.

That if I chance to hold my peace,
These stones to praise thee may not cease.
O let thy blessed SACRIFICE be mine,
And sanctifie this ALTAR to be thine.

Drama

There has been remarkably little study of the genre of drama from a linguistic point of view. This is partly because so much of the language it contains is traditionally analysed under other headings – reference is often made to the 'poetry' of Shakespeare's plays, for instance, which is then investigated using metrical and rhetorical techniques. And if the language of drama is not poetry (it might be argued), then it is prose, and thus analysable using the techniques of other prose genres, such as the novel or short story.

But drama is neither poetry nor novel. It is first and foremost dialogue in action. With few exceptions, there is no narrative framework other than that provided by the language of the characters and by the visual setting in which they act. The author cannot step back and provide an opinion or manipulate our point of view, as happens routinely in novels. The dialogue must do everything.

Dramatic dialogue also has to be convincing, as a representation of conversation. But to be convincing is not to be real. No dramatist presents us with the equivalent of a tape recording of everyday speech, with all its hesitations, broken syntax, and inexplicit vocabulary (p. 52). Even the most colloquial of dramatic conversations, whether it is written by Harold Pinter, Arthur Miller, or Shakespeare, presents us with an exercise in linguistic artifice, the extent of which is only beginning to be appreciated, as techniques become available that allow us to make comparisons with real conversation.

Significant silence

Even pauses can be manipulated for special dramatic effect, as is well illustrated by this extract from Harold Pinter's *The Caretaker* (1959), where three degrees of pause are written into the dialogue. Apart from controlling the pace of the drama, the pauses also underline the uncertain relationship between the characters, keep the atmosphere tense, and help to promote our sense of apprehension.

DAVIES: You sleep here, do you?

ASTON: Yes.

DAVIES: What, in that?

ASTON: Yes.

DAVIES: Yes, well, you'd

be well out of the draught there.

ASTON: You don't get much wind.

DAVIES: You'd be well out of it. It's different when you're kipping out.

ASTON: Would be.

DAVIES: Nothing but wind then.

(Pause.)

ASTON: Yes, when the wind gets up it ...

(Pause.)

DAVIES: Yes ...

ASTON: Mmmn ...

(Pause.)

DAVIES: Gets very draughty.

ASTON: Ah.

DAVIES: I'm very sensitive to it.

ASTON: Are you?

DAVIES: Always have been.

(Pause.)

You got more rooms then, have you?

ASTON: Where?

DAVIES: I mean, along the landing here ... up the landing there.

ASTON: They're out of commission.

DAVIES: Get away.

ASTON: They need a lot of doing to.

(Slight pause.)

DAVIES: What about downstairs?

ASTON: That's closed up. Needs seeing to ... The floors ...

(Pause.)

CONTROLLING THE DIALOGUE

The stylistic distinctiveness of a dramatic text lies primarily in the conventions of layout, abbreviation, and direction that the dramatist employs to indicate the nature of the action, and the movement and interpretation of the dialogue. But there are great variations in approach. Some authors restrict themselves to the essential directions about the actions of the characters, leaving it to the actors and producer to infer interpretations about character or tone of voice from the text. In Shakespeare, for example, we find the bare minimum of comment, as in this scene from *Hamlet*:

SCENE I. *Elsinore. The guard-platform of the Castle.*

[FRANCISCO at his post. Enter to him BERNARDO.]

BER: Who's there?

FRAN: Nay, answer me. Stand and unfold yourself.

BER: Long live the King!

FRAN: Bernardo?

BER: He.

FRAN: You come most carefully upon your hour.

BER: 'Tis now struck twelve; get thee to bed, Francisco.

By contrast, some authors make great use of stage directions – in effect, giving the reader a partial interpretation of events. Along with the formal indications of dialogue, they provide the chief marker of linguistic identity of the genre in its written form. Extracts from Act I of Tom Stoppard's *Rosencrantz and Guildenstern Are Dead* (1967) illustrate the way stage directions can give basic information about character, setting, and plot.

ACT I

Two ELIZABETHANS passing the time in a place without any visible character.

They are well dressed – hats, cloaks, sticks and all.

Each of them has a large leather money bag.

GUILDENSTERN's bag is nearly empty.

ROSENCRANTZ's bag is nearly full.

The reason being: they are betting on the toss of a coin, in the following manner: GUILDENSTERN (hereafter 'GUIL') takes a coin out of his bag, spins it, letting it fall. ROSENCRANTZ (hereafter 'ROS') studies it, announces it as 'heads' (as it happens) and puts it in his own bag. Then they repeat the process. They have apparently been doing this for some time.

The run of 'heads' is impossible, yet ROS betrays no surprise at all – he feels none. However, he is nice enough to feel a little embarrassed at taking so much money off his friend. Let that be his character note.

... ..

ROS: Now why exactly are you behaving in this extraordinary manner?

GUIL: I can't imagine! (Pause.) But all that is well known, common property. Yet he sent for us. And we did come.

ROS (alert, ear cocked): I say! I heard music –

GUIL: We're here.

ROS: – Like a band – I thought I heard a band.

GUIL: Rosencrantz ...

ROS: (absently, still listening): What?

(Pause, short.)

GUIL: (gently wry): Guildenstern ...

ROS: (irritated by the repetition): What?

GUIL: Don't you discriminate at all?

ROS: (turning dumbly): Wha'?

(Pause.)

FROM DRAMA TO NOVEL

A play for voices

In Dylan Thomas's *Under Milk Wood* (1954), the narrator's voice interweaves with the voices of the characters to produce a work that, though cast in dramatic form, permits several of the effects of the novel.

ACT I

FIRST VOICE: In the blind-drawn dark dining-room of School House, dusty and echoing as a dining-room in a vault, Mr and Mrs Pugh are silent over cold grey cottage pie. Mr Pugh reads, as he forks the shroud meat in, from *Lives of the Great Poisoners*. He has bound a plain brown-paper cover round the book. Slyly, between slow mouthfuls, he spies up at Mrs Pugh, poisons her with his eye, then goes on reading. He underlines certain passages and smiles in secret.

MRS PUGH: Persons with manners do not read at table,

FIRST VOICE: says Mrs Pugh. She swallows a digestive tablet as big as a horse-pill, washing it down with clouded peasoup water.

(Pause)

MRS PUGH: Some persons were brought up in pigsties.

MR PUGH: Pigs don't read at table, dear.

FIRST VOICE: Bitterly she flicks dust from the broken cruet. It settles on the pie in a thin gnat-rain.

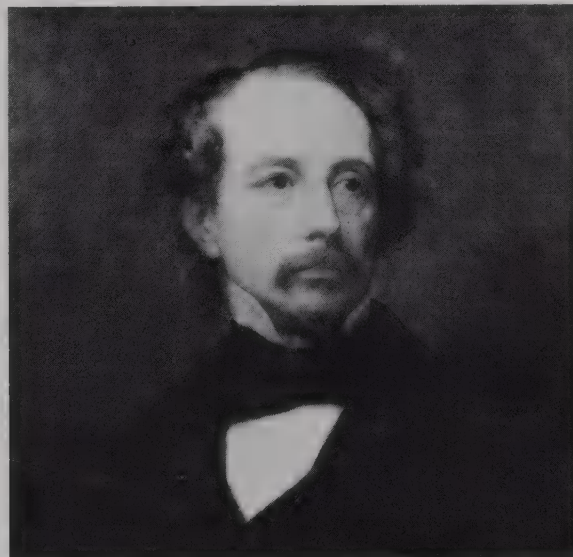
MR PUGH: Pigs can't read, my dear.

MRS PUGH: I know one who can.

Charles Dickens

In a speech made in 1858 (*For the Royal Theatrical Fund*), Dickens made a remark which underscores the problem facing anyone who wishes to argue for a definite

boundary between plays and novels: 'Every writer of fiction, though he may not adopt the dramatic form, writes in effect for the stage.'



Charles Dickens (1812–1870)

A novel for voices

It would take only the addition of character names and a change to present tense in the last line to turn the following extract into a play. It is the whole of a chapter from Hank Stine's *The Prisoner* (1970, p. 63), a novel based on the cult television series starring Patrick McGoochan. The Prisoner is under arrest.

'On what charge?'

'A complaint has been brought against you.'

'By whom?'

'By a party who considers himself aggrieved.'

'In what way?'

'It is not my place to know.'

'Whose place is it?'

'Those whose place it is to know such things.'

'And when will I be advised of the nature of the charge?'

'At the proper time.'

'And when will that be?'

'When it is deemed necessary.'

'And who will decide it is necessary?'

'The proper authorities.'

'Just who are these

'proper authorities'?'
'Those who have been duly constituted.'

'And who constituted them?'

'The people.'

'Which people?'

'The people of this village. Now, you will come with me. There will be no further arguments.'

'They went out into the rain.'



The novel

Since the 18th century, the novel has become the major genre of literature in most literate societies. It has attracted a vast range of literary criticism, but few large-scale linguistic investigations. Enormous variations in the size and scope of different novels make it difficult to arrive at satisfactory generalizations about linguistic form and content, other than to identify its essentially *narrative* purpose. The problem has long been recognized: indeed, it was present from the earliest years of the genre, when authors searched for a label to identify their new product. Henry Fielding, for example, called his *Joseph Andrews* (1742) 'a comic Epic-Poem in Prose'.

Part of the analytical problem lies in the way novels contain so much variety mixing. They tap the resources of a language's stylistic range more than does any other genre. In principle, no character, situation, theme, plot, or point of view is excluded. All language varieties might expect to be represented in a novel sooner or later, from the most colloquial to the most formal, from the most mundane to the most arcane. Even other major genres come to be swallowed up by the novel, as may be seen in an early work, Samuel Richardson's *Clarissa* (1747–8), where one of the letters from Lovelace to Belford opens with the heading 'Act II, Scene: Hampstead Heath, continued. Enter my Rascal', and continues in dialogue form with stage directions interspersed. James Joyce's *Ulysses* has over 100 pages in dramatic form, representing the fantasy world of one of the characters. And, as a recent example, D. M. Thomas's *The White Hotel* (1981) contains long extracts of poetry, alongside documentary prose, imaginative prose, postcards, letter-writing, scholarly writing, and even footnotes!

In recent years, linguistic (or textual) analysis has examined several aspects of the way language is used to identify the various themes, characters, settings, plots, and viewpoints which are introduced into the narrative. There have been several studies of the experiments in linguistic technique that have been a major feature of novel-writing during the past century, especially in relation to the ways in which a character's consciousness might be portrayed (p. 78). Authors such as Henry James, Virginia Woolf, and James Joyce have attracted particular attention from this point of view. Another well-investigated area is the author's use of linguistic devices to maintain realistic dialogue and to identify character. And a third area is the study of the movement and direction of plot, which can be illuminated by the detailed study of patterns of sentence and paragraph connectivity – a major feature of the emerging field of text-linguistics (§20), and a preoccupation of structuralist approaches to literature (p. 79).

Who spoke?

The characters in a novel can be presented in several ways: the author can describe them directly, other characters can talk about them – and they can talk for themselves. One of the most important linguistic techniques of characterization is through the use of a distinctive style of speech, which emphasizes features of regional or class background, or personal idiosyncrasies. The effect may be conveyed by the habitual use of a single word (as in the first extract below), by more fundamental changes in grammatical construction (as in the second and third extracts), or by a completely different orthographic system, specially devised to capture features of pronunciation (as in the fourth extract).

'I think you are wrong, Uriah,' I said, 'I dare say there are several things I could teach you, if you would like to learn them.'

'Oh, I don't doubt that, Master Copperfield,' he answered; 'not in the least. But not being umble yourself, you don't judge well, perhaps, for them that are. I won't provoke my betters with knowledge, thank you. I'm much too umble. Here is my umble dwelling, Master Copperfield.'

(Charles Dickens, *David Copperfield*, 1849–50, Ch. 17)

'No,' El Sordo said and patted his shoulder. 'Joke. Comes from La Granja. Heard last night comes English dynamiter. Good. Very happy. Get whisky. For you. You like?'

(Ernest Hemingway, *For*

Whom the Bell Tolls, 1940, Ch. 11)

While narrating these things, every time Queequeg received the tomahawk from me, he flourished the hatchet-side of it over the sleeper's head. 'What's that for, Queequeg?' 'Perry easy, kill-e; oh! perry easy!'

(Herman Melville, *Moby Dick*, 1851, Ch. 21)

'Noa!' said Joseph . . . 'Noa!' that manes nowt – Hathecliff makes noa 'cahnt uh t'mother, nur yah norther – bud he'll hev his lad; und Aw mun tak him – soa now ye know!'

(Emily Brontë, *Wuthering Heights*, 1847, Ch. 19)

Speech presentation

In traditional grammars, a basic distinction is drawn between 'direct' and 'indirect' (or 'reported') speech. In direct speech, someone's words are quoted exactly as they were said (e.g. 'Did the man see you yesterday?' Mary asked John.); in indirect speech, we express what was said in our own words (e.g. Mary asked John if the man had seen him the day before.). Several important linguistic changes take place in moving from direct to indirect speech, such as the removal of inverted commas, the change of pronouns, and the 'back-shift' in tense forms and associated adverbs. Both styles of speech presentation are widely used in the novel.

But there are several other, more subtle modes of presenting speech, where the distinction

between direct and indirect does not easily apply. 'Free indirect speech' (*le style indirect libre*, or *erlebte Rede*) is one such mode, in which, typically, the reporting clause of indirect speech is dropped, but the other conventions are retained (e.g. *Had the man seen John the day before?*). But there may be further variants, in which only some forms are altered (e.g. *Had the man seen John yesterday?*). And there is also a category of 'free direct speech', in which the writer moves from narrative to direct speech without the use of the usual markers (e.g. *Mary approached John. Did the man see you yesterday? John looked away.*).

Charles Dickens was one who experimented successfully with modes of speech presentation –

especially the use of free indirect speech. The Coroner's interrogation of the crossing sweeper, Jo, in *Bleak House* (Ch. 11) is a good illustration of the way this style can add speed and economy to a narrative, as characters interact without the cumbersome use of such conventions as 'said X . . . said Y'. It also conveys something of the character's typical speech style, and his unspoken process of reflection:

Name, Jo. Nothing else that he knows on. Don't know that everybody has two names. Never heard of sich a think.

Don't know that Jo is short for a longer name. Thinks it long enough for him. He don't find no fault with it. Spell it? He can't spell it. No father, no mother, no friends. Never been to school . . .

Some ways of telling a story

■ The author, in the first person, takes on the *persona* of someone in the story. This convention allows a great sense of involvement and immediacy, and a personal relationship to develop with the reader; but inevitably there is a limited perspective:

1801. – I have just returned from a visit to my landlord – the solitary neighbour that I shall be troubled with. This is certainly a beautiful country! In all England, I do not believe that I could have fixed on a situation so completely removed from the stir of society. A perfect misanthropist's Heaven – and Mr Heathcliff and I are such a suitable pair to divide the desolation between us. A capital fellow!
(Emily Brontë, *Wuthering Heights*, 1847, Ch. 1)

■ A third-person narrative, with an omniscient narrator, can provide a comprehensive account of all aspects of the story, including the characters' motivations, without personal involvement:

Emma Woodhouse, handsome, clever, and rich, with a comfortable home and happy disposition, seemed to unite some of the best blessings of existence; and had lived nearly twenty-one years in the world with very little to distress or vex her.
(Jane Austen, *Emma*, 1816, Ch. 1)

● The author may cease to be omniscient, adopting the point of view of the reader, or of another character in the novel. In this extract, the author breaks the usual third-person con-

vention, adopting the viewpoint of the people in the vicinity, first through the use of question-forms, then through speculative commentary:

A fine night, and a bright large moon, and multitudes of stars. Mr Tulkinghorn, in repairing to his cellar, and in opening and shutting those resounding doors, has to cross a little prison-like yard. He looks up casually, thinking what a fine night, what a bright large moon, what multitudes of stars! A quiet night, too.

What's that? Who fired a gun or pistol? Where was it?

The few foot-passengers start, stop, and stare about them. Some windows and doors are opened, and people come out to look. It was a loud report, and echoed and rattled heavily. It shook one house, or so a man says who was passing... Has Mr Tulkinghorn been disturbed? His windows are dark and quiet, and his door is shut. It must be something unusual indeed, to bring him out of his shell...
(Charles Dickens, *Bleak House*, 1853, Ch. 48)

● The author may switch from third-person to first-person and back again, often in a highly indirect and subtle manner. In this extract, the two viewpoints continue almost simultaneously, as first-person words like *yesterday* and the reflective *yes* combine with third-person words such as *he*, and words that could represent either viewpoint, such as *might* and *could*:

It cheered Pavel Nikolayevich

to think that his wife was coming to see him. There was nothing concrete she could do to help him, of course, but it would mean a lot to be able to unburden himself, to tell her how awful he felt, how the injection hadn't done him any good, and how horrible the people in the ward were. She would sympathise with him, and he would feel better. He might ask her to bring him a book, some cheerful modern book, and his fountain pen, so there'd be no recurrence of that ridiculous situation yesterday when he'd had to borrow the young boy's pencil to write down the prescription. Yes, and most important of all, he could get her to find out about that fungus for him, the birch fungus.

(Alexander Solzhenitsyn, *Cancer Ward*, 1968, Ch. 13)

■ The story may be told by the characters themselves, in the form of a representation of their stream of consciousness. In its most extreme form, there are no quotation marks or reporting verbs; sentences are short and elliptical; topics change suddenly:

O, look we are so! Chamber music. Could make a kind of pun on that. It is a kind of music I often thought when she. Acoustics that is. Tinkling. Empty vessels make most noise. Because the acoustics, the resonance changes according as the weight of the water is equal to the law of falling water. Like those rhapsodies of Liszt's, Hungarian, gipsyeyed. Pearls. Drops. Rain. Diddle iddle addle oodle oodle. Hiss. Now. Maybe now. Before.
(James Joyce, *Ulysses*, 1922, p. 281 (Penguin edn.))

Taking texts to pieces

The present century has witnessed a series of academic approaches to the study of style, deriving partly from linguistics and partly from literary theory. It is a complex period, raising questions about literary interpretation and evaluation that go well beyond the scope of this encyclopedia. In this section, therefore, it is possible only to hint at the overlap that exists between the study of language and this broader domain.

The end of the 19th century saw a reaction against the traditional view of a literary work as the product of an author's way of thinking about the world, in which the writer's personal history and cultural milieu were crucial factors in arriving at an interpretation. To some critics, this view of literature was too subjective and 'mystical', and drew attention away from what they saw to be the one definite fact about a work: the language in which it was written. Only a close analysis of textual language, it was felt, would place the study of literary texts on a firm, objective footing.

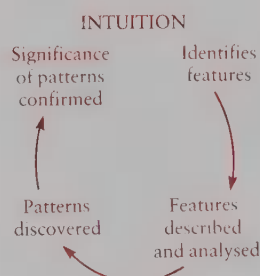
The first method to attempt this task developed in France, and came to be known as *explication de texte*. This used analytical techniques deriving from the study of classical languages. Texts were seen as unique, autonomous units of meaning, with a complex internal structure that could be discovered only through a meticulous language analysis. The linguistic features identified (such as figurative language or metrical structure) were then related to the text's historical background and to the reader's aesthetic response.

The 'formalist' school of Russian (later Czech) critics in the early 20th century focussed on the analysis of the literary text as an end in itself, without reference to social history, the writer's intention, or the reader's reaction. In this approach, literary language was seen as a special variety, whose aesthetic effects could be explained by a systematic, technical analysis.

These principles were introduced into modern English criticism in the 1920s, through the work of I. A. Richards (1893–1979), William Empson (1906–1984), and Cleanth Brooks (1906–), and in due course became associated with the American school of critical theory known as 'New Criticism'. In linguistics, the ideas of the Russian emigré linguist Roman Jakobson (1896–1983) were influential in the development of a specifically linguistic approach to the study of style, which later came to be called *linguistic stylistics* (sometimes *stylolinguistics*). In its early period, this was much taken up with microanalytical studies of word use, metrics, and sentence structure. In recent years, efforts have been made to broaden the scope of the subject, through the study of patterns above the sentence (§20).

Leo Spitzer (1887–1960)

This Austrian-born literary theorist provided an early account of the link between stylistic features and aesthetic response. His approach to stylistic study involved the use of what he called a 'philological circle' (right) of reasoning. The first step is to use our intuition to identify stylistic features. The second step is to analyse these features and find a pattern. As a result, we confirm the validity of our original intuition.



STRUCTURALISM AND AFTER

Formalist approaches displayed several limitations. They were unable to handle types of literature that did not use specifically 'literary' language (p. 71), and their microanalytic techniques were not suitable for larger texts, such as the novel. As a result, an alternative approach developed during the 1950s based on the principles of structural linguistics (§§16, 65). This provided a fresh focus for textual analysis concentrating on the *function* of the various elements in a text. The insights of the founder of modern linguistics, Ferdinand de Saussure (p. 407), were used to hypothesize rules governing the underlying system of meaning that a literary text expressed. The aim was not to interpret texts, in the traditional way, but to define universal principles of literary structure using linguistic techniques. As one critic put it, the aim was to 'transform literary studies into a scientific discipline' (T. Todorov).

The approach used by the French anthropologist Claude Lévi-Strauss (1908—) and others was to take the basic notion of a contrastive unit (or '-eme', as in 'phoneme', p. 160), and apply it to the analysis of behaviour (kinship, eating, etc.). In literary studies, research focused on finding a common structure underlying the many kinds of narrative text (e.g. folk tales, myths, detective stories). For example, significant basic units of myth ('mythemes') were recognized, and organized as a set of binary oppositions, in the same way as phonemes. In one study (A. J. Greimas, 1966), it was suggested that three basic thematic contrasts occur in all narrative:

- 'Subject' vs 'Object', which relate to the desire or search that motivates a character at the beginning of the story (e.g. a detective searching for a murderer).
- 'Sender' vs 'Receiver', as people communicate with each other about relevant events (e.g. establishing various facts about the murder).

Deconstruction

The methods and principles of structuralism come under most severe attack in the approach known as 'deconstruction', associated primarily with the writing of Jacques Derrida (1930—). This approach aims to show inherent contradictions and paradoxes in the way that structuralism demonstrates the rules governing the structure of texts, especially its reliance on binary oppositions.

The task of deconstruction

begins by isolating a specific structural relationship (e.g. 'speech' vs 'writing'), and identifying the priorities that give the structure its centre (in structuralist thinking, speech is held to be more fundamental, closer to thought, expressing the 'presence' of the author more directly; writing is a derived medium, with an independent existence on paper that makes it less able to maintain the author's presence). In order to de-

construct the opposition, the critic reverses the expected priorities (showing that, in certain respects, writing might be closer to self-consciousness than speech, and speech less so). The result, however, is not to see the alternative term as in some way superior (to see writing as fundamental, and speech as derived). Rather, the whole basis of the opposition is called into question (*both* speech and writing can be shown to lack

presence, *both* can be seen as derived). In this way, readers are forced to rethink the validity of the sets of oppositions they use to think about the world.

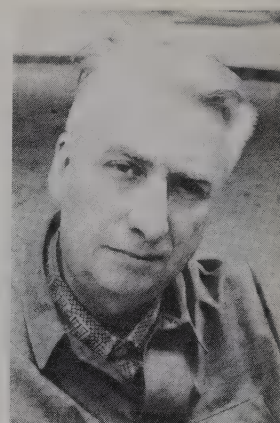
The approach has attracted a great deal of interest among literary theorists in recent years. Whether a coherent critical position can ultimately emerge from such radical questioning is a major theme of contemporary critical debate.

- 'Helper' vs 'Opponent', as characters assist or hinder the course of events.

These notions, it was argued, identified a common structure of themes, actions, and character types underlying all kinds of narrative.

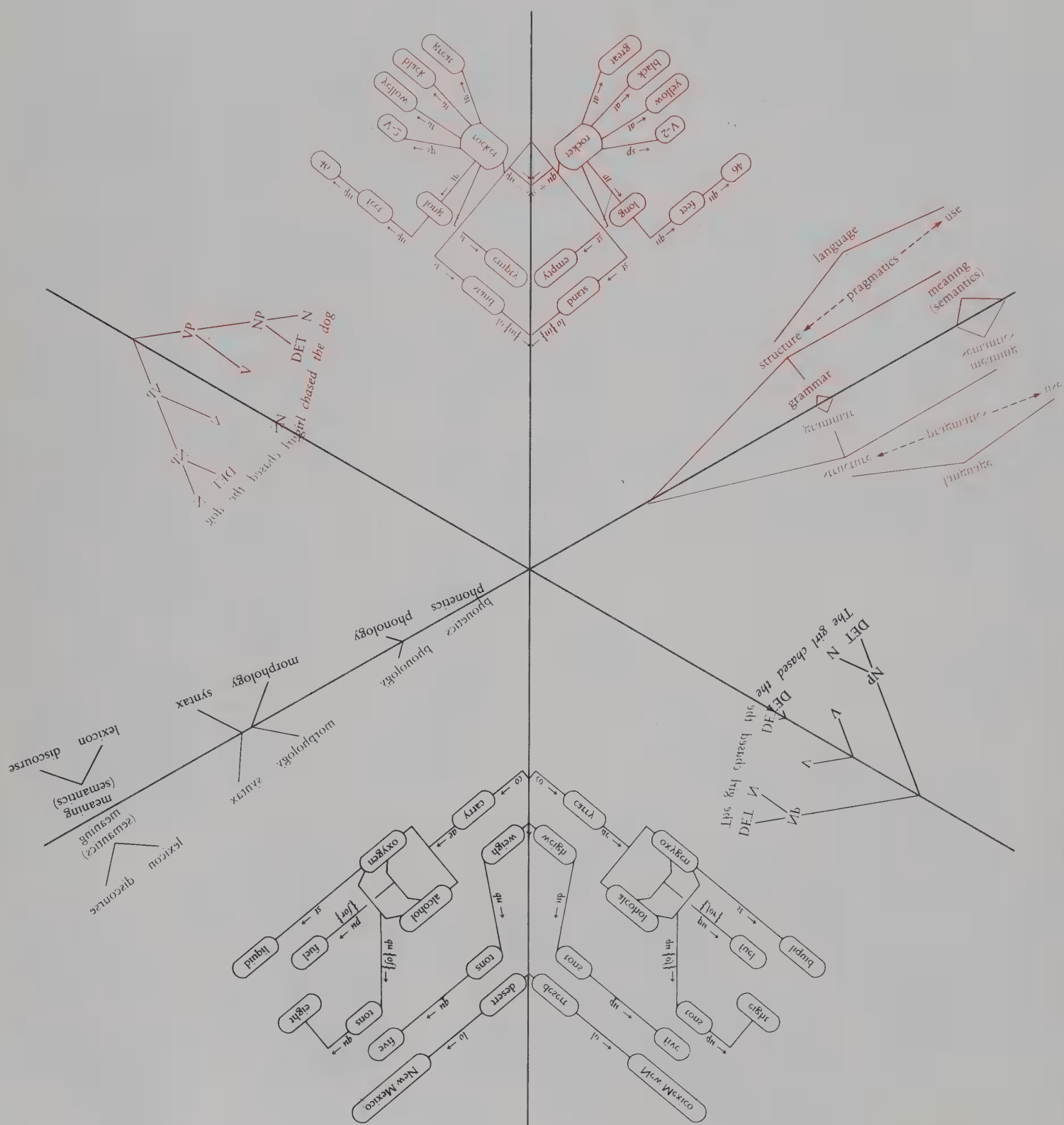
Structuralism paid little attention in its analyses to the role of the human mind or social reality. A poem, for example, was to be understood not by studying the experience of the poet, the reader, or the world, but by studying the text. The author was no longer the authority for interpretation; the meaning of a text was to be found in its individual use of language. This meaning was accessible to the critic because author and critic both belonged to the same community language system (or *langue*, p. 407). Language had been handed down to an author, who used it to construct a text. In this view, language did not reflect reality, but created it.

Structuralism brought a valuable objectivity into literary analysis, but at the expense of the total neglect of an author's individuality, the social context, and the varying historical situation. In the late 1960s, accordingly, there developed a reaction to this 'logocentric' view, which came to be known as 'post-structuralism' – a set of ideas whose implications have still to be fully explored. Here, language is seen not as a static structure, existing regardless of social, historical, or personal considerations, but as a system whose values shift in response to these factors, and whose meaning is too complex to be demonstrable by structuralist techniques. A range of post-structuralist viewpoints has developed which emphasize the limitations of binary analyses, draw attention to the multiple and overlapping meanings of words, and stress the role of mental processes in interpreting linguistic relationships. The approach is highly critical of the scientific aims of structuralism, denying the possibility of objectivity in textual interpretation.



Roland Barthes French theorist Barthes (1915–80) was a major influence on early structuralist thought, and he continued to play an important role in the post-structuralist period. In his later thinking, the focus on a text's formal structure is replaced by an emphasis on the active, creative processing carried out by the reader (cf. Chomsky's emphasis, in the same decade, on the creative abilities of the speaker (p. 409)).

Several reader-oriented approaches to literature have now been proposed, and a number of controversial issues have emerged or re-emerged as to whether readers can be credited with a 'literary competence' capable of handling the special properties of literary language. But there is a common emphasis on the opinion that meaning is not to be found in the language of the text. Rather, it is the reader who constructs the text's meaning, always *reading in* meanings which cannot be found within the text itself. Texts, in this view, have no separate identity: they exist only when they are read.



PART III

The structure of language

The structure of language is something most of us take completely for granted. We are so used to speaking and understanding our mother tongue with unselfconscious ease that we do not notice the complex linguistic architecture that underlies almost every sentence. We forget the years we expended in mastering this skill, so that when we encounter the structural complexity of a foreign language as an adult, we are often amazed at the level of difficulty involved. Similarly, when we hear of people whose ability to control the structures of their language has broken down, as in the case of aphasia (p.270), we can be surprised at the amount of structural planning involved in the linguistic analysis and treatment of their handicap. Such instances suggest the central importance of the field of linguistic structure, not only to such specialists as teachers or therapists, but to all who wish to further their understanding of the phenomenon of language.

A simple but effective way of sensing the variety and complexity of language structure is to turn a radio dial slowly from one end of a waveband to the other. The first reaction to the auditory tangle of sounds and words must be one of confusion; but if we stop and listen for a while to one of the foreign-language stations, a pattern will gradually emerge. Some words will stand out, and some (such as international products or political names) may be recognizable. The pronunciation will become less alien, as we detect the melodies and rhythmical

patterns that convey such information as 'stating' and 'questioning'. We may even find ourselves distinguishing familiar from unfamiliar sounds.

The same kind of reaction takes place when we scan an array of foreign-language publications. Instead of sounds and rhythms, we are now dealing with shapes and spaces; but the principle is the same. The multifarious variety of visual forms, many of which are expressing similar meanings, is a striking manifestation of the diversity and depth of language structure.

In this part of the encyclopedia, we therefore examine the factors involved in carrying out a structural analysis of language, whether spoken, written, or signed, and illustrate the main components, or levels, that linguists have proposed in order to elucidate the way languages operate. The largest section will be devoted to the field of grammar, which is at the centre of most linguistic investigation, but several pages will also be given to semantics, the study of meaning in language, and to the associated themes of dictionaries, place names, and personal names. We begin with a review of some general issues that form part of any structural study of language, and address the question of whether all languages have properties in common. Part III concludes with a discussion of some of the more recent movements in linguistic study which analyse conversations, narratives, and other kinds of spoken or written discourse.

Fragments of the grammatical and semantic structure of language.

13 Linguistic levels

There is too much going on in a piece of speech, writing, or signing to permit us to describe its characteristics in a single, simple statement. Even in a short spoken sentence such as *Hello there!*, several things are taking place at once. Each word conveys a particular meaning. There is a likely order in which the words may appear – we would not say *There hello!* Each word is composed of a specific sequence of sounds. The sentence as a whole is uttered in a particular tone of voice (poorly signalled in writing through the exclamation mark (§29)). And the choice of this sentence immediately constrains the occasions when it might be used – on a first meeting (and not, for example, upon leave-taking). While we say or hear the sentence, we are not consciously aware of all these facets of its structure, but once our attention is drawn to them, we easily recognize their existence. We could even concentrate on the study of one of these facets largely to the exclusion of the others – something that takes place routinely in language teaching, for instance, where someone may learn about aspects of ‘pronunciation’ one day, and of ‘vocabulary’ or ‘grammar’ the next.

Selective focusing of this kind in fact takes place in all linguistic studies, as part of the business of discovering how language works, and of simplifying the task of description. The different facets are usually referred to as *levels* of linguistic organization. Each level is studied using its own terms and techniques, enabling us to obtain information about one aspect of language structure, while temporarily disregarding the involvement of others. The field of pronunciation, for example, is basically analysed at the level of *phonetics*, using procedures that are quite distinct from anything encountered at other linguistic levels. When we do phonetic research, we try to disassociate ourselves from the problems and practices we would encounter if we were carrying out a study at the level of, say, *grammar*. Similarly, grammatical study takes place using approaches that are in principle independent of what goes on in phonetics. And other levels, likewise, provide us with their own independent ‘slant’ on the workings of language structure.

The notion of levels is widely applicable, especially when we engage in the analysis of a range of languages, as it enables us to see and state patterns of organization more clearly and succinctly than any other way that has so far been devised. Levels appear to have a certain empirical validity in psychological and neurological contexts also (§45). At the same time, we must never forget that, when we isolate a level for independent study, we are introducing an artificial element into our enquiry, whose consequences must be anticipated.

The sounds of speech that we study via phonetics are, after all, the substance through which the patterns of grammar are conveyed. There will therefore be interrelationships between levels that need to be taken into account if we wish to understand the way language as a whole is organized. As with any structure, the whole cannot be broken down into its constituent parts without loss; and we must therefore always recollect the need to place our work on individual levels within a more general structural perspective.

HOW MANY LEVELS?

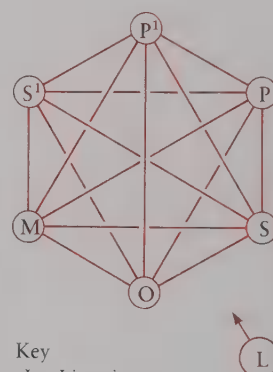
It is not difficult to sense the complexity of language structure, but it is not so easy to say how many levels should be set up in order to explain the way this structure is organized. Some simple models of language recognize only two basic levels: the set of physical *forms* (sounds, letters, signs, words) contained in a language, and the range of abstract *meanings* conveyed by these forms. More commonly, the notion of *forms* is sub-divided, to distinguish different kinds of abstractness. In speech, for example, the physical facts of pronunciation, as defined by the processes of articulation, acoustic transmission and audition, are considered to be the subject matter of *phonetics* (§27). The way different languages organize sounds to convey differences of meaning is the province of *phonology* (§28). And the study of the way meaningful units are brought into sequence to convey wider and more varied patterns of meaning is the province of *grammar*. The term *semantics* is then used for the study of the patterns of meaning themselves.

Four-level models of language (phonetics/phonology/grammar/semantics) are among the most widely used, but further divisions within and between these levels are often made. For example, within the level of grammar, it is common to recognize a distinction between the study of word structure (*morphology*) and the study of word sequence within sentences (*syntax*) (§16). Within phonology, the study of vowels, consonants, and syllables (*segmental* phonology) is usually distinguished from the study of prosody and other tones of voice (*suprasegmental* phonology) (§29). Within semantics, the study of vocabulary (or *lexicon*) is sometimes taken separately from the study of larger patterns of meaning (under such headings as *text* or *discourse*) (§20). All of these are regularly referred to as ‘levels’ of structure.

We could continue, making divisions within divisions, and recognizing more subtle kinds of structural organization within language. We could extend the notion to include other aspects of language functioning apart from structure (as when

Space-station linguistics?

In this diagram, each circle represents a linguistic level. If the whole were drawn as a complex of modules and corridors, the result would be not unlike a space station (or, for that matter, Charles De Gaulle Airport in Paris). Linguists may enter the system at any level, with immediate access to all other levels. In this respect, the linguist bears a striking resemblance to the star-child of Arthur C. Clarke’s *2010!*



- Key
- L Linguist
 - M Morphology
 - P Phonetics
 - P¹ Phonology
 - S Syntax
 - S¹ Semantics
 - O Other levels

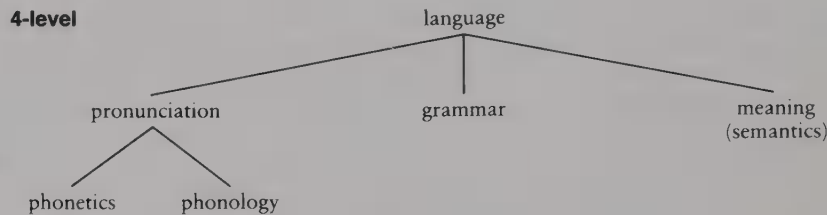
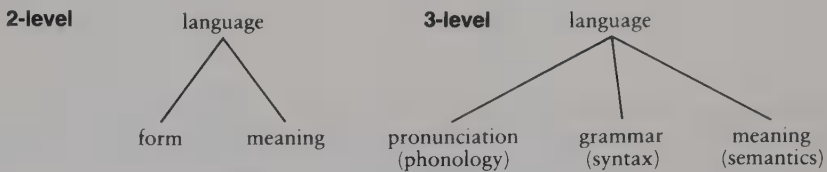
some scholars talk of a *pragmatic* 'level' (§21)). But there comes a point when the notion ceases to be helpful. When a theory sets up a large number of levels, it becomes difficult to plot the relationships between them, and to retain a sense of how they integrate into a single system. At that point, alternative models need to be devised.

WHICH LEVEL FIRST?

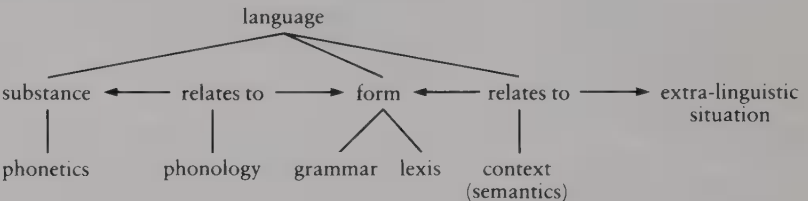
Is there a 'best' direction for the study of a language, using the framework of levels? The American linguist Leonard Bloomfield (1887–1949) recommended an approach in which one worked through the various levels in a particular order, beginning with a phonetic description, proceeding through phonology, morphology, and syntax, and concluding with semantics. In this view, the analysis at each level apart from the first is dependent on what has gone before. Workers in the Bloomfieldian tradition would talk about starting at the 'bottom', with the phonetics, and working 'up' to the semantics – though in view of the complexity of the task facing phoneticians, phonologists, and grammarians, it is a moot point whether anyone who strictly followed this approach would ever arrive there. Apocryphal stories abound of informants in field studies who have died before the investigating linguist got around to studying the meaning of the speech patterns that had been so painstakingly transcribed!

In any case, it is now recognized that it is possible to carry out an analysis at one level only if we make certain assumptions about other levels. Our choice of sounds to describe phonetically depends to some extent on our awareness of which sounds play an important role in a language (phonology), which in turn depends on our awareness of the way sounds distinguish words (grammar) enabling them to convey differences in meaning (semantics). Similarly, when we study grammatical patterns, such as sentence structure, we need to be aware of both semantic factors (such as the relationships of meaning that bring the patterns together) and phonological factors (such as the features of intonation that help to identify sentence units in speech). In a sense, when we work with levels, we need to be able to move in all directions at once. The British linguist J. R. Firth (1890–1960) once likened the business to a lift that moves freely from one level to another, in either direction, without giving priority to any one level. The simile makes its point, but the two-dimensional analogy is still misleading. To capture the notion of levels, multi-dimensional geometries are required.

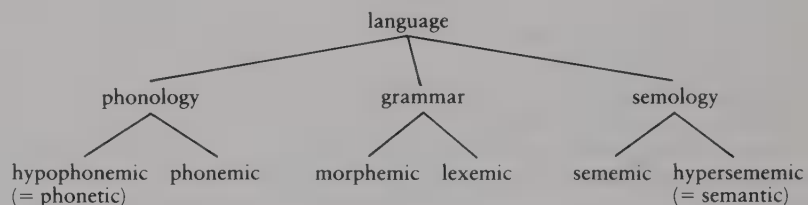
Models of spoken language structure



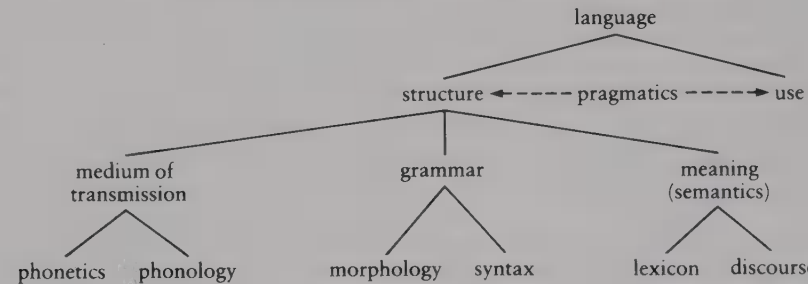
5-level This model (after M. A. K. Halliday, 1961) recognizes three primary levels (substance, form, context); substance and form are related by the 'interlevel' of phonology; form is divided into grammar and lexis.



6-level In this approach (after S. M. Lamb, 1966), the various levels are referred to as *strata*, and the model as a whole is known as *stratificational grammar*.



The present work In this encyclopedia, we shall be making most use of a 6-level model of structure which uses three basic notions (*transmitting medium*, *grammar*, *semantics*), each containing a twofold division. The model also incorporates the dimension of language *in use*, which is related to the concerns of language structure through the notion of *pragmatics*. The diagram gives only the distinctions required for the spoken medium of transmission: these are reviewed in detail in Part iv. The properties of the written medium are reviewed in Part v, and of the signing medium in Part vi. The various facets of language in use are discussed in Part ii and §63. The remaining levels, including pragmatics, are dealt with in later sections of Part iii.



14 Typology and universals

The languages of the world present us with a vast array of structural similarities and differences. Why should this be so? One way of answering this question is to adopt a historical perspective, investigating the origins of language, and pointing to the importance of linguistic change – a perspective that is discussed in Part IX. An alternative approach is to make a detailed description of the similarities or differences, regardless of their historical antecedents, and proceed from there to generalize about the structure and function of human language.

There are two main ways of approaching this latter task. We might look for the structural features that all or most languages have in common; or we might focus our attention on the features that differentiate them. In the former case, we are searching for language *universals*; in the latter case, we are involving ourselves in language *typology*. In principle, the two approaches are complementary, but sometimes they are associated with different theoretical conceptions of the nature of linguistic enquiry.

SIMILARITY OR DIFFERENCE?

Since the end of the 18th century, the chief concern has been to explain the nature of linguistic diversity. This was the focus of comparative philology and dialectology, and it led to early attempts to set up genetic and structural typologies of languages (§50). The emphasis carried through into the 20th century when the new science of linguistics continually stressed the variety of languages in the world, partly in reaction against the traditions of 19th-century prescriptivism, where one language, Latin, had been commonly regarded as a standard of excellence (§1).

Since the 1950s, the focus on diversity has been replaced by a research paradigm, stemming from the work of the American linguist Noam Chomsky (1928–), in which the nature of linguistic universals holds a central place. Chomsky's generative theory of language proposes a single set of rules from which all the grammatical sentences in a language can be derived (p. 97). In order to define these rules in an accurate and economical way, a grammar has to rely on certain general principles – abstract constraints that govern the form it takes and the nature of the categories with which it operates. In this approach, these principles are conceived as universal properties of language – properties that are biologically necessary and thus innate (p. 234). The notion of universals is important, it is argued, not only because it deepens our understanding of language in its own right, but because it provides an essential first step in the task of understanding human intellectual capacity.

In Chomsky's view, therefore, the aim of linguistics is to go beyond the study of individual languages, to determine what the universal properties of language are, and to establish a 'universal grammar' that would account for the range of linguistic variation that is humanly possible. The question is simply: What are the limits on human language variability? Languages do not make use of all possible sounds, sound sequences, or word orders. Can we work out the reasons? It might be possible to draw a line between the patterns that are essential features of language, and those that no language ever makes use of. Or perhaps there is a continuum between these extremes, with some features being found in most (but not all) languages, and some being found in very few. Questions of this kind constitute the current focus of many linguists' attention.

Expressing comparison

The English comparative construction, 'X is bigger than Y' involves three parts: the adjective (*big*), the markers of comparison (*-er* and *than*), and the standard of comparison (Y). This way of putting it is shared by many languages, including Berber, Greek, Hebrew, Malay, Maori, Songhai, Swahili, Thai, Welsh, and Zapotec.

However, the opposite order, in which the standard of comparison is expressed first, is also common. In Japanese, for example, it is 'Y yori okii' (literally 'Y from big'), and this way of putting it is shared by Basque, Burmese, Chibcha, Guarani, Hindi, Kannada, and Turkish, among others. Finnish is a language which uses both constructions.

The Port-Royal grammar

Contemporary ideas about the nature of linguistic universals have several antecedents in the work of 17th-century thinkers. The *Grammaire générale et raisonnée* (1660) is widely recognized as the most influential treatise of this period. It is often referred to as the 'Port-Royal grammar', because it was written by scholars who belonged to the community of intellectuals and religious established between 1637 and 1660 in Port-Royal, Versailles.

Although published anonymously, the authorship of the grammar has been ascribed to Claude Lancelot (1615–95) and Antoine Arnauld (1612–94). Its subtitle, referring to 'that which is common to all languages, and their principal differences...' provides a neat summary of the current preoccupation with universals and typology. However, the approach of modern linguistics is less concerned with how language relates to logic and reality, and more with its arbitrary properties.

GRAMMAIRE GENERALE ET RAISONNE'E.

CONTENANT

Les fondemens de l'art de parler ; expliquez d'une maniere claire & naturelle;

Les raisons de ce qui est commun à toutes les langues, & des principales differences qui s'y rencontrent;

Et plusieurs remarques nouvelles sur la Langue Françoisé.



A PARIS,

Chez PIERRE LE PETIT, Imprimeur & Libraire ordinaire du Roy, rue S. Jacques, à la Croix d'Or.

M. DC. LX.

Avec Privilege de sa Majesté.

BREADTH OR DEPTH?

The distinction between typological and universalist approaches to language study is doubtless ultimately an arbitrary one; and both have considerable insights to offer. But the two approaches, as currently practised, differ greatly in their procedures. Typologists typically study a wide range of languages as part of their enquiry, and tend to make generalizations that deal with the more observable aspects of structure, such as word order, parts of speech, and types of sound. In contrast with the empirical breadth of such studies, universalists rely on in-depth studies of single languages, especially in the field of grammar – English, in particular, is a common language of exemplification – and tend to make generalizations about the more abstract, underlying properties of language.

This focus on single languages might at first seem strange. If we are searching for universals, then surely we need to study many languages? Chomsky argues, however, that there is no paradox. Because English is a human language, it must therefore incorporate all universal properties of language, as well as those individual features that make it specifically ‘English’. One way of finding out about these properties, therefore, is the detailed study of single languages. The more languages we introduce into our enquiry, the more difficult it can become to see the central features behind the welter of individual differences.

On the other hand, it can be argued that the detailed study of single languages is inevitably going to produce a distorted picture. There are features of English, for example, that are *not* commonly met with in other languages, such as the use of only one inflectional ending in the present tense (third-person, as in *she runs*), or the absence of a second-person singular/plural distinction (cf. French *tu/vous*). Without a typological perspective, some say, it is not possible to anticipate the extent to which our sense of priorities will be upset. If languages were relatively homogeneous entities, like samples of iron ore, this would not be a problem. But, typologists argue, languages are unpredictably irregular and idiosyncratic. Under these circumstances, a focus on breadth, rather than depth, is desirable.

Relative or absolute?

The universalist ideal is to be able to make succinct and interesting statements that hold, without exception, for all languages. In practice, very few such statements can be made: the succinct ones often seem to state the obvious (e.g. all languages have vowels); and the interesting ones often seem to require considerable technical qualification. Most of the time, in fact, it is clear that ‘absolute’ (or exceptionless) universals do not exist. As a result, many linguists look instead for trends or tendencies across languages – ‘relative’ universals

– which can be given statistical expression. For example, in over 99% of languages whose word order has been studied, grammatical subjects precede objects. And in a phonological study of over 300 languages (p. 165), less than 3% have no nasal consonant. Linguistic features that are statistically dominant in this way are often referred to as ‘unmarked’; and a grammar that incorporates norms of this kind is known as a ‘core grammar’.

Three types of universals

Substantive

Substantive universals comprise the set of categories that is needed in order to analyse a language, such as ‘noun’, ‘question’, ‘first-person’, ‘anonym’, and ‘vowel’. Do all languages have nouns and vowels? The answer seems to be yes. But certain categories often thought of as universal turn out not to be so: not all languages have case endings, prepositions, or future tenses, for example, and there are several surprising limitations on the range of vowels and consonants that typically occur (§28). Analytical considerations must also be borne in mind. Do all languages have words? The answer depends on how the concept of ‘word’ is defined (p. 91).

Formal

Formal universals are a set of abstract conditions that govern the way in which a language analysis can be made – the factors that have to be written into a grammar, if it is to account successfully for the way sentences work in a language. For example, because all languages make statements and ask related questions (such as *The car is ready* vs *Is the car ready?*), some means has to be found to show the relationship between such pairs. Most grammars derive question structures from statement structures by some kind of transformation (in the above example, ‘Move the verb to the beginning of the sentence’). If it is claimed that such transformations are necessary in order to carry out the analysis of these (and other kinds of) structures, as Chomskyan theory does, then they would be proposed as formal universals. Other cases include the kinds of rules used in a grammar, or the different levels recognized by a theory (§13).

Implicational

Implicational universals always take the form ‘If X, then Y’, their intention being to find constant relationships between two or more properties of language. For example, three of the universals proposed in a list of 45 by the American linguist, Joseph Greenberg (1915–) are as follows:

Universal 17. With overwhelmingly more-than-chance frequency, languages with dominant order VSO [=Verb–Subject–Object] have the adjective after the noun.

Universal 31. If either the subject or object noun agrees with the verb in gender, then the adjective always agrees with the noun in gender.

Universal 43. If a language has gender categories in the noun, it has gender categories in the pronoun.

As is suggested by the phrasing, implicational statements have a statistical basis, and for this reason are sometimes referred to as ‘statistical’ universals (though this is a somewhat different sense from that used in §15).

How many languages?

It is impossible in principle to study all human languages, in order to find out about universals, for the simple reason that many languages are extinct, and there is no way of predicting what languages will emerge in the future. To be practical, typological or universal studies therefore need to be based on a sample of the 4,000 or so current languages of the world (§47). But how should a representative sample be achieved?

Several projects on language universals have had to address this basic question. The aim is to include as many different kinds of language as possible. Languages are selected from the main branches of every language family, insofar as these are known. They are not selected from the same local geographical area, in case they display a high degree of mutual influence. And the number of languages within each family has to be carefully considered. It would not be right to select an arbitrary five languages from each family – bearing in mind that Indo-Pacific, for example, has over 700 languages, whereas Dravidian has only about 20 (§52). The languages of New Guinea ought, statistically speaking, to constitute about 20% of any sample.

In practice, surveys have to be satisfied with what they can get. As few of the New Guinea languages have been studied in depth, for instance, it is currently impracticable to achieve the target of 20%. For such reasons, even the largest surveys work under considerable limitations. For example, in an American study of phonological universals (§28), the database was provided by a total of only 317 languages – less than 10% of the whole. But the study nonetheless provided an enormous amount of valuable information (I. Maddieson, 1984).

15 The statistical structure of language

Within any level of linguistic structure (§13), it is possible to count the different units that occur, and interrelate the frequencies we obtain, to see if there are statistical regularities governing their use. Many aspects of grammar, vocabulary, sound system, and writing system have been studied in this way, and several interesting patterns have emerged. It has even been possible to propose statistical properties that are in common to all languages; these are sometimes referred to as statistical *laws* or ‘*universals*’.

Statistical regularities are independent of speaker or writer, or subject matter. While in a sense we are free to say whatever we want, in practice our linguistic behaviour conforms closely to statistical expectations. We can say with confidence that if we write a *q* in English, it is almost always going to be followed by *u* (though not always, because of *Iraq*, and other exceptions). Less obviously, but equally confidently, it emerges that just over 60% of everything we say will be made up of consonants, and just under 40% of vowels. About a third of all the syllables we use in everyday speech will have the structure of consonant + vowel + consonant, as in *cat*. The 50 most commonly used words in the language will make up about 45% of everything we write.

The remarkable thing about such facts is that, while we are engaged in communication, we do not consciously monitor our language to ensure that these statistical properties obtain. It would be impossible to do so. Yet, without any deliberate effort on our part, we will find the same underlying regularities in any large sample of our speech or writing. The study of these regularities, and of the factors that constrain them, is the province of *statistical linguistics*.

LETTER FREQUENCY

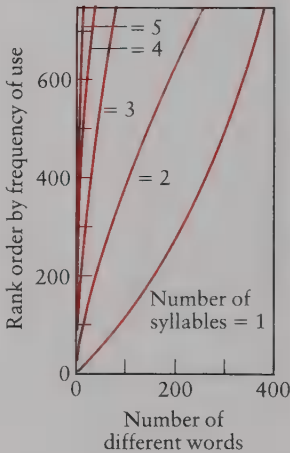
One of the simplest demonstrations of statistical regularity within a language is the frequency of

occurrence of the letters of the alphabet. Here is a selection of frequency orders found in one comparative study of different styles of American English (after A. Zettersten, 1969, p.21): (a) press reporting, (b) religious writing, (c) scientific writing, (d) general fiction. The average rank order, based on a description of 15 categories of text totalling over a million words, is given as (e). Column (f) gives the order used by Samuel Morse (1791-1872) in compiling the Morse Code. His frequency ordering was based on the quantities of type found in a printer’s office (see column (g)).

(a)	(b)	(c)	(d)	(e)	(f)	(g)
e	e	e	e	e	e	12,000
t	t	t	t	t	t	9,000
a	i	a	a	a	a	8,000
o	a	i	o	o	i	8,000
n	o	o	h	i	n	8,000
i	n	n	n	n	o	8,000
s	s	s	i	s	s	8,000
r	r	r	s	r	h	6,400
h	h	h	r	h	r	6,200
l	l	l	d	l	d	4,400
d	d	c	l	d	l	4,000
c	c	d	u	c	u	3,400
m	u	u	w	u	c	3,000
u	m	m	m	m	m	3,000
f	f	f	c	f	f	2,500
p	p	p	g	p	w	2,000
g	y	g	f	g	y	2,000
w	w	y	y	w	g	1,700
y	g	b	p	y	p	1,700
b	b	w	b	b	b	1,600
v	v	v	k	v	v	1,200
k	k	k	v	k	k	800
j	x	x	j	x	q	500
x	j	q	x	j	j	400
q	q	j	z	q	x	400
z	z	z	q	z	z	200

Monosyllabic or polysyllabic?

The most frequent words are monosyllabic. This effect is clearly seen in a study of telephone conversation. There were few words of 3 or more syllables in the 800 most frequently occurring words. (After N. R. French, *et al.*, 1930.)



Lexical top twenties

The 20 most-frequently occurring words in studies of newspaper writing in English, French, and German are shown (after P. M. Alexejew *et al.*, 1968). For comparison, the last column lists the most-frequent words in the London-Lund corpus of spoken conversation (p. 411). The importance of the speech/writing distinction is evident: note the frequency of *I*, *yes*, and *well* in spoken English, and the occurrence of *DDR* ('German Democratic Republic') in the German list.

Rank	French	German	Written English	Spoken English	Rank	French	German	Written English	Spoken English
1	de	der	the	the	12	dans	mit	at	yes
2	le (a.)	die	of	and	13	il	sich	he	was
3	la (a.)	und	to	I	14	à	daß	with	this
4	et	in	in	to	15	en	dem	by	but
5	les	des	and	of	16	ne	sie	be	on
6	des	den	a	a	17	on	ist	it	well
7	est	zu	for	you	18	qui	im	an	he
8	un (a.)	das	was	that	19	au	eine	as	have
9	une (a.)	von	is	in	20	se	DDR	his	for
10	du	für	that	it					
11	que (p.)	auf	on	is					

a. article p. pronoun

Zipf's laws

One of the first demonstrations of the existence of major statistical regularities in language was carried out by the American philologist George Kingsley Zipf (1902–50). His best known ‘law’ proposes a constant relationship between the rank of a word in a frequency list, and the frequency with which it is used in a text. If you want to test the validity of the law, you have to carry out the following operations:

- 1. Count all the instances of different words in a text – *the* 364, *is* 251, *table* 4, etc.
- 2. Put them in descending rank order of frequency, and give each rank a number – (1) *the* 364, (2) *is* 251, (3) *of* 166, etc.
- 3. Multiply the rank number (r) by the frequency (f), and the result is approximately constant (C).

For example, the list below gives the 35th, 45th, 55th, 65th, and 75th most-frequently occurring words in one category of the London–Lund corpus of spoken conversation. The values come out at around 30,000 each time.

r	×	f	=	C
35	<i>very</i>	836	=	29,260
45	<i>see</i>	674	=	30,330
55	<i>which</i>	563	=	30,965
65	<i>get</i>	469	=	30,485
75	<i>out</i>	422	=	31,650

In other words, the relationship is inversely proportional, and it was thought to obtain regardless of subject matter, author, or any other linguistic variable. However, it was subsequently shown that the relationship does not obtain for words of highest and lowest frequencies. In the same corpus, for

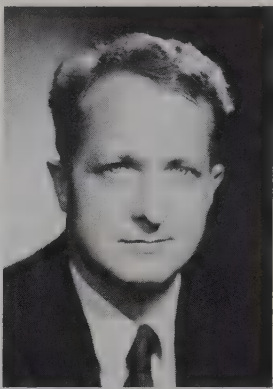
example, the most frequent word, *I*, occurs 5,920 times ($r.f = 5,920$), and the 100th word, *he’s*, occurs 363 times ($r.f = 36,300$). The size of the sample is also a critical factor.

Nonetheless, the ‘standard curve’ of word frequency, summarized as $f.r = C$ is an interesting observation about language patterns. Moreover, the same kind of curve has been found in many languages. For example, in a French word-frequency book, the 100th word was used 314 times (= 31,400), the 200th, 158 times (31,600), and the 1,000th, 31 times (31,000).

OTHER RELATIONSHIPS

Zipf also showed that there is an inverse relationship between the length of a word and its frequency. In English, for example, the majority of the commonly used words are monosyllables. The same relationship obtains even in a language like German, which has a marked ‘polysyllabic’ vocabulary. This effect seems to account for our tendency to abbreviate words when their frequency of use rises, e.g. the routine reduction of *microphone* to *mike* by radio broadcasters. It would also seem to be an efficient communicative principle to have the popular words short and the rare words long.

Factors such as efficiency and ease of communication appealed strongly to Zipf, who argued for a principle of ‘least effort’ to explain the apparent equilibrium between diversity and uniformity in our use of sounds and words. The simpler the sound and the shorter the word, the more often will human beings want to use it. There are, however, several difficulties facing this explanation (e.g. how to quantify the ‘effort’ involved in articulating sounds, and the exceptions to the law referred to above), and today a more conventional explanation in terms of probability theory is accepted.



G. K. Zipf (1902–50)

Syllables

Take a tape recording of some spoken English, and transcribe it. Mark the boundaries between the syllables. You should find that 12 syllables make up 25% of the speech: /ðə/, /əv/, /ɪn/, /ænd/, /ɪ/, /ə/, /tu/, /ɪn/, /ə/, /rɪ/, /ɪt/, /ðæt/ (see Appendix II for transcription). Half the speech will use only 70 different syllables. But to account for 90% of the speech, you will need to recognize over 1,300 syllable types. /ðə/ alone makes up 7% of all spoken syllables; it turns up on average every 14 syllables. (After G. Dewey, 1923.)

Length/frequency relationship

The relationship of syllable length and frequency of occurrence was charted in a study of nearly 11 million German words (after F. W. Kaeding, 1898).

Number of syllables in word	Number of word occurrences	Percentage of whole
1	5,426,326	49.76
2	3,156,448	28.94
3	1,410,494	12.93
4	646,971	5.93
5	187,738	1.72
6	54,436	0.50
7	16,993	0.22
8	5,038	
9	1,225	
10	461	
11	59	
12	35	
13	8	
14	2	
15	1	

Take a text, any text . . .

Take a text, in any language, and count the words. Order the words in terms of decreasing frequency. According to statistical prediction, the first 15 words will account for 25% of the text. The first 100 words will account for 60%; and the first 1,000 for 85%. The first 4,000 will account for 97.5%. In short samples, however, considerable variation from these proportions will be found.

Dictionaries

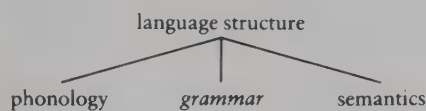
Take a dictionary and count the meanings of each word, as indicated by the sub-entries. The number of words (n) that have a particular number of meanings (m) is inversely proportional to the square of the number of meanings ($n.m^2 = C$).

16 Grammar

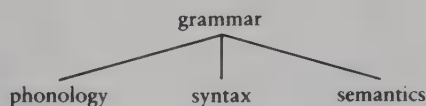
It is difficult to capture the central role played by grammar in the structure of language, other than by using a metaphor such as 'framework' or 'skeleton'. But no physical metaphor can express satisfactorily the multifarious kinds of formal patterning and abstract relationship that are brought to light in a grammatical analysis.

Two steps can usually be distinguished in the study of grammar. The first step is to identify units in the stream of speech (or writing, or signing) – units such as 'word' and 'sentence'. The second step is to analyse the patterns into which these units fall, and the relationships of meaning that these patterns convey. Depending upon which units we recognize at the beginning of the study, so the definition of grammar alters. Most approaches begin by recognizing the 'sentence', and grammar is thus most widely defined as 'the study of sentence structure'. A grammar of a language, from this point of view, is an account of the language's possible sentence structures, organized according to certain general principles. For example, in the opening pages of the most influential grammatical treatise of recent times, the American linguist Noam Chomsky (1928–), writes that a grammar is a 'device of some sort for producing the sentences of the language under analysis' (1957, p. 11), to which is added the rider that the sentences produced must be grammatical ones, acceptable to the native speaker.

Within this general perspective there is room for many different positions. In particular, there are two quite distinct applications of the term 'grammar', yielding a specific sense and a general one. The specific sense is the more traditional: here, grammar is presented as just one branch of language structure, distinct from phonology and semantics. This is the approach used in this encyclopedia (§13):



The general sense of the term, popularized by Chomsky, subsumes *all* aspects of sentence patterning, *including* phonology and semantics, and introduces the term 'syntax' as the more specific notion:



Six types of grammar

Descriptive grammar An approach that describes the grammatical constructions that are used in a language, without making any evaluative judgments about their standing in society. These grammars are commonplace in linguistics, where it is standard practice to investigate a 'corpus' of spoken or written material, and to describe in detail the patterns it contains (p. 410).

Pedagogical grammar A book specifically designed for teaching a foreign language, or for developing an awareness of the mother tongue. Such 'teaching grammars' are widely used in schools, so much so that many people have only one meaning for the term 'grammar': a grammar book.

Prescriptive grammar A manual that focusses on constructions where usage is divided, and lays down rules governing the socially correct use of language (§1). These grammars were a formative influence on language attitudes in Europe and America during the 18th and 19th centuries. Their influence lives on in the handbooks of usage widely found today, such as *A Dictionary of Modern English Usage* (1926) by Henry Watson Fowler (1858–1933).

Reference grammar A grammatical description that tries to be as comprehensive as possible, so that it can act as a reference book for those interested in establishing grammatical facts (in much the same way as a dictionary is used as a 'reference lexicon' (§18)). Several north European grammarians compiled handbooks of this type in the early 20th century, the best known being the seven-volume *Modern English Grammar* (1909–49) by the Danish grammarian Otto Jespersen (1860–1943), and *A Comprehensive Grammar of the English Language* (1985) by Randolph Quirk (1920–) et al.

Theoretical grammar An approach that goes beyond the study of individual languages, to determine what constructs are needed in order to do any kind of grammatical analysis, and how these can be applied consistently in the investigation of a human language. It is thus a central notion in any investigation of linguistic universals (§14).

Traditional grammar A term often used to summarize the range of attitudes and methods found in the period of grammatical study before the advent of linguistic science (§65). The 'tradition' in question is over 2,000 years old, and includes the work of classical Greek and Roman grammarians, Renaissance writers, and 18th-century prescriptive grammarians. It is difficult to generalize about such a wide variety of approaches, but linguists generally use the term pejoratively, identifying an unscientific approach to grammatical study, in which languages were analysed in terms of Latin, with scant regard for empirical facts. However, many basic notions used by modern approaches can be found in these earlier writings, and there is now fresh interest in the study of traditional grammar, as part of the history of linguistic ideas.

* ?

Two of the most important symbols in modern grammatical analysis. An asterisk is placed before a construction to show that it is ungrammatical. A question-mark shows that the construction is of doubtful grammaticality. For example, there is no doubt about the ungrammaticality of

*Who and why came in?
*That book looks alike.

But the status of the following sentences is less certain. Both are in use, yet there is something odd about them.

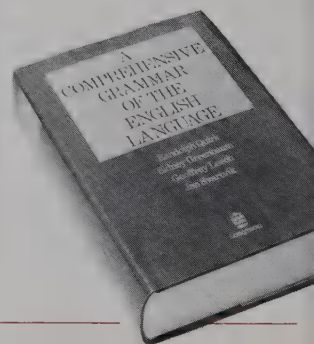
?Don't forget yours and my books.

?This is the car of the family.

One of the main aims of linguistic analysis is to discover the principles enabling us to decide the grammaticality of a sentence.

So much grammar in a language

Probably the largest grammar produced for any language: *A Comprehensive Grammar of the English Language* (1985), by Randolph Quirk, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. The amount of detail in its 1,779 pages comes as a surprise to many people who, because of the traditional focus on grammar as a matter of word-endings, have been brought up to think of English as a language lacking in grammar. But this book stands on the shoulders of even more detailed treatments of areas of the language; for example, *a* and *the* alone have warranted a 200-page study (P. Christopherson, 1939).



PARSING vs CREATING

Traditional grammars taught people to 'parse', or analyse, a sentence, by making a series of divisions within it. *The man saw the cow*, for example, would be divided into a 'subject' (*the man*), and a 'predicate' (*saw the cow*). The predicate would then be divided into its verb (*saw*) and the 'object' (*the cow*). Other divisions would be made until all the features of the sentence had been identified. It is an approach to language that many people recall with distaste. Grammar, for them, was a dry, boring, and frustrating subject. Why should this have been so?

There were several reasons. All too often, in the traditional grammars, insufficient reasons were given for making a particular sentence analysis. As a consequence, it was common to find children learning analyses and definitions off by heart, without any real understanding of what was going on. In particular, they had to master the cumbersome, Latin-based grammatical terminology as an end in itself (terms such as 'accusative', 'complement', 'apposition'), and apply it to examples of language that were either artificially constructed, or taken from abstruse literature. It was all at a considerable remove from the child's real language world, as found in conversation or the media. Little attempt was made to demonstrate the practical usefulness of grammatical analysis in the child's daily life, whether in school or outside. And there was no interest shown in relating this analysis to the broader principles of grammatical patterning in the language as a whole. It is not surprising, then, that most people who were taught parsing in school ended up unable to see the point of the exercise, and left remembering grammar only as a dead, irrelevant subject.

The reality is quite the opposite. The techniques of grammatical analysis can be used to demonstrate the enormous creative power of language – how, from a finite set of grammatical patterns, even a young child can express an infinite set of sentences. They can help us all to identify the fascinating 'edges' of language, where grammaticality shades into ungrammaticality, and where we find the many kinds of humorous and dramatic effects, both in literature and in everyday language (p. 72). As we discover more about the way we each use grammar as part of our daily linguistic survival, we inevitably sharpen our individual sense of style, and thus promote our abilities to handle more complex constructions, both in speaking/listening and in reading/writing. We become more likely to spot ambiguities and loose constructions, and to do something about it. Moreover, the principles of grammatical analysis are general ones, applicable to the study of any language, so that we find ourselves developing a keener sense of the similarities and differences between languages. And many kinds of specialized problems can be illuminated through the study of grammar – such as the difficulties facing the language-handicapped, the foreign-

language learner, or the translator. Grammar need not be dry, unreal, arcane; it can be alive, relevant, entertaining. As with so many subjects, it depends only on how it is put across.

Grammatical nature rambles?

Imagine teaching a child about the structure of a flower in the following way. A hypothetical plant is drawn on the board, and its parts labelled: stamen, pistil, stalk, etc. Each term is defined, and the children write them in their books. They have to learn them off by heart, and until they do they will *not* be allowed to see or work with any real plant!

It is unlikely that anyone in a modern biology class would be taught this topic through such an approach. The teacher would arrive armed with real plants, and give them out; then the children would search for the parts, all the while meeting problems, and asking for help with the labels as they went along. Later, the teacher would get them to write up their project in a book, and then might ask for some terms to be learned.

That is the modern way: discovery first, definitions of terms last. But grammar continues to suffer, in many schools, by being taught the other way round (when it is taught at all!). A hypothetical sentence is put on the board, and the required grammatical terminology has to be learned, before any attempt is made to grapple with real sentences in a real world. Often, even, no attempt at all is made to go searching for interesting, real, sentence specimens. It is as if the children's knowledge of plants were to remain forever solely on the blackboard. No one would tolerate such a silly pedagogical approach for biology. But for many decades, just such an approach was actively practised for grammar – and it is by no means extinct.

Poodles wearing jeans?

It is not difficult to think up dramatic or entertaining sentences that would motivate a child to carry out a grammatical analysis, because of their ambiguity or stylistic effect. Here are some nice cases of ambiguity, taken from W. H. Mittins, *A Grammar of Modern English* (1962), all of which can be explained through a single principle:

The girl was followed by a small poodle wearing jeans.

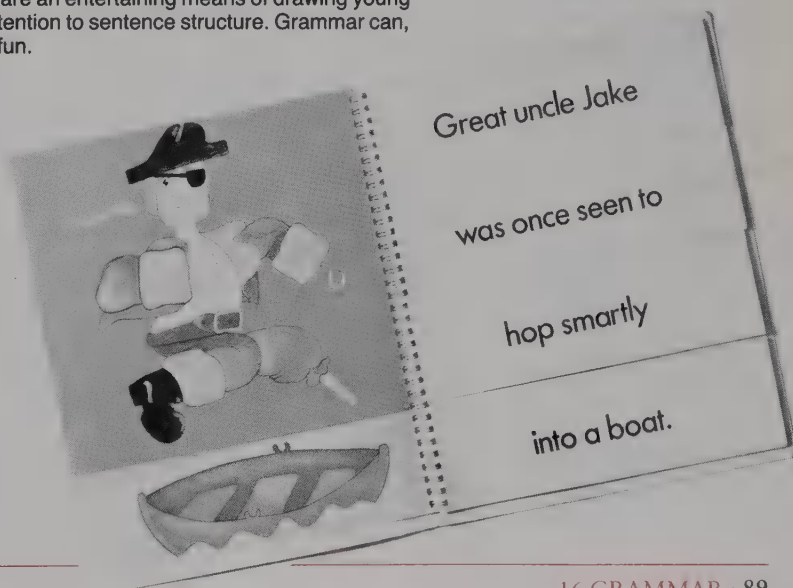
Next came a mother with a very small baby who was pushing a pram.

I always buy my newspapers at the shop next to the police station in which cards, magazines, and fancy goods are displayed.

A sailor was dancing with a wooden leg.

In each case, the construction at the end of the sentence has been separated from the noun to which it belongs. If one wished to avoid the unintentionally humorous effects, the sentences would need to be reformulated with this construction immediately following, or 'postmodifying', the noun ('The girl wearing jeans ...').

A page from Maureen Vidler's *Find a Story* (1974) The page is cut horizontally, so that as each strip is turned over, a new sentence and picture results. On the next page, for instance, the top strip reads 'My silly cousin Nell', and the bottom one 'along the sea shore'. There are only 12 pages in the book, but there are over 20,000 possible grammatical combinations. In a similar approach ('Roll a Story'), the child makes a sentence by rolling a series of blocks on which words have been printed. Such approaches are an entertaining means of drawing young children's attention to sentence structure. Grammar can, at times, be fun.



Basic grammatical notions

The range of constructions that is studied by grammar is very large, and grammarians have often divided it into sub-fields. The oldest and most widely-used division is that between morphology and syntax.

Morphology

This branch of grammar studies the structure of words. In the following list, all the words except the last can be divided into parts, each of which has some kind of independent meaning.

<i>unhappiness</i>	<i>un- -happi- -ness</i>
<i>horses</i>	<i>horse- -s</i>
<i>talking</i>	<i>talk- -ing</i>
<i>yes</i>	<i>yes</i>

Yes has no internal grammatical structure. We could analyse its constituent sounds, /j/, /e/, /s/, but none of these has a meaning in isolation. By contrast, *horse*, *talk*, and *happy* plainly have a meaning, as do the elements attached to them (the 'affixes'): *un-* carries a negative meaning; *-ness* expresses a state or quality; *-s* expresses plural; and *-ing* helps to convey a sense of duration. The smallest meaningful elements into which words can be analysed are known as *morphemes*; and the way morphemes operate in language provides the subject matter of morphology.

It is an easy matter to analyse the above words into morphemes, because a clear sequence of elements is involved. Even an unlikely word such as *antidisestablishmentarianism* would also be easy to analyse, for the same reason. In many languages (the so-called 'agglutinating' languages (p.293)), it is quite normal to have long sequences of morphemes occur within a word, and these would be analysed in the same way. For example, in Eskimo the word *angyaghllangyugtuq* has the meaning 'he wants to acquire a big boat'. Speakers of English find such words very complex at first sight; but things become much clearer when we analyse them into their constituent morphemes:

<i>angya-</i>	'boat'
<i>-ghlla-</i>	an affix expressing augmentative meaning
<i>-ng-</i>	'acquire'
<i>-yug-</i>	an affix expressing desire
<i>-tuq-</i>	an affix expressing third person singular.

English has relatively few word structures of this type, but agglutinating and inflecting languages, such as Turkish and Latin, make widespread use of morphological variation. A verb in the African language, Bilin, could appear in over 10,000 variant forms.

MORPHEME PROBLEMS

Not all words can be analysed into morphemes so easily. In English, for example, it is difficult to

know how to analyse irregular nouns and verbs: *feet* is the plural of *foot*, but it is not obvious how to identify a plural morpheme in the word, analogous to the *-s* ending of *horses*. In the Turkish word *evinden* 'from his/her house', there is the opposite problem, as can be seen from the related forms:

<i>ev</i>	house
<i>evi</i>	his/her/its house
<i>evden</i>	from the house

It seems that the *-i* ending marks 'his/her/its', and the *-den* ending marks 'from' – in which case the combination of the two ought to produce *eviden*. But the form found in Turkish has an extra *n*, which does not seem to belong anywhere. Its use is automatic in this word (in much the same way as an extra *r* turns up in the plural of *child* in English – *child-r-en*). Effects of this kind complicate morphological analysis – and add to its fascination. To those with a linguistic bent, there is nothing more intriguing than the search for regularities in a mass of apparently irregular morphological data.

Another complication is that morphemes sometimes have several phonetic forms, depending on the context in which they occur. In English, for example, the past-tense morpheme (written as *-ed*), is pronounced in three different ways, depending on the nature of the sounds that precede it. If the preceding sound is /t/ or /d/, the ending is pronounced /ɪd/, as in *spottèd*; if the preceding sound is a voiceless consonant (p. 128), the ending is pronounced /t/, as in *walkèd*; and if the preceding sound is a voiced consonant or a vowel, the ending is pronounced /d/, as in *rollèd*. Variant forms of a morpheme are known as *allomorphs*.

INFLECTIONAL AND DERIVATIONAL

Two main fields are traditionally recognized within morphology. *Inflectional morphology* studies the way in which words vary (or 'inflect') in order to express grammatical contrasts in sentences, such as singular/plural or past/present tense. In older grammar books, this branch of the subject was referred to as 'accidence'. *Boy* and *boys*, for example, are two forms of the 'same' word; the choice between them, singular vs plural, is a matter of grammar, and thus the business of inflectional morphology. *Derivational morphology*, however, studies the principles governing the construction of new words, without reference to the specific grammatical role a word might play in a sentence. In the formation of *drinkable* from *drink*, or *disinfect* from *infect*, for example, we see the formation of different words, with their own grammatical properties.

New words out of old

There are four normal processes of word formation in English:

- *prefixation* a prefix is placed before the base of the word, e.g. *disobey*;
- *suffixation* a suffix is placed after the base of the word, e.g. *kindness*;
- *conversion* a word changes its class without any change of form, e.g. (*the*) *carpet* (noun) becomes (*to*) *carpet* (verb); and
- *compounding* two base forms are added together, e.g. *blackbird*.

There are also some less usual ways of making new words:

- *reduplication* a type of compound in which both elements are the same, or only slightly different, e.g. *goody-goody*, *wishy-washy*, *teeny-weeny*;
- *clippings* an informal shortening of a word, often to a single syllable, e.g. *ad*, *gents*, *flu*, *telly*;
- *acronyms* words formed from the initial letters of the words that make up a name, e.g. NATO, UNESCO, *radar* (=radio detection and ranging); a sub-type is an *alphabetism*, in which the different letters are pronounced, e.g. *VIP*, *DJ*; and
- *blends* two words merge into each other, e.g. *brunch* (from 'breakfast' + 'lunch'), *telex* ('teleprinter' + 'exchange').

Abso-blooming-lutely

Morphemes can be classified into 'free' and 'bound' forms. Free morphemes can occur as separate words, e.g. *car*, *yes*. Bound morphemes cannot occur on their own, e.g. *anti-*, *-tion*. The main classes of bound morphemes are the prefixes and suffixes; but *infixes* are also possible – an affix which is inserted *within* a stem. The nearest we get to this in English is emphatic forms such as *abso-blooming-lutely awful*; but in many languages, infixation is a normal morphological process. In Tagalog, for example, the form /um/ 'one who does' is infixed within the form /pi:lit/ 'effort' to produce /pumi:lit/, which means 'one who compelled'.

Words

Words sit uneasily at the boundary between morphology and syntax. In some languages – ‘isolating’ languages, such as Vietnamese (p. 293) – they are plainly low-level units, with little or no internal structure. In others – ‘polysynthetic’ languages, such as Eskimo – word-like units are highly complex forms, equivalent to whole sentences. The concept of ‘word’ thus ranges from such single sounds as English *a* to *palyamunurringkutjamunurtu* (‘he/she definitely did not become bad’) in the Western Desert language of Australia.

Words are usually the easiest units to identify, in the written language. In most languages, they are the entities that have spaces on either side. (A few languages use word dividers (e.g. Amharic), and some do not separate words at all (e.g. Sanskrit).) Because a literate society exposes its members to these units from early childhood, we all know where to put the spaces – apart from a small number of problems, mainly to do with hyphenation. Should we write *washing machine* or should it be *washing-machine*? *Well informed* or *well-informed*? *No one* or *no-one*?

It is more difficult to decide what words are in the stream of speech, especially in a language that has never been written down. But there are problems, even in languages like English or French. Certainly, it is possible to read a sentence aloud slowly, so that we can ‘hear’ the spaces between the words; but this is an artificial exercise. In natural speech, pauses do not occur between each word, as can be seen from any acoustic record of the way people

talk. Even in very hesitant speech, pauses come at intervals – usually between major grammatical units, such as phrases or clauses (p. 95). So if there are no audible ‘spaces’, how do we know what the words are? Linguists have spent a great deal of time trying to devise satisfactory criteria – none of which is entirely successful.

There are no word spaces in the 4th century Greek *Codex Sinaiticus*. These were introduced by the Romans.

ΚΕΤΙΣΤΕΣΤΙΝΟΝΑ
ΠΑΙΔΟΥΣΣΕΤΟΥΤ
ΟΥΝΙΔΩΝΟΙΕΤΙ
ΕΙΤΙΕΝΤΩΙΟΥΤ

Five tests of word identification

Potential pause

Say a sentence out loud, and ask someone to ‘repeat it very slowly, with pauses’. The pauses will tend to fall between words, and not within words. For example, *the/three/little/pigs/went/to/market*. But the criterion is not fool-proof, for some people will break up words containing more than one syllable, e.g. *mar/ket*.

Indivisibility

Say a sentence out loud, and ask someone to ‘add extra words’ to it. The extra items will be added between the words and not within them. For example, *the pig went to market* might become *the big pig once went straight to the market*, but we would not have such forms as *pi-big* or *mar-the-ket*. However,

this criterion is not perfect either, in the light of such forms as *absoblooming-lutely*.

Minimal free forms

The American linguist Leonard Bloomfield (1887–1949) thought of words as ‘minimal free forms’ – that is, the smallest units of speech that can meaningfully stand on their own.

This definition does handle the majority of words, but it cannot cope with several items which are treated as words in writing, but which never stand on their own in natural speech, such as English *the* and *of*, or French *je* (‘I’) and *de* (‘of’).

Phonetic boundaries

It is sometimes possible to tell from the sound of a word where it begins or ends. In Welsh, for exam-

ple, long words generally have their stress on the penultimate syllable, e.g. ‘*cartref*’ ‘home’, *car* ‘*treli*’ ‘homes’. In Turkish, the vowels within a word harmonize in quality (p. 161), so that if there is a marked change in vowel quality in the stream of speech, a new word must have begun. But there are many exceptions to such rules.

Semantic units

In the sentence *Dog bites vicar*, there are plainly three units of meaning, and each unit corresponds to a word. But language is often not as neat as this. In *I switched on the light*, *the* has little clear ‘meaning’, and the single action of ‘switching on’ involves two words.

WORD CLASSES

Since the early days of grammatical study, words have been grouped into *word classes*, traditionally labelled the ‘parts of speech’. In most grammars, eight such classes were recognized, illustrated here from English:

nouns	<i>boy, machine, beauty</i>
pronouns	<i>she, it, who</i>
adjectives	<i>happy, three, both</i>
verbs	<i>go, frighten, be</i>
prepositions	<i>in, under, with</i>
conjunctions	<i>and, because, if</i>
adverbs	<i>happily, soon, often</i>
interjections	<i>gosh, alas, coo</i>

In some classifications, participles (*looking, taken*) and articles (*a, the*) were separately listed.

Modern approaches classify words too, but the use of the label ‘word class’ rather than ‘part of speech’ represents a change in emphasis. Modern linguists are reluctant to use the notional definitions found in traditional grammar – such as a noun being the ‘name of something’. The vagueness of these definitions has often been criticized: is *beauty* a ‘thing’? is not the adjective *red* also a

‘name’ of a colour? In place of definitions based on meaning, there is now a focus on the structural features that signal the way in which groups of words behave in a language. In English, for example, the definite or indefinite article is one criterion that can be used to signal the presence of a following noun (*the car*); similarly, in Romanian, the article (*ul*) signals the presence of a preceding noun (*avionul* ‘the plane’).

Above all, the modern aim is to establish word classes that are coherent: all the words within a class should behave in the same way. For instance, *jump, walk, and cook* form a coherent class, because all the grammatical operations that apply to one of these words apply to the others also: they all take a third person singular form in the present tense (*he jumps/walks/cooks*), they all have a past tense ending in *-ed* (*jumped/walked/cooked*), and so on. Many other words display the same (or closely similar) behaviour, and this would lead us to establish the important class of ‘verbs’ in English. Similar reasoning would lead to an analogous class being set up in other languages, and ultimately to the hypothesis that this class is required for the analysis of all languages (as a ‘substantive universal’, §14).

Classifying nouns

Distinctions such as masculine/feminine and human/non-human are well known in setting up sub-classes of nouns, because of their widespread use in European languages. But many Indo-Pacific and African languages far exceed these in the number of noun classes they recognize. In Bantu languages, for example, we find such noun classes as human beings, growing things, body parts, liquids, inanimate objects, animals, kinship names, abstract ideas, artefacts, and narrow objects.

However, these labels should be viewed with caution, as they are no more exact semantically than are the gender classes of European languages. In Swahili, for example, there are sub-classes for human beings and insect/animal names, but the generic words ‘insect’ and ‘animal’ in fact formally belong to the ‘human’ class!

Gradience

Word classes should be coherent. But if we do not want to set up hundreds of classes, we have to let some irregular forms into each one. For example, for many speakers *house* is the only English noun ending in /s/, where the /s/ becomes /z/ when the plural ending is added (*houses*). Although in theory it is 'in a class of its own', in practice it is grouped with other nouns, with which it has a great deal in common.

Because of the irregularities in a language, word classes are thus not as neatly homogeneous as the theory implies. Each class has a core of words that behave identically, from a grammatical point of view. But at the 'edges' of a class are the more irregular words, some of which may behave like words from other classes. Some adjectives have a function similar to nouns (e.g. *the rich*); some nouns behave similarly to adjectives (e.g. *railway* is used adjectivally before *station*).

The movement from a central core of stable grammatical behaviour to a more irregular periphery has been called *gradience*. Adjectives display this phenomenon very clearly. Five main criteria are usually used to identify the central class of English adjectives:

- (A) they occur after forms of *to be*, e.g. *he's sad*;
- (B) they occur after articles and before nouns, e.g. *the big car*;
- (C) they occur after *very*, e.g. *very nice*;
- (D) they occur in the comparative or superlative form, e.g. *sadder/saddest*, *more/most impressive*; and
- (E) they occur before *-ly* to form adverbs, e.g. *quickly*.

We can now use these criteria to test how much like an adjective a word is. In the matrix below, candidate words are listed on the left, and the five criteria are along the top. If a word meets a criterion, it is given a +; *sad*, for example, is clearly an adjective (*he's sad*, *the sad girl*, *very sad*, *sadder/saddest*, *sadly*). If a word fails the criterion, it is given a - (as in the case of *want*, which is nothing like an adjective: **he's want*, **the want girl*, **very want*, **wanter/wantest*, **wantly*).

	A	B	C	D	E
<i>happy</i>	+	+	+	+	+
<i>old</i>	+	+	+	+	-
<i>top</i>	+	+	+	-	-
<i>two</i>	+	+	-	-	-
<i>asleep</i>	+	-	-	-	-
<i>want</i>	-	-	-	-	-

The pattern in the diagram is of course wholly artificial because it depends on the way in which the criteria are placed in sequence; but it does help to show the gradual nature of the changes as one moves away from the central class, represented by *happy*. Some adjectives, it seems, are more adjective-like than others.

What part of speech is *round*?

You cannot tell what class a word belongs to simply by looking at it. Everything depends on how the word 'behaves' in a sentence. *Round* is a good illustration of this principle in action, for it can belong to any of five word classes, depending on the grammatical context.

Adjective

Mary bought a round table.

Preposition

The car went round the corner.

Verb

The yacht will round the buoy soon.

Adverb

We walked round to the shop.

Noun

It's your round. I'll have a whiskey.

A dustbin class?

Several of the traditional parts of speech lacked the coherence required of a well-defined word class – notably, the adverb. Some have likened this class to a dustbin, into which grammarians would place any word whose grammatical status was unclear. Certainly, the following words have very little structurally in common, yet all have been labelled 'adverb' in traditional grammars:

<i>tomorrow</i>	<i>very</i>	<i>no</i>
<i>however</i>	<i>quickly</i>	<i>when</i>
<i>not</i>	<i>just</i>	<i>the</i>

The, an adverb? In such contexts as *The more the merrier*.

Noun tenses?

Some languages formally mark the expression of time relations on word classes other than the verb. In Japanese, adjectives can be marked in this way, e.g. *shiroi* 'white', *shirokatta* 'was white', *shirokute* 'being white', etc. In Potawatomi, the same ending that expresses past time on verbs can be used on nouns also:

/nkaʃatəs/	I am happy
/nkaʃatsəpən/	I was once happy
/nos/	my father
/nospən/	my dead father
/nčiman/	my canoe
/nčimanpən/	my former canoe (lost, stolen)

(After C. F. Hockett, 1958, p. 238.)

Five moods

A range of attitudes can be expressed by the mood system of the verb. In Fox, one mood expresses the meaning 'God forbid that this should happen!'; another, 'What if it did happen! What do I care!' In Menomini, there is a five-term mood system:

/pi·w/	he comes/is coming/came
/pi·wen/	he is said to be coming/it is said that he came
/pi·ʔ/	is he coming?/did he come?
/piasah/	so he <i>is</i> coming after all!
/piapah/	but he was going to come! (and now it turns out he is not)

(After C. F. Hockett, 1958, p. 237.)

Dual and trial number

Four numbers are found in the language spoken on Annatom Island (Melanesia): singular, dual, trial, plural (excl./incl. = exclusive/inclusive of speaker):

/ainjak/	I
/aijumrau/	we two (excl.)
/aijuntai/	we three (excl.)
/aijama/	we (excl.)
/akaijau/	we two (incl.)
/akataij/	we three (incl.)
/akaija/	we (incl.)
/aiek/	you (sing.)
/aijaurau/	you two
/aijautaij/	you three
/aijaua/	you (pl.)

(After L. Bloomfield, 1933, p. 257.)

A fourth person

A fourth-person contrast is made in the Algonquian languages, referring to non-identical animate third persons in a particular context. In Cree, if we speak of a man, and then (secondarily) of another man, the forms are different: /'na:pe:w/ vs /'na:peʃwa/. This fourth person form is usually referred to as the 'obviative'.

(After L. Bloomfield, 1933, p. 257.)

Fifteen cases

Nominative (subject), *genitive* (of), *accusative* (object), *inessive* (in), *elative* (out of), *illative* (into), *adessive* (on), *ablative* (from), *allative* (to), *essive* (as), *partitive* (part of), *translative* (change to), *abessive* (without), *instructive* (by), and *comitative* (with).

The Finnish case system seems fearful to those brought up on the six-term system of Latin. But the less familiar cases are really quite like prepositions – except that the forms are attached to the end of the noun as suffixes, instead of being separate words placed before, as in English.

GRAMMATICAL CATEGORIES

In many languages, the forms of a word vary, in order to express such contrasts as number, gender, and tense. These categories are among the most familiar of all grammatical concepts, but their analysis can lead to surprises. In particular, it emerges that there is no neat one-to-one correspondence

between the grammatical alterations in a word's form and the meanings thereby conveyed. Plural nouns do not always refer to 'more than one'; a first-person pronoun does not always refer to the person who is talking; and masculine nouns are not always male.

Category	Typical formal contrasts	Typical meanings conveyed	Examples	But note . . .
aspect (verbs)	perfect(ive), imperfect(ive)	completeness, habituality, continuousness, duration, progressiveness	Russian <i>ya pročítal</i> (pf.) vs <i>on čítal</i> (impf.), roughly 'I read' vs 'I used to read/was reading'; English <i>she sings</i> (as a job) vs <i>she's singing</i> (now).	Adverbs can change the meaning, as when <i>always</i> changes the 'in progress' meaning of <i>John is driving from London</i> to a habitual (and often irritated) meaning: <i>John's always driving from London</i> .
case (nouns, pronouns, adjectives)	nominative, vocative, accusative, genitive, partitive	actor, possession, naming, location, motion towards	English gen. <i>boy's, girls'</i> ; Latin nom. <i>puella</i> 'girl', gen. <i>puellae</i> 'of the girl'; Serbo-Croat <i>grad</i> 'town', loc. <i>gradu</i> 'at a town'.	Cases may have several functions. The English genitive is sometimes called the 'possessive', but it can express other meanings than possession, e.g. <i>the man's release, a week's leave, a summer's day</i> .
gender (nouns, verbs, adjectives)	masculine, feminine, neuter, animate, inanimate	male, female, sexless, living	Spanish masc. <i>el muchacho</i> 'boy', fem. <i>la muchacha</i> 'girl'; German masc. <i>der Mann</i> 'the man', fem. <i>die Dame</i> 'the lady', neut. <i>das Ende</i> 'the end'; Russian past tense singular masc. <i>čítal</i> , fem. <i>čítala</i> , neut. <i>čítalo</i> 'read'.	There is no necessary correlation between grammatical gender and sex. In German, 'spoon' is masculine (<i>der Löffel</i>); 'fork' is feminine (<i>die Gabel</i>); 'knife' is neuter (<i>das Messer</i>). French 'love' <i>amour</i> is masculine in the singular, but often feminine in the plural.
mood (verbs)	indicative, subjunctive, optative	factuality, possibility, uncertainty, likelihood	Latin <i>requiescit</i> 'he/she/it rests' vs <i>requiescat</i> 'may he/she rest'; English <i>God save the Queen, if I were you</i> .	Although a major section in traditional grammars, many European languages no longer make much use of the subjunctive. It is often restricted to formulaic phrases or very formal situations.
number (nouns, verbs, pronouns)	singular, dual, trial, plural	one, two, more than one, more than two, more than three	Swedish <i>bil</i> 'car', <i>bilar</i> 'cars'; Dutch <i>ik roep</i> 'I call', <i>wij roepen</i> 'we call'; Samoan /ʔoe/ 'you' (sing.), /ʔoulua/ 'you two', /ʔoutou/ 'you' (pl.).	Nouns plural in form may refer to singular entities (e.g. <i>binoculars, pants</i>), and some nouns functioning as singulars refer to several events (e.g. <i>athletics, news</i>). The two crops known as <i>wheat</i> and <i>oats</i> look very similar; but in English one is singular and the other is plural.
person (pronouns, verbs)	first person, second person, third person, fourth person	speaker, addressee, third party, fourth party	Welsh <i>mi</i> 'I', <i>ni</i> 'we'; Menomini /nenah/ 'I', /kenah/ 'thou', /wenah/ 'he'; Latin <i>amo</i> 'I love', <i>amas</i> 'you love' (sing.), <i>amat</i> 'he/she/it loves'.	First person can refer to addressee (Doctor (to patient): <i>How are we today?</i>) or to a third party (Secretary (to friend, about the boss): <i>We're not in a good mood today</i>). Third person can refer to self (Wife: <i>How's my husband?</i> Husband: <i>He's hungry</i>).
tense (verbs)	present, past, future	present time, past time, future time	Italian <i>io parlo</i> 'I speak', <i>io ho parlato</i> 'I have spoken', <i>io parlavo</i> 'I was speaking'; Gaelic <i>chuala mi</i> 'I heard', <i>cluinneadh mi</i> 'I'll hear'.	Tense and time do not always correspond. Present tense—past time: <i>Minister dies</i> (headline). Present tense—future time: <i>I'm leaving tomorrow</i> . Future tense—past time: <i>John will keep phoning us every day</i> .
voice (verbs)	active, passive, middle, causative	who did action, what was acted upon, what caused action	Classical Greek active <i>didàsko</i> 'I teach', middle <i>didàskomai</i> 'I get myself taught'; Portuguese active <i>cortou</i> 'cut', passive <i>foi cortada</i> 'was cut'; Tigrinya active <i>qätäle</i> 'he killed', causative <i>ʔaqtäle</i> 'he caused to kill'.	There are several active verbs in English which have no passive (e.g. <i>She has a car</i> will not transform into <i>*A car is had by her</i>), and several passives which have no active (e.g. <i>He was said to be angry</i> will not transform into <i>*Someone said him to be angry</i>).

Syntax

Syntax is the way in which words are arranged to show relationships of meaning within (and sometimes between) sentences. The term comes from *syntaxis*, the Greek word for 'arrangement'. Most syntactic studies have focused on sentence structure, for this is where the most important grammatical relationships are expressed.

THE SENTENCE

Traditionally, grammars define a sentence in such terms as 'the complete expression of a single thought'. Modern studies avoid this emphasis, because of the difficulties involved in saying what 'thoughts' are. *An egg* can express a thought, but it would not be considered a complete sentence. *I shut the door, as it was cold* is one sentence, but it could easily be analysed as two thoughts.

Some traditional grammars give a logical definition to the sentence. The most common approach proposes that a sentence has a 'subject' (= the topic) and a 'predicate' (= what is being said about the topic). This approach works quite well for some sentences, such as *The book is on the table*, where we can argue that *the book* is what the sentence is 'about'. But in many sentences it is not so easy to make this distinction. *It's raining* is a sentence, but what is the topic? And in *Michael asked Mary for a pen*, it is difficult to decide which of Michael, Mary, or the pen is the topic – or whether we have three topics!

In some written languages, it is possible to arrive at a working definition of 'sentence' by referring to the punctuation one is taught to use in school. Thus, an English sentence for many people 'begins with a capital letter and ends with a full stop' (or some other mark of 'final' punctuation). The problem is that many languages (e.g. in Asia) do not make use of such features; and even in those that do, punctuation is not always a clear guide. It may be omitted (in notices and legal documents, for example); and it proves difficult to prescribe rules governing its use other than 'good practice'. People therefore often disagree about the best way to punctuate a text. In some manuals of style, it is recommended that one should not end a sentence before a coordinating conjunction (*and*, *or*, *but*). But there are often cases where an author might feel it necessary – for reasons of emphasis, perhaps – to do the opposite.

It is even more difficult to identify sentences in speech, where the units of rhythm and intonation often do not coincide with the places where full stops would occur in writing. In informal speech, in particular, constructions can lack the careful organization we associate with the written language (p.52). It is not that conversation lacks grammar: it is simply that the grammar is of a rather different kind, with sentences being particularly difficult to demarcate. In the following extract, it is not easy to decide whether a sentence

ends at the points marked by pauses (–), or whether this is all one, loosely constructed sentence:

when they fed the pigs/ they all had to stand well back/ – and they were allowed to take the buckets/ – but they weren't allowed to get near the pigs/ you see/ – so they weren't happy ...

Linguistic approaches

Despite all the difficulties, we continue to employ the notion of 'sentence', and modern syntacticians try to make sense of it. But they do not search for a satisfactory definition of 'sentence' at the outset – an enterprise that is unlikely to succeed, with over 200 such definitions on record to date. Rather, they aim to analyse the linguistic constructions that occur, recognizing the most independent of them as sentences. Thus, because the following constructions can stand on their own as utterances, and be assigned a syntactic structure, they would be recognized as sentences:

she asked for a book/
come in/
the horse ran away because the train was noisy/

The following combination of units, however, could not be called a sentence:

will the car be here at 3 o'clock/ it's raining/.

The syntax of the first unit and that of the second do not combine to produce a regular pattern. It would be just as possible to have:

it's raining/ will the car be here at 3 o'clock/

or either unit without the other. Within each unit, however, several kinds of rules of syntactic order and selection are apparent. We may not say:

- *will be here at 3 o'clock the car/
- *will be here the car/
- *car at 3 o'clock/.

Each unit in the sequence, then, is a sentence; but the combination does not produce a 'larger' syntactic unit.

A sentence is thus the largest unit to which syntactic rules apply – 'an independent linguistic form, not included by virtue of any grammatical construction in any larger linguistic form' (L. Bloomfield, 1933, p.170). But this approach has its exceptions, too. In particular, we have to allow for cases where sentences are permitted to omit part of their structure and thus be dependent on a previous sentence (*elliptical* sentences), as in:

A: Where are you going?

B: To town.

Several other types of exception would be recognized in a complete grammatical description.

Minor sentence types

A language contains many sentence-like units which do not conform to the regular patterns of formation. Here is a selection from English:

Yes.
Gosh!
Least said, soonest mended.
How come you're early?
Oh to be free!
All aboard!
Down with racism!
No entry.
Taxi!
Good evening.
Happy birthday
Checkmate.



Exceptions These signs – the first from a school playground, the second from an office building – are presumably sentences, but they do not follow the expected rules of punctuation.

ASPECTS OF SENTENCE SYNTAX

Hierarchy

Hilary couldn't open the windows.

One of the first things to do in analysing a sentence is to look for groupings within it – sets of words (or morphemes, p. 90) that hang together. In this example, we might make an initial division as follows:

Hilary / couldn't open / the windows.

Units such as *couldn't open* and *the windows* are called *phrases*. The first of these would be called a *verb phrase*, because its central word (or 'head') is a verb, *open*; the second would be called a *noun phrase*, because its head is a noun, *windows*. Other types of phrase also exist – adjective phrases, for example, such as *very nice*.

Phrases may in turn be divided into their constituent *words* (p. 91):

couldn't + open the + windows

And words may be divided into their constituent *morphemes*, if there are any:

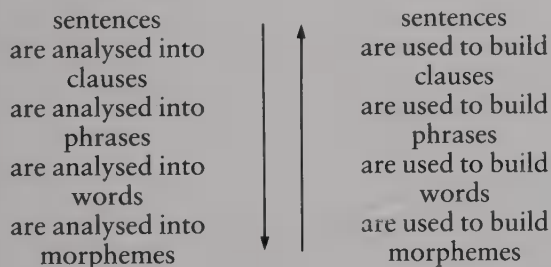
could + n't window + s

This conception of sentence structure as a hierarchy of levels, or ranks, may be extended 'upwards'. The sentence can be made larger by linking several units of the same type:

Hilary opened the windows, but David couldn't open the doors.

Here, too, we have a sentence, but now we have to recognize two major units within it – each of which has a structure closely resembling that of an independent sentence. These units are traditionally referred to as *clauses*. In the above example, the clauses have been 'coordinated' through the use of the conjunction *but*. An indefinite number of clauses can be linked within the same sentence.

A five-rank hierarchy is a widely used model of syntactic investigation:



Morphemes are the 'lower' limit of grammatical enquiry, for they have no grammatical structure. Similarly, sentences form the 'upper' limit of grammatical study, because they do not usually form a part of any larger grammatical unit.

Clauses

The various units that make up the structure of a clause are usually given functional labels, such as *Subject* (S), *Verb* (V), *Complement* (C), *Object* (O), and *Adverbial* (A). A number of clause types can be identified in this way, such as:

S + V	The dog + is running.
S + V + O	The man + saw + a cow.
S + V + C	The car + is + ready.
S + V + A	A picture + lay + on the ground.
S + V + O + O	I + gave + John + a book.
S + V + O + C	He + called + John + a fool.
S + V + O + A	Mary + went + home + yesterday.

Several approaches to grammatical analysis make use of elements of this kind, though there is considerable variation in definition and terminology. Languages also vary greatly in the way in which these elements are identified. In English, for example, word order is the main factor, with only occasional use being made of morphology (e.g. *he* (subject) *saw* (verb) *him* (object)). In Latin, word-endings provide the main clues to element function, word order being irrelevant (e.g. *puer puellam vidit* 'the boy saw the girl'). In Japanese, basic grammatical relations are marked by special particles: *ga* (subject), *o* (direct object), *ni* (indirect object), and *no* (genitive). For example,

kodomo ga tomodachi no inu ni mizu o yaru
the child friend's to dog water gives

'The child gives water to his/her friend's dog.'

Phrases

Most phrases can be seen as expansions of a central element (the *head*), and these are often referred to as 'endocentric' phrases:

cars
the cars
the big cars
all the big cars
all the big cars in the garage

Phrases which cannot be analysed in this way are then called 'exocentric': inside/the cars.

The internal structure of an endocentric phrase is commonly described in a three-part manner:

all the big cars in the garage
PREMODIFICATION HEAD POSTMODIFICATION

Coordination vs subordination

Coordination is one of two main ways of making sentences more complex; the other is known as *subordination*, or 'embedding'. The essential difference is that in the former the clauses that are linked are of equal grammatical status, whereas in the latter, one clause functions as part of another (the 'main' clause). Compare:

Coordinate clause:

The boy left on Monday and the girl left on Tuesday.

Subordinate clause:

The boy left on Monday when John rang.

The phrase *on Monday* is part of the clause, giving the time when the action took place. Similarly, the unit *when John rang* is also part of the clause, for the same reason. But *when John rang* is additionally a clause in its own right.

Concord

Grammatical links between words are often signalled by concord, or 'agreement'. A form of one word requires a corresponding form of another, as when in English a singular noun 'agrees with' a singular verb in the present tense: *the man walks* vs *the men walk*.

The purpose of concord varies greatly between languages. In Latin, it is an essential means of signalling which words go together. In the absence of fixed word-order patterns, sentences would otherwise be uninterpretable. For example, in *parvum puerum magna puella vidit* 'the tall girl saw the small boy', we know that the boy is small and the girl is tall only through the agreement of the endings, *-um* vs *-a*.

On the other hand, concord plays much less of a role in modern French, in cases such as *le petit garçon et la grande fille* 'the little boy and the big girl'. Because the position of adjectives is fixed (before the noun, in these cases), it would not pose any problems of intelligibility if there were no difference between the masculine and feminine forms:

le petit garçon
**la petit fille*
**le petite garçon*
la petite fille

If French allowed free word order, as in Latin, so that one could say **le garçon et la fille petit grande*, then concord would be needed to show which adjective should go with which noun – but this does not happen. The gender system is thus of limited usefulness, though it still has a role to play in certain syntactic contexts, such as cross-reference (*J'ai vu un livre et une plume. Il était nouveau*. 'I saw a book and a pen. It [i.e. the book] was new.').

IMMEDIATE CONSTITUENT DIAGRAMS

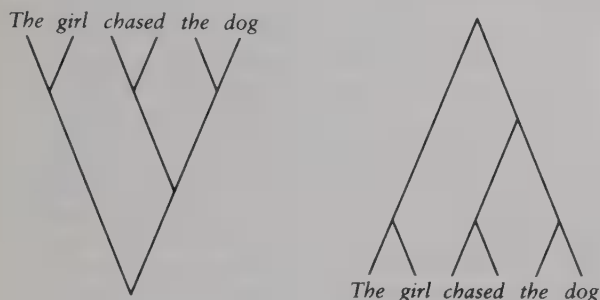
One of the most widely used techniques for displaying sentence structure is the use of immediate constituent (IC) analysis. This approach works through the different levels of structure within a sentence in a series of steps. At each level, a construction is divided into its major constituents, and the process continues until no further divisions can be made. For example, to make an IC analysis of the sentence *The girl chased the dog*, we carry out the following steps:

1. Identify the two major constituents, *the girl* and *chased the dog*.
2. Divide the next-biggest constituent into two, viz. *chased the dog* into *chased* and *the dog*.
3. Continue dividing constituents into two until we can go no further, viz. *the girl* and *the dog* into *the* + *girl*, *the* + *dog*, and *chased* into *chase* + the *-ed* ending.

The order of segmentation can be summarized using lines or brackets. If the first cut is symbolized by a single vertical line, the second cut by two lines, and so on, the sentence would look like this:

the /// girl / chase /// -ed // the /// dog

However, a much clearer way of representing constituent structure is through the use of 'tree diagrams':

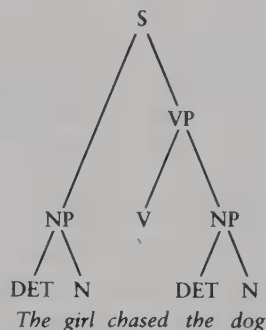


The second kind of tree diagram is in fact the normal convention in modern linguistics.

Such representations of structure are very helpful, as far as they go. But not all sentences are as easy to analyse in IC terms as this one. It is sometimes not clear where the cuts should be made (e.g. whether to divide *the three old men* into *the* + *three old men* or *the three old* + *men*, or *the three* + *old men*). More important, the process of segmenting individual sentences does not take us very far in understanding the grammar of a language. IC analyses do not inform us about the identity of the sentence elements they disclose, nor do they provide a means of showing how sentences relate to each other grammatically (as with statements and questions, actives and passives). To develop a deeper understanding of grammatical structure, alternative approaches must be used.

PHRASE STRUCTURE

A good way of putting more information into an analysis would be to name, or *label*, the elements that emerge each time a sentence is segmented. It would be possible to use functional labels such as 'subject' and 'predicate', but the approach that is most widely practised has developed its own terminology and abbreviations, so these will be used here. Taking the above sentence (S), the first division produces a 'noun phrase' (NP) *the girl* and a 'verb phrase' (VP) *chased the dog*. (This is a broader sense of 'verb phrase' than that used on p. 95, as it includes both the verb and the noun phrase that follows.) The second division recognizes a 'verb' (V) *chased* and another noun phrase (NP) *the dog*. The next divisions would produce combinations of 'determiner' (DET) and 'noun' (N) *the* + *girl*, *the* + *dog*. This is the 'phrase structure' of the sentence, and it can be displayed as a tree diagram:



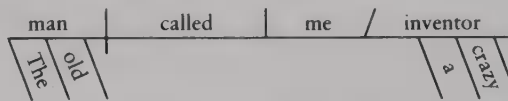
This kind of representation of the phrase structure of a sentence is known as a 'phrase marker' (or 'P-marker'). Phrase structures are also sometimes represented as labelled sets of brackets, but these are more difficult to read:

[S[NP[DETthe][Ngirl]][VP[Vchased][NP[DETthe][Ndog]]]]

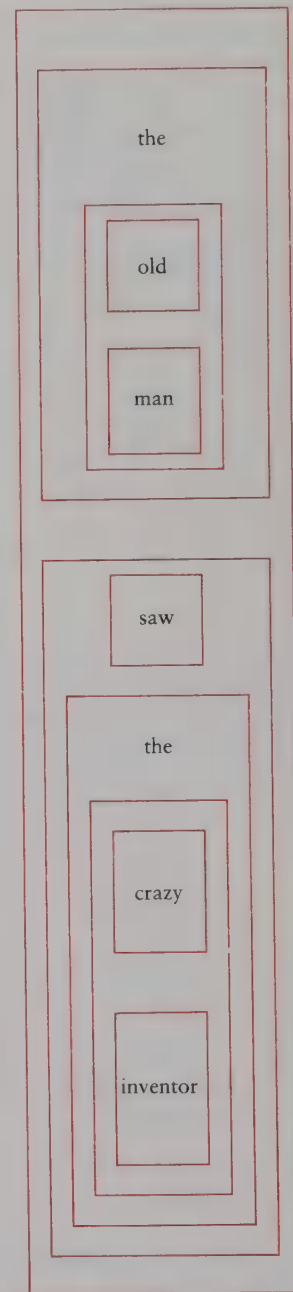
Diagramming

A frequent practice in American schools is the use of a system of vertical and slanting lines to represent the various relationships in a sentence. The representations are often called 'Reed & Kellogg' diagrams, after the authors of a 19th-century English textbook. A long vertical line marks the boundary between subject and predicate; a short vertical line divides verb and direct object; and a short slanting line marks off a complement. Other items are drawn in beneath the main parts of the sentence.

The old man called me a crazy inventor.



The approach shows the relationships between words clearly, but it cannot handle variations in word order: both *I turned off the light* and *I turned the light off* would be diagrammed in the same way.



A little-used 'Chinese box' representation of sentence structure

RULES

Analyses of single sentences are illuminating, as far as they go, but grammarians are concerned to move beyond this, to see whether their analyses work for other sentences in the language. To what other sentences might the above sequence of steps, and the resulting P-marker, also apply? In Noam Chomsky's approach, first outlined in *Syntactic Structures* (1957), the jump from single-sentence analysis is made by devising a set of rules that would 'generate' tree structures such as the above. The procedure can be illustrated using the following rules (but several details from the original approach are omitted for clarity):

S → NP + VP
VP → V + NP
NP → DET + N
V → *chased*
DET → *the*
N → *girl, dog*

The first rule states that a sentence can consist of a noun phrase and a following verb phrase; the second, that a verb phrase can consist of a verb plus a following noun phrase; the third, that a noun phrase can consist of a determiner plus a noun. Each abstract category is then related to the appropriate words, thus enabling the sentence to be generated. Grammars that generate phrase structures in this way have come to be called 'phrase structure grammars' (PSGs).

If we follow these rules through, it can be seen that there is already a significant increase in the 'power' of this grammar over the single-sentence analysis used previously. If we choose *the girl* for the first NP, and *the dog* for the second, we generate *the girl chased the dog*; but if the choices are made the other way round, we generate the sentence *the dog chased the girl*. By the simple device of adding a few more words to the rules, suddenly a vast number of sentences can be generated:

V → *chased, saw, liked* ...
DET → *the, a*
N → *girl, man, horse* ...

the girl chased the horse
the man saw the girl
the horse saw the man etc.

However, if *went* were introduced into the rules, as a possible V, ungrammatical sentences would come to be generated, such as **the girl went the man*. In working out a generative grammar, therefore, a means has to be found to block the generation of this type of sentence, at the same time permitting such sentences as *the man went* to be generated. The history of generative syntax since 1957 is the study of the most efficient ways of writing rules, so as to ensure that a grammar will generate all the grammatical sentences of a language and none of the ungrammatical ones.

Transformations

This tiny fragment of a generative grammar suffices only to illustrate the general conception underlying the approach. 'Real' grammars of this kind contain many rules of considerable complexity and of different types. One special type of rule that was proposed in the first formulations became known as a *transformational* rule. These rules enabled the grammar to show the relationship between sentences that had the same meaning but were of different grammatical form. The link between active and passive sentences, for example, could be shown – such as *the horse chased the man* (active) and *the man was chased by the horse* (passive). The kind of formulation needed to show this is:

$NP_1 + V + NP_2 \rightarrow NP_2 + Aux + Ven + by + NP_1$

which is an economical way of summarizing all the changes you would have to introduce, in order to turn the first sentence into the second. If this formula were to be translated into English, four separate operations would be recognized:

- (i) The first noun phrase in the active sentence (NP_1) is placed at the end of the passive sentence.
- (ii) The second noun phrase in the active sentence (NP_2) is placed at the beginning of the passive sentence.
- (iii) The verb (V) is changed from past tense to past participle (*Ven*), and an auxiliary verb (Aux) is inserted before it.
- (iv) A particle *by* is inserted between the verb and the final noun phrase.

This rule will generate all regular active-passive sentences.

In subsequent development of generative grammar, many kinds of transformational rules came to be used, and the status of such rules in a grammar has proved to be controversial (§65). Recent generative grammars look very different from the model proposed in *Syntactic Structures*. But the fundamental conception of sentence organization as a single process of syntactic derivation remains influential, and it distinguishes this approach from those accounts of syntax that represent grammatical relations using a hierarchy of separate ranks (p. 95).

Generative notation

A major feature of generative grammar is the way special notations have been devised to enable rules to be expressed in an economical way. In particular, different types of brackets, such as (), [], and { } are given different meanings. Round brackets, for example, enclose a grammatical element that is *optional* in a sentence; that is, the sentence would be grammatical even if the element were left out. The rule

NP → DET (ADJ) N

means that a noun phrase can consist of *either* a determiner, adjective, and noun *or* simply a determiner and noun (*the old man* *or* *the man*). A grammar could, of course, list the two possibilities separately, as

NP → DET + N

NP → DET + ADJ + N

but collapsing them into a single rule, through the use of the () convention, saves a great deal of space, and represents something we all 'know' about the structure of the noun phrase.

Rules and 'rules'

The 'rules' of a generative grammar are not to be identified with the prescriptive 'rules' that formed part of traditional grammar (p. 3). A prescriptive grammatical rule is a statement – such as 'You should never end a sentence with a preposition' – that tells us whether we are right or wrong to use a particular construction. Generative rules have no such implication of social correctness. They are objective descriptions of the grammatical patterns that occur.

WORD ORDER

The term 'word order' is somewhat ambiguous, for it can refer both to the order of words in a phrase, and to the order of multi-word units within a sentence. Given the sentence

The cat sat on the mat

both the following involve word-order problems – but they are of very different kinds:

*cat the sat mat the on
*sat the cat on the mat

In linguistic description, word-order studies usually refer to the second type of problem – that is, the sequence in which grammatical elements such as Subject, Verb, and Object occur in sentences. A great deal of attention has been paid to the way in which languages vary the order of these elements, as part of typological studies (§14). Word order, it is hoped, will be a more satisfactory way of classifying languages than the older morphological method (which recognized such types as isolating and inflecting, p.293), into which many languages do not fit neatly.

In comparing word orders across languages, it is important to appreciate that what is being compared is the 'basic' or 'favourite' pattern found in each language. For example, in English, we will encounter such sequences as:

SVO the boy saw the man
OVS Jones I invited – not Smith
VSO govern thou my song (Milton)
OSV strange fits of passion have I known (Wordsworth)
SOV pensive poets painful vigils keep (Pope)

However, only the first of these is the natural, usual, 'unmarked' order in English; the others all convey special effects of an emphatic or poetic kind. The same principle must apply in studying word order in all languages, but it is often not so easy to establish which is the normal word-order pattern and which is the pattern that conveys the special effect. The mere fact of talking to a foreigner, for instance, might motivate a native speaker to change from one order to another, and it often requires great ingenuity on the part of the linguist to determine whether such stylistic changes are taking place.

Typology

Apart from cases of free word order (e.g. Latin, Quechua, Navajo, Fore), there are six logical possibilities: SVO, SOV, VSO, VOS, OSV, OVS. Of these, over 75% of the world's languages use SVO (as in English, French, Hausa, Vietnamese) or SOV (as in Japanese, Amharic, Tibetan, Korean). A further 10–15% use VSO (e.g. Welsh, Tongan, Squamish). Examples of VOS are Malagasy, Tzotzil, and Houailou.

Until recently, Object-initial languages were conspicuous by their absence, and it was thought that

perhaps these did not exist. But a group of OVS languages have now been found, all in the Amazon basin, mainly belonging to the Carib family, e.g. Hixkaryana, Apalai, Bacairi, Makusi. A few other languages (e.g. Jamamadi, Apurina) seem to be OSV. But there is some variability in the data that have been collected so far, with both OVS and OSV being used by some languages.

Word-order generalizations often need careful qualification. Latin, for example, is said to have a free word order, but in fact SOV is a very common pattern in that language. Modern Hebrew is SVO, but Classical Hebrew seemed to favour VSO. German prefers SVO in main clauses, but SOV in subordinate clauses. In Tagalog, the V usually comes first, but there is great variation in what follows, with both OS and SO being widely used. In Japanese, SOV is favoured, but OSV is also very common.

Lisu

This Lolo-Burmese language seems to have free word order, yet it has no morphological cases to mark Subject and Object. A sentence Noun–Verb–Noun might therefore mean either 'N1 did V to N2' or 'N2 did V to N1'. In theory, such a language ought to be unintelligible! But in fact the speakers survive, by relying on context, the use of alternative grammatical constructions, and a modicum of common sense.

OSV in space

Sick I've become.
Strong with the Force you are.
Your father he is.
When nine hundred years you reach, look as good you will not.

The rarity of OSV constructions and languages perhaps explains the impact of this strange speech style, used by the Jedi Master, Yoda, in the film *Return of the Jedi* (1983).



Deep and surface structure

In the standard approach to generative grammar, sentences are analysed in terms of two levels of organization, known as *deep structure* and *surface structure*. At the 'deep' (or 'underlying') level, a sentence structure is represented in an abstract way, displaying all the factors that govern how its meaning should be interpreted. At the 'surface' level, there is a more concrete representation, giving the string of morphemes that closely corresponds to what

we would hear if the sentence were spoken.

This distinction was used to explain sentence ambiguities, by arguing that in such cases a single surface structure correlates with more than one deep structure. An early Chomskyan example was *Flying planes can be dangerous*, which can be related to two underlying sentences: *Planes which fly can be dangerous* and *To fly planes can be dangerous*.

The distinction was also used to relate sentences that

have different surface forms but the same underlying meaning, as in the case of active and passive sentences. *Cats chase mice* and *Mice are chased by cats* were said to have different surface structures, but the same deep structure.

The interpretation and status of the two notions has altered greatly in generative theory over the years (§65), but the basic insight is one that has achieved widespread recognition in linguistics.

Honorific grammar

Several languages make use of a special set of grammatical contrasts, in which different levels of politeness or respect are expressed, according to the mutual status of the participants (§10). An 'honorific' system, as it is often called, is well developed in several oriental languages, such as Korean, Japanese, Tibetan, and Japanese; and although its use is changing, especially among younger generations of speakers, it still plays an important role in the marking of social relationships.

Japanese honorific expression shares with many other languages certain characteristics of formal speech. Local dialect forms are avoided; loan words are often used (Chinese loans, in the case of Japanese); sentences are longer and involve more circumlocution and negative expression (cf. English 'I wonder whether you mightn't ...'). What differentiates Japanese from European languages is the way in which pronouns, verbs, adjectives, and many types of grammatical construction change their form depending on their honorific status. A large number of special forms are permitted, which are classified into 'respect words' (*sonkei-go*), 'condescending words' (*kenzyoo-go*), and 'polite words' (*teinei-go*).

Honorific markers in the morphological system include: (a) a specific honorific prefix, *o-* or *go-*; (b) the complete replacement of a word, e.g. *iw-u* 'say' becomes *ossyar-u*; and (c) a complex system of titular forms (where English would say 'Mr, Mrs, Miss'), all suffixes attached to the name:

-sama	very polite
-san	neutral
-chian	diminutive
-kun	for men only
sensei	traditionally used to a person who was 'born earlier', but now used to someone whose capabilities are respected, especially a teacher or politician

A wide range of pronoun forms is used. Among the first-person forms, we find:

watakushi	very formal male; less formal female
watashi	formal male; neutral female
atakushi	rare male; snobbish female
atashi	chiefly female, colloquial
washi	dialectal, chiefly male, older generation
boku	exclusively male, proscribed in talking to superiors (but cf. p. 21)
ore	colloquial male

Among the second-person forms, we find:

anata	standard, polite, not used to superiors
anta	informal
sochira	polite, very formal
kimi	chiefly men to men of equal or lower status
omae	informal, colloquial, somewhat pejorative

kisama and *temē* derogatory, very impolite
(After S. I. Harada, 1976.)

Miscellany

Even a brief survey of grammatical issues leaves one somewhat in awe at the extraordinary variety of patterns that exist in the languages of the world. Repeatedly the lesson is brought home that there is nothing sacrosanct or superior about the grammar of any one language – a lesson that is particularly apposite for English users, whose language holds a special position in modern society (§59). The following structural differences illustrate this important principle still further.

- English counts in tens and units, as reflected in our number-names: 41 = 'four tens one'. Welsh counts in a mixture of tens and twenties: 20 = *ugain*, 30 = *deg ar hugain* 'ten on twenty', 40 = *deugain* 'two twenties', 50 = *deg a deugain* 'ten and forty'. French also makes some use of twenty: 91 = *quatre-vingt-onze* 'four-twenty-eleven'. Old Hawaiian made use of forty as a counting unit: 50 was 'forty and ten'; 968 was expressed as 'two

four-hundreds and four forties and eight'. Some number systems involve counting backwards: English sees 199 as '100 plus 99'; Yoruba sees it as '200 less 1'. Several languages have no number system: Andamanese makes do with two number-words, one and one-plus. Khoisan languages express one, two, and occasionally three, but rarely more.

- English has a single pair of demonstratives, *this* and *that*, which basically refer to 'near' vs 'further away'. To make other semantic distinctions, we have to use a circumlocution, e.g. 'that one over there'. Japanese has a three-way system: *kono* = near the speaker, *sono* = near the hearer, *ano* = distant from both (in time or place). The Australian language Alyawarra has a four-term system: *nhinha* = 'this', *yanha* = 'that (near)', *nhaka* = 'that (far)', and *awutha* = 'the one mentioned before'. Eskimo has around 30 separate demonstrative forms, expressing such notions as

'that in there', 'that high up there', 'that unseen'.

- English has a single pair of response words that can be used to reply to all questions (other than those beginning with a question-word, such as *why*): *yes* and *no*. In Welsh, there is an indefinite number of response forms, the choice depending on the grammatical form of the question. For example, a question beginning *A oes ...?* (Is there ...?) is replied to by *oes* (yes) or *nag oes* (no); *Ydy Gwen yn mynd?* (Is Gwen going?) → *Ydy/Nag ydy*, *Ydych chi'n mynd?* (Are you going?) → *Ydw/Nag ydw*, *Allwch ...?* (Can you ...?) → *Galla/Na alla*. The principle underlying this proliferation of forms is straightforward, however. In most cases, the reply simply repeats the verb form, allowing for changes in pronouns. It is as if in English there was a system:

Are you going? Yes-I-go.
Is he there? No-he-isn't.
Did I see? Yes-you-saw.

"I miss the good old days
when all we had to worry about
was nouns and verbs."



17 Semantics

Semantics is the study of meaning in language. The term did not come to be widely used until the 20th century, but the subject it represents is very old, reaching back to the writings of Plato and Aristotle, and attracting the special interest of philosophers, logicians, and (these days) linguists (§65). The linguistic approach aims to study the properties of meaning in a systematic and objective way, with reference to as wide a range of utterances and languages as possible. It is thus broader than the approach taken by many logicians and philosophers, who have tended to concentrate on a restricted range of sentences (typically, statements, or 'propositions') within a single language. But logical analysis nonetheless exercises a major influence on contemporary linguistic semantics (p. 107).

Any scientific approach to semantics has to be clearly distinguished from a pejorative sense of the term that has developed in popular use, when people talk about the way language can be manipulated in order to mislead the public. A newspaper headline might read 'Unemployment reduced to semantics' – referring to a new way of counting the unemployed which makes it appear that there are fewer of them. Or someone might say in an argument, 'That's just semantics', implying that the point is purely a verbal quibble, bearing no relationship to anything in the real world. This kind of nuance is absent when we talk about semantics from the objective viewpoint of linguistic research.

THE MEANINGS OF MEANING

In an important early book on the subject, C. K. Ogden & I. A. Richards's *The Meaning of Meaning* (1923), 16 different meanings of the words 'mean/meaning' were distinguished. Here are some of them:

John means to write. 'intends'
A green light means go. 'indicates'
Health means everything. 'has importance'
His look was full of meaning. 'special import'
What is the meaning of life? 'point, purpose'
What does 'capitalist' mean to you? 'convey'
What does 'cornea' mean? 'refer to in the world'

It is the last kind of use that comes closest to the focus of linguistic semantics; but even this is a special kind of enquiry. The question asks for a definition, which is a somewhat unusual form of reply, found more in dictionaries than in everyday speech, that involves the 'translation' of the difficult word into 'easier' words. The study of the properties of definitions is an important part of semantics, but



Semantics and Alice

One of the favourite quotations of semanticists is from Lewis Carroll's *Through the Looking Glass* (1872, Chapter 6), in which Humpty Dumpty turns our conventional understanding of meaning on its head, and thus makes us see more clearly what it has to be about. If everyone were to use words in an idiosyncratic way, as Humpty suggests, the result would be communication anarchy. Only in certain fields – such as literature (§12) – do we tolerate personal deviations from the semantic norms of the language.

'There's glory for you!' 'I don't know what you mean by "glory,"' Alice said. Humpty Dumpty smiled contemptuously. 'Of course you don't – till I tell you. I meant "there's a nice knock-down argument for you!"' 'But "glory" doesn't mean "a nice knock-down argument,"' Alice objected. 'When I use a word,' Humpty Dumpty said, in rather a scornful tone, 'it means just what I choose it to mean – neither more nor less.'

'The question is,' said Alice, 'whether you *can* make words mean so many different things.'

'The question is,' said Humpty Dumpty, 'which is to be master – that's all.'

Alice was too much puzzled to say anything: so after a minute Humpty Dumpty began again.

'They've a temper, some of them – particularly verbs, they're the proudest – adjectives you can do anything with, but not verbs – however, I can manage the whole lot of them! Impenetrability! That's what I say!'

'Would you tell me, please,' said Alice, 'what that means?'

'Now you talk like a reasonable child,' said Humpty Dumpty, looking very much pleased. 'I meant by "impenetrability" that we've had enough of that subject, and it would be just as well if you'd mention what you mean to do next, as I suppose you don't mean to stop here all the rest of your life.'

'That's a great deal to make one word mean,' Alice

said in a thoughtful tone.

'When I make a word do a lot of work like that,' said Humpty Dumpty, 'I always pay it extra.'

'Oh!' said Alice. She was too much puzzled to make any other remark.

'Ah, you should see 'em come round me of a Saturday night,' Humpty Dumpty went on, wagging his head gravely from side to side, 'for to get their wages, you know.'

it is only a part. Of greater importance is the study of the way in which words and sentences convey meaning in the everyday situations of speech and writing.

THREE CONCEPTIONS OF MEANING

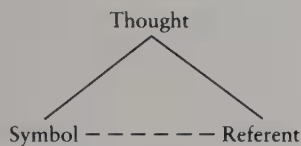
Words → things

A popular view is that words 'name' or 'refer to' things – a view that can be found in the pages of Plato's *Cratylus*. Proper names like *London*, *Bill Brown*, and *Daddy* illustrate this conception, as do several other words and phrases – the labels attached to objects for sale in a shop, or those found

on a paint colour chart. But there are large numbers of words where it is not possible to see what 'thing' the word refers to: verbs such as *ask* or *find*; adjectives such as *difficult* or *popular*; nouns such as *consistency* or *tradition*. In fact, the majority of words seem unable to be related to things, in any clear way.

Words → concepts → things

This view denies a direct link between words and things, arguing that the relationship can be made only through the use of our minds. For every word, there is an associated concept. One of the best-known formulations of this position is the 'semiotic triangle' of Ogden and Richards (1923, p. 99):



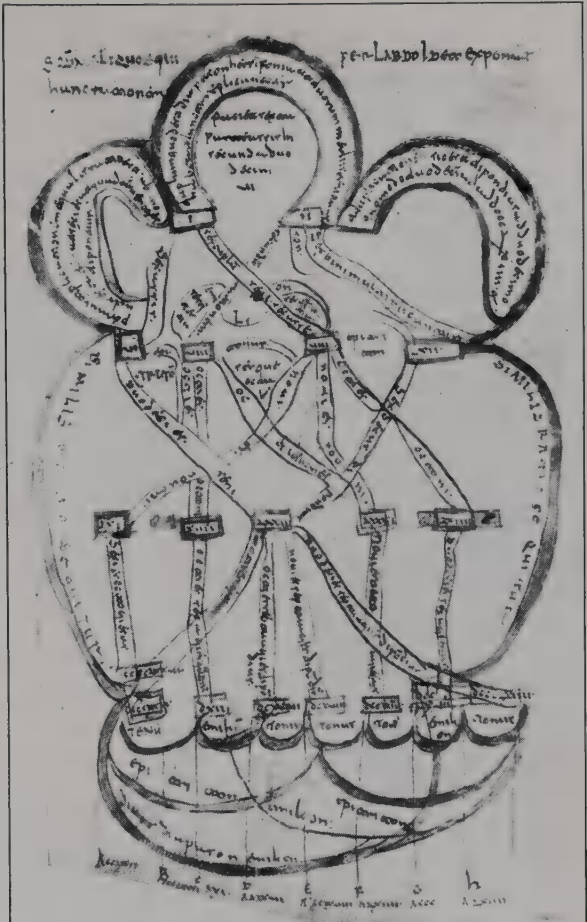
The main criticism of this approach is the insuperable difficulty of identifying 'concepts'. The 'concept' underlying a word such as *tradition* is no easier to define than the 'thing' referred to by *tradition*. Some words do have meanings that are relatively easy to conceptualize, but we certainly do not have neat visual images corresponding to every word we say. Nor is there any guarantee that a concept which might come to mind when I use the word *table* is going to be the same as the one you, the reader, might bring to mind.

Stimuli → words → responses

Leonard Bloomfield (1887–1949) expounded a behaviourist view of meaning in his book *Language* (1933): meaning is something that can be deduced solely from a study of the situation in which speech is used – the stimulus (S) that led someone to speak (r), and the response (R) that resulted from this speech (s). He draws this as follows:



In Bloomfield's example, Jill is hungry, sees an apple (S) and asks Jack to get it for her (r); this linguistic stimulus (s) leads to Jack getting the apple (R). Bloomfield argues that you can tell what the meaning of r...s must be just by observing the events that accompanied it. However, in very many situations it is difficult to demonstrate what the relevant features of the stimulus/response are – a real problem when events are not clearly visible in physical terms (as in the expression of feelings). And it proves even more difficult to handle cases where people do not act in the 'predicted' way (if Jack did not fetch the apple, perhaps because of a quarrel with Jill at Monte Carlo two years before).



A design by Isidore of Seville (c. AD 555–636) The design attempts to show a link between a word's shape and its meaning. Isidore believed that the basic meaning of a word could be found if it could be traced back to its primitive shape. The discussion is found in the ninth book of his *Originum sive etymologiarum libri XX*, which is largely about questions of semantic history and the origins of language.

Natural or conventional?

The Greek philosophers were the first to debate the nature of meaning, from which two main views emerged. The *naturalist* view, deriving largely from Plato (427–347 BC), maintained that there was an intrinsic connection between sound and sense. The *conventionalist* view, largely Aristotelian, held that this connection was purely arbitrary (§65). In their extreme forms, both views are untenable. If the naturalist view were valid, we would be able to tell the meaning of words just by hearing them. Only onomatopoeic words (§30), such as *bow wow* and *splash*, come close to this,

and even they change greatly from language to language. But naturalistic thinking is still widely encountered, especially in the concern many people have over the use of certain words (to do with death or sex, for example, p. 61), or in the readiness with which they make judgments about the appropriateness of words. 'Look at them, sir,' says Aldous Huxley's character Old Rowley, pointing to swine wallowing in the mud, 'Rightly is they called "pigs".' (Crome Yellow, 1921). The conventionalist position is nearer the truth, as it emphasizes the arbitrary relationship between words

and things – a principle accepted by modern semanticists. There is nothing in the form of the word *pig* that bears any direct relationship to the 'thing'. But it is equally untenable to think of language, as the conventionalists did, solely as the result of an *agreement* between people to use words in a certain way. Such a procedure would presuppose the prior existence of language, to formulate the agreement in the first place. Diodorus of Megara (4th century BC) nonetheless supported the conventionalist position to the extent of calling his slaves by the names of Greek particles!

Modern semantics

In the past, semantic debate has been largely concerned with discovering what ‘meaning’ is, as a concept in its own right. The enquiries have undoubtedly increased our understanding of the nature of the problem, but an accepted definition of ‘meaning’ is as far away today as it was in Plato’s time. Why should this be so?

It is now widely held that ‘meaning’ is not some kind of ‘entity’ separate from language – any more than measures such as ‘height’ or ‘length’ have some kind of independent existence. To say that objects ‘have height’ means only that they are so many units high; it does not mean that there is an abstract property of ‘height’ that exists independently of objects. In the same way, it is argued, to say that words ‘have meaning’ means only that they are used in a certain way in a sentence. We can examine the meaning of individual words and sentences – but there is no ‘meaning’ beyond that.

In modern linguistics, then, meaning is studied by making detailed analyses of the way words and sentences are used in specific contexts. It is an approach shared by several philosophers and psychologists (p. 412). Ludwig Wittgenstein (1889–1951), in particular, stressed its importance in his dictum: ‘the meaning of a word is its use in the language’.

SENSE vs REFERENCE

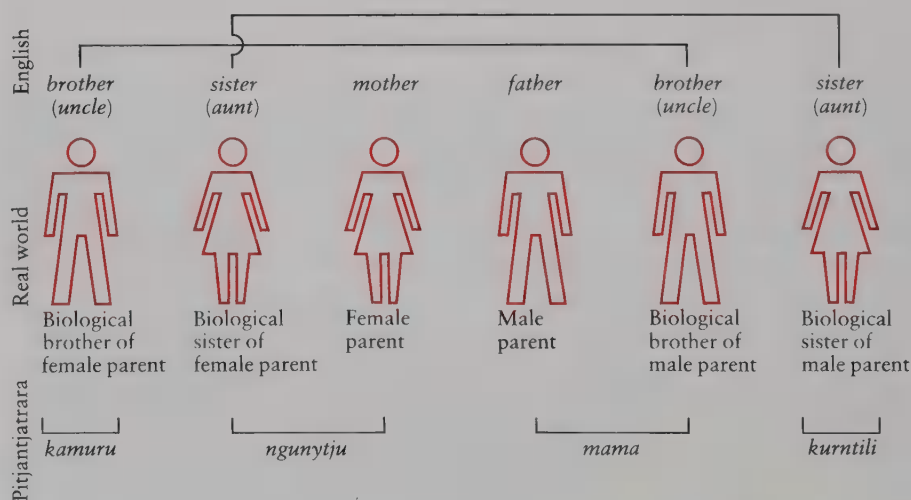
Semantics is not directly concerned with the study of the external world, or its conceptualization. The world of non-linguistic experience is the province of physicists, geographers, psychologists, and others. Nor, as we have seen (p. 101), is semantics easily able to cope with the study of how language *refers* to this external world – the notion of ‘reference’. Rather, the primary focus of the modern subject is on the way people relate words to each other within the framework of their language – on their ‘sense’, rather than their reference.

The distinction between sense and reference is a critical one, because it allows us to study the many cases where we happily use words, even though they do not naturally correspond to the way things are in the world. This may be difficult to see if we restrict our study to a single language, but when we look at how different languages ‘parcel out’ the world, the distinction is forced upon us. For example, in the ‘real’ world, mothers and fathers have brothers and sisters. In English, there are no single words expressing the notions ‘mother’s brother’, ‘father’s brother’, ‘mother’s sister’, or ‘father’s sister’, and we have to use a circumlocution to make the distinction. In the Australian language Pitjantjatjara, however, we have a different situation: *ngunyitju* = ‘mother’s sister’, *kamuru* = ‘mother’s brother’, *kurntili* = ‘father’s sister’, and *mama* = ‘father’s brother’. There is also a complication (to English ways of thinking): *mama* also means ‘father’, and *ngunyitju* also means ‘mother’.

What is plain, though, is that the same biological relationships are given quite different linguistic treatment between the two languages. Family photographs would look the same, but the words would have different senses (see below).

But even within a single language, we need to distinguish sense from reference, to explain the way language makes divisions where there are none in reality. The neat scientific classifications of fauna and flora, where each name has its place in a system of terms, are not typical of language. In everyday life, we use such words as *hill* and *mountain*, *cup* and *glass*, or *stream* and *river*, where the real-world notions are quite indeterminate. When does a stream become a river, or a hill a mountain? And would all agree about which of the pictures (right) count as a *chair*?

There is also the problem of how we explain what a word’s meaning is. Let us imagine someone who had encountered the word *chair* and did not know what it meant. One procedure would be to explain its reference: we could take the person to a chair and point to it. But this would be of limited help, for how would the person know from that experience which *other* objects in the world should also be called chairs? The wrong deduction might also be made, that what we were pointing at was the quality ‘wooden’, or the concept of ‘furniture’ – the kind of error children make when they learn vocabulary (§42). A better procedure would be to explain the sense of the word, using a rough definition such as ‘a seat with four legs and a back’. Such a definition would enable the person to look out for other objects with similar properties, and thus use the word appropriately. The definition could then be sharpened, as related words were met (e.g. *armchair*, *stool*). But this whole process of vocabulary learning continues without any direct reference to the objects in the real world: there is total reliance on the use of words to explain the sense of other words – a process that reaches its logical conclusion in a dictionary (§18).



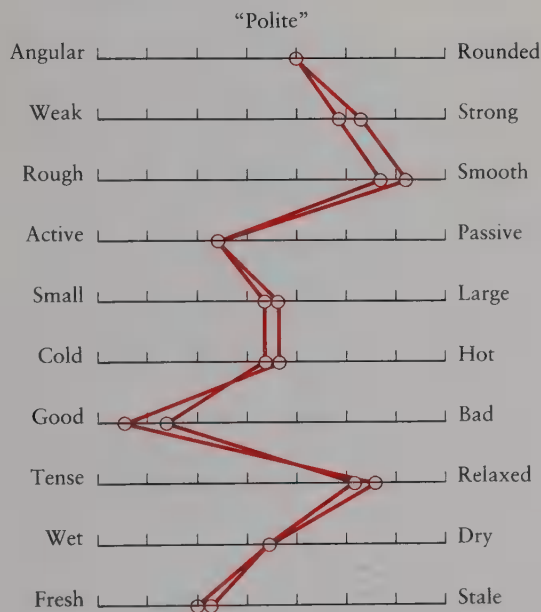
SEMANTIC SPACE

Psychologists also share the concern to establish the semantic properties of individual words, and several approaches have been proposed to plot differences and quantify the psychological ‘distance’ between words.

A pioneering work in this field was C. E. Osgood, G. Suci, & P. Tannenbaum, *The Measurement of Meaning* (1957), which was a study of ‘affective’ meaning – the emotional reactions attached to a word. Each word was subjected to a test that they called a ‘semantic differential’ – the name reflecting the view that it was possible to analyse meaning into a range of different dimensions. Osgood likened his procedure to a game of Twenty Questions, in which each question (e.g. ‘Is it good or bad? fast or slow? small or large?’) would aim to locate a concept in semantic space. The questions were presented as seven-point scales, with the opposed adjectives at each end, such as

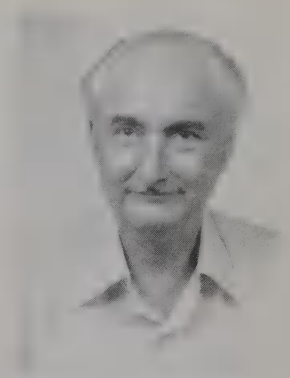
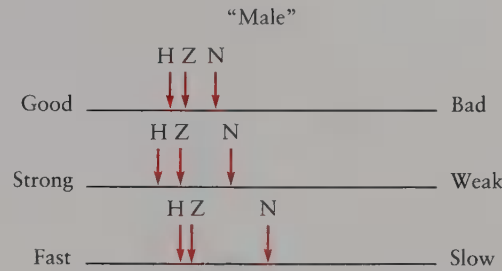
good ————— bad

and subjects were asked to rate words in terms of where they would fall on these scales. If they felt that *car* was ‘good’, for example, they would place a mark towards the ‘good’ end of the first scale; if ‘bad’, towards the other end. The seven positions allowed for variations in degree of feeling. Ten of the scales are illustrated below, giving the average responses from two groups of 20 subjects to the word *polite* (after C. E. Osgood, 1952):



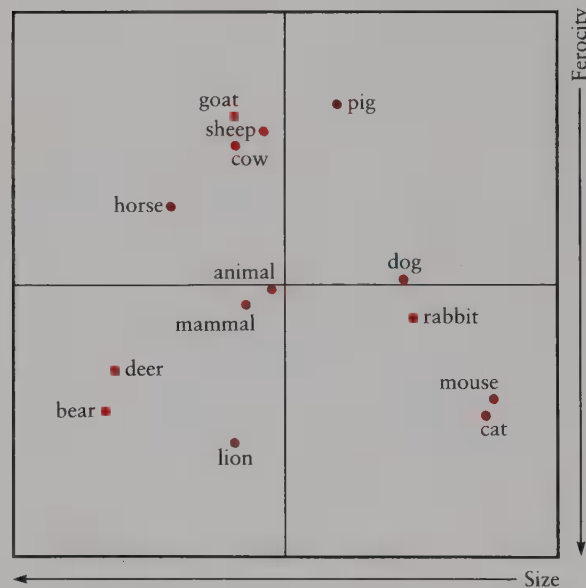
The method was also used to make comparisons between cultural groups. For example, *noise* is a highly affective concept for the Japanese, who tended to react to it using the extremes of the polar scales; it is not so for Americans or Kannada-speaking Indians. The word *male* varies in its connotations between Hopi (H), Zuñi (Z), and Navaho

(N) Indians, the first two groups being fairly close together (after H. Maclay & E. E. Ware, 1961).



Charles E. Osgood (1916–)

The semantic differential procedure is a limited one. It does not provide information about the basic meaning of a word but only about the emotions the word generates. It tells us, for example, that *mother* might be ‘very good’, ‘slightly strong’, etc., but it does not tell us that the word means ‘adult female parent’. To display this kind of information, other ways of working with semantic space are required. We can illustrate this using the results of a technique in which people judge the similarities between words. In the diagram, mammal names are located in a space where the horizontal dimension represents size and the vertical dimension represents ferocity (after L. J. Rips *et al.*, 1973). Larger animals are on the left; more ferocious animals are towards the bottom. The more similar any two animals are, the closer they are placed in the space.



This is a very simple analysis, which it would be more difficult to make for words where the relevant dimensions of meaning are less clear-cut (items of furniture, for example). But the general approach is illuminating, with considerable research potential.

SEMANTIC STRUCTURE

One of the most productive approaches to the semantic analysis of vocabulary has come from the application of structuralist ideas (§65). From this viewpoint, language is a network of systematic relationships between units. In phonology, for example, the relationships exist between sounds – or phonemes (§28). What are the equivalent semantic units, and how are they related?

Lexemes

So far in this section, we have used the term ‘word’ to discuss semantic units, and this is the traditional use. People readily talk about the ‘meaning of words’. However, if we wish to enquire precisely into semantic matters, this term will not do, and an alternative must be found. There are three main reasons.

1. The term *word* is used in ways that obscure the study of meaning. The forms *walk*, *walks*, *walking*, and *walked* could all be called ‘different words’; yet from a semantic point of view, they are all variants of the same underlying unit, ‘walk’. If the variants are referred to as ‘words’, though, what should the underlying unit be called? It would not be particularly clear to say that ‘these four words are different forms of the same word’.
2. The term *word* is useless for the study of idioms, which are also units of meaning. A much-used example is *kick the bucket* (= ‘die’). Here we have a single unit of meaning, which happens to consist of three words. Again, it would hardly be clear to talk of this unit as a ‘word’, if we then go on to say that this word consists of three words.
3. The term *word* has in any case been appropriated for use elsewhere in linguistic study – in the field of grammar, where it does sterling service at the junction between syntax and morphology (p. 90).

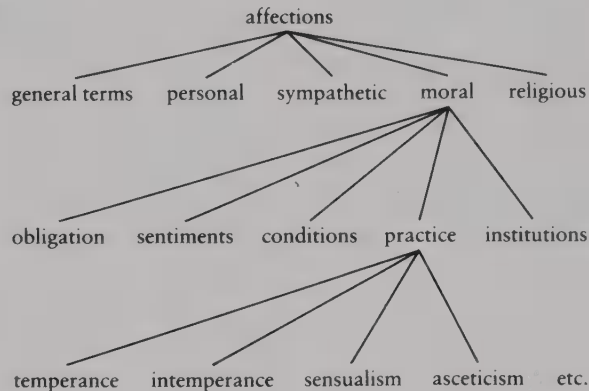
For such reasons, most linguists prefer to talk about the basic units of semantic analysis with fresh terminology, and both *lexeme* and *lexical item* are in common use. We may now avoid the lack of clarity referred to above, and say that the ‘lexeme’ WALK occurs in several variant forms – the ‘words’ *walk*, *walks*, etc. Similarly, we can say that the ‘lexeme’ KICK THE BUCKET contains three ‘words’; and so on. It is lexemes that are usually listed as headwords in a dictionary. Accordingly, we shall put this term to use in the remaining parts of this section.

SEMANTIC FIELDS

One way of imposing some order on vocabulary is to organize it into ‘fields’ of meaning. Within each field, the lexemes interrelate, and define each other in specific ways. For example, the various lexemes for ‘parts of the body’ (*head*, *neck*, *shoulders*, etc.) form a semantic field, as do the different lexemes for ‘vehicles’, ‘fruit’, ‘tools’, or

‘colour’. It has been argued that the whole of a language’s vocabulary is structured into fields; but there is in fact a great deal of variation as we move from one part of the language to another. There would be little difficulty gathering together all the English lexemes for ‘body parts’, for example; but it would be very difficult to do the same job for ‘noise’ or ‘ornaments’.

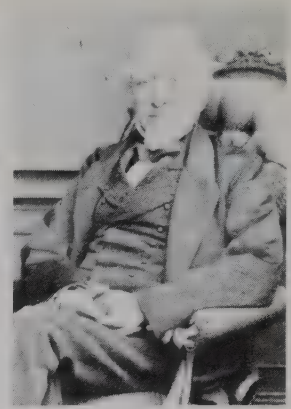
There have been many philosophical and linguistic attempts to classify the concepts or words in a language – notably, those associated with the 17th-century quest for a universal language (§58). In recent times, the most influential and popular work has been the *Thesaurus* of Peter Mark Roget (1779–1869), first published in 1852. Roget divided the vocabulary into six main areas: *abstract relations*, *space*, *matter*, *intellect*, *volition*, and *affections*. Each area was given a detailed and exhaustive sub-classification, producing 1,000 semantic categories in all. One path through the thesaurus is illustrated below:



Groups of words are then listed under each of these headings and classified into the main parts of speech. For example, in the 1962 edition of the work (p. 625), we find the following items listed as a section within *temperance* (numbers refer to other thesaurus sections; keywords are in italics):

abstainer, total a., teetotaller 948n. *sober person*; prohibitionist, pussyfoot; vegetarian, fruitarian, Pythagorean; Encratite; dieter, banter, faster; enemy of excess, Spartan 945n. *ascetic*.

Thesauri of this kind have now been produced for several languages, and prove to be a useful adjunct to many practical linguistic activities, such as professional writing, translating, and setting or solving crosswords. For the semanticist, however, their value is limited, as they contain no information about the sense relationships between individual lexemes, and items that come from different regional, social, or professional varieties (§§8–11) are juxtaposed without comment. To study the structure of a semantic field, more precise means of plotting the sense relations between lexemes need to be used.

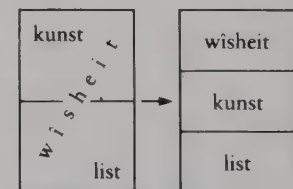


Roget (1779–1869)

Semantic change

The linguistic approach to semantic fields was first propounded by German scholars in the 1930s. In one of the earliest studies (J. Trier, 1934), the approach showed how the structure of a semantic field can change over time. Middle High German terms for ‘knowledge’ changed greatly between 1200 and 1300. In 1200, a German had no separate lexeme for the quality of cleverness. The language contained *kunst* (‘courtly skills’) and *list* (‘non-courtly skills’), and there was also *wisheit* for any form of knowledge, whether courtly or not, mundane or divine.

A hundred years later, everything was different. *Wisheit* had developed the restricted meaning of ‘religious experience’; *kunst* was beginning to take on the meaning of ‘art/skill’, and *wizzen* (modern *Wissen*) had more the meaning of ‘knowledge’. *List* had left the field entirely, as it had begun to develop pejorative connotations (cf. its sense of ‘cunning’ or ‘trick’ in Modern German). The whole of this change can be summarized in the form of two diagrams:



For a similar use of diagrams in the comparison of modern languages, see p. 106.

SENSE RELATIONSHIPS

How are the lexemes of a language organized? To think of them as a list, such as we might find in a dictionary, is highly misleading. There is no semantic reality in alphabetical order; on the contrary, alphabetical order destroys semantic structure, keeping apart lexemes that should belong together (such as *aunt* and *uncle*, or *big* and *little*). Rather, we need to develop an alternative conception, based on our intuitions that groups of lexemes are related in sense.

Accounts of semantic structure recognize several kinds of sense relations between lexemes. Some result from the way lexemes occur in sequences (*syntagmatic* relations); others from the way in which lexemes can substitute for each other (*paradigmatic* relations) (§65). For example, in the sentence *It was a very auspicious* —, English speakers 'know' that the omitted word will be one of a very small set (e.g. *occasion*, *event*) — unless, of course, a literary or humorous point is being made (*It was a very auspicious kilt*). This would be a syntagmatic semantic relationship. By contrast, the relationship between the following two sentences is a paradigmatic one: *Is that a new radio?* No, *it's an old radio*. The substitution of *old* for *new* results in a change of meaning that we recognize as an 'opposite'.

Several types of paradigmatic relationship have been recognized, some of which form a familiar part of language syllabuses in school. These include:

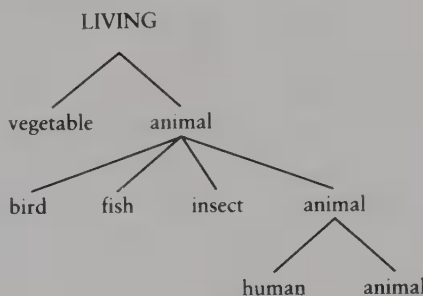
- **Synonymy** This is the relationship of 'sameness' of meaning, e.g. *kingly/royal/regal*, *pavement/sidewalk*, *youth/youngster*. The search for synonyms is a longstanding pedagogical exercise, but it is as well to remember that lexemes rarely (if ever) have *exactly* the same meaning. There are usually stylistic, regional, emotional, or other differences to consider. And context must be taken into account. Two lexemes might be synonymous in one sentence but different in another: *range* and *selection* are synonyms in *What a nice — of furnishings*, but not in *There's the mountain —*.

- **Hyponymy** This less familiar relationship refers to the notion of 'inclusion', whereby we can say that 'an X is a kind of Y'. For example, *rose* is a hyponym of *flower*, *car* of *vehicle*. Several lexemes will be 'co-hyponyms' of the same superordinate term: *rose*, *pansy*, *tulip* ... Once again, it must be stressed that this is a linguistic, and not a real-world, classification. Languages differ in their superordinate terms, and in the hyponyms they accept under one such term. For instance, in Classical Greek the lexemes for 'carpenter', 'doctor', 'flautist', and other occupations are all hyponyms of *demiourgos*; but there is no equivalent superordinate term in English. We simply do not have a single 'occupational' term that would allow us to say 'A carpenter/doctor/flautist, etc. is a kind of

The 'animal' kingdom

Animal is a strange lexeme in English, because it can be used at three levels in a hierarchy of inclusion:

1. in a classification of living things, it contrasts with *vegetable*, to include birds, fishes, and insects;
2. it contrasts with *bird*, *fish*, and *insect* to include humans and beasts;
3. it contrasts with *human*.



—'. Likewise, *potato* is a hyponym of *vegetable* in English, but *Kartoffel* is not included among *Gemüse* in German (after J. Lyons, 1963).

- **Antonymy** This is the relationship of 'oppositeness of meaning'. Antonyms are often thought of in the same breath as synonyms, but they are in fact very different. There may be no true synonyms, but there are several kinds of antonyms. Some of the most important types are:

- *gradable* antonyms, such as *big/small*, *good/bad*, which permit the expression of degrees (*very big*, *quite small*, etc.);

- *nongradable* antonyms (also called *complementary* terms), which do not permit degrees of contrast, such as *single/married*, *male/female*; it is not possible to talk of *very male*, *quite married*, etc., except in jest; and

- *converse* terms: two-way contrasts that are interdependent, such as *buy/sell* or *parent/child*; one member presupposes the other.

- **Incompatibility** Under this heading are grouped sets of lexemes that are mutually exclusive members of the same superordinate category. For example, *red*, *green*, etc. are incompatible lexemes within the category *colour*: it would not be possible to say 'I am thinking of a single colour, and it is green and red.' On the other hand, *red* is not incompatible with such lexemes as *round* or *dirty* (something can be at once 'red and round'). Terms for fruit, flowers, weekdays, and musical instruments illustrate other incompatible sets. Once again, we must be prepared for some unexpected usages — as in English, where *black*, *white*, and *grey* are not always included within the category of *colour* (as with *black-and-white* films and TV sets), and where *red* can be excluded from this category (as with snooker, where one may proceed to play the 'coloured' balls only after all the red balls have been potted).

The company lexemes keep

'You shall know a word by the company it keeps', said the British linguist J. R. Firth (1890–1960) in 1957, referring to the syntagmatic tendency of lexemes to work together ('collocate') in predictable ways. *Blond* collocates with *hair*, *flock* with *sheep*, *neigh* with *horse*. Some collocations are totally predictable, such as *spick* with *span*, or *addled* with *brains* or *eggs*. Others are much less so: *letter* collocates with a wide range of lexemes, such as *alphabet* and *spelling*, and (in another sense) *box*, *post*, and *write*. Yet other lexemes are so widely used that they have no predictable collocates at all, such as *have* and *get*.

Collocation should not be confused with 'association of ideas'. The way lexemes work together may have nothing to do with 'ideas'. We say in English *green with jealousy* (not *blue*, *red*, etc.), though there is nothing literally 'green' about 'jealousy'. *Coffee* can be *white*, though the colour is brown. Both lads and lasses may be well rounded enough to be called *buxom*, but this lexeme is used only with the latter.

Collocations differ greatly between languages, and provide a major difficulty in mastering foreign languages. In English, we 'face' problems and 'interpret' dreams; but in modern Hebrew, we have to 'stand in front of' problems and 'solve' dreams. In Japanese the verb for 'drink' collocates with water and soup, but also with tablets and cigarettes.

The more fixed a collocation is, the more we think of it as an 'idiom' — a pattern to be learned as a whole, and not as the 'sum of its parts'. Thus we find French *broyer du noir* (lit. 'grind' + 'black'), meaning to 'have the blues' or 'be browned off' — a nice instance of the arbitrary use of colour terms.

Collocations are quite different from the idiosyncratic links between ideas that can be verbally expressed. On a psychiatrist's couch, we may 'free associate', responding to *farm* with *Easter*, or *jam* with *mother*. This is not collocation, which is a link between lexemes made by all who speak a language.

COLOUR LEXEMES

The colour spectrum is a continuous band, lacking any clear physical boundaries. The semantic field of colour has therefore attracted particular attention because it demonstrates very clearly the different patterns of lexical use in a language. English has 11 basic colour lexemes: *white, black, red, green, yellow, blue, brown, purple, pink, orange, and grey*. In contrast:

- There were no generic lexemes for 'brown' or 'grey' in Latin; modern Romance forms (such as French *brun, gris*) have been borrowed from Germanic. Navaho has a single lexeme for both.
- Navaho also makes no lexical distinction between 'blue' and 'green'. On the other hand, it has two terms for 'black', distinguishing the black of darkness from the black of such objects as coal.
- Russian makes a distinction between two kinds of 'blue', *sinij* vs *goluboj*, where English has to use circumlocutions: 'dark blue' vs 'sky blue'. Hungarian has two terms for 'red'.
- Japanese *awo* can mean 'green', 'blue', or 'dark', depending on context (e.g. vegetables, sea, clouds).
- In Hanunóo, there are just four basic colour terms, 'black', 'white', 'red', and 'green'.
- Some New Guinea Highland languages have terms only for 'black' and 'white' – perhaps better translated as 'dark' vs 'light'.
- In some languages the situation is more difficult to express in words, and a field diagram is clearer. Literary Welsh, for example, divides the green–brown part of the spectrum quite differently from English:

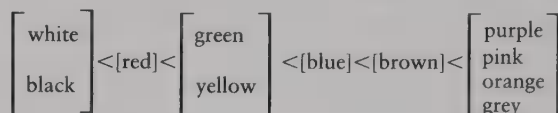
green	<i>gwyrrdd</i>
blue	<i>glas</i>
grey	
brown	<i>llwydd</i>

Modern Welsh is similar to English, but even so, *glas* is used for the colour of growing things (though it otherwise is equivalent to *blue*).

Colour universals?

The differences between the colour terms of various languages are striking, and might lead us to conclude that each language has worked out a unique system in a totally arbitrary way. A 1969 study by B. Berlin & P. Kay, however, argued the opposite. After studying the colour systems of 98 languages, they concluded that there is a universal inventory of only 11 basic colour categories, and all languages use either these 11 or fewer. 'Basic' was interpreted to mean that the terms used only

a single morpheme (excluding *light brown*, etc.), were in common use (excluding *indigo*), applied to many objects (excluding *blond*), and were not contained within another colour (excluding *scarlet*). They also claimed (p. 25) that these basic terms were ordered, as follows:



If a language has a term to the right of the sign <, it will also have all the terms to the left.

These claims are not without controversy. Obtaining reliable data from native speakers about such matters is a problem, especially as their judgments might have been coloured by their exposure to other languages. Some languages, also, seem to have 12 basic terms (e.g. Russian). But the research has demonstrated some impressive similarities across a wide range of languages.

POLYSEMY OR HOMONYMY?

- Polysemy* refers to cases where a lexeme has more than one meaning: for example, *chip* can mean a piece of wood, food, or electronic circuit. People see no problem in saying that 'the word *chip* has several different meanings in English'.

- Homonymy* refers to cases where two (or more) different lexemes have the same shape: for example, *bank* is both a building and an area of ground. Again, people see no problem in saying that 'these are two different words in English'.

This second reaction would also be given to those cases where lexemes were only 'half' identical in shape:

- *homophones*, which have the same pronunciation, but different spelling (e.g. *threw* vs *through*);
- *homographs*, which have the same spelling, but different pronunciation (e.g. *wind* – air movement vs bend).

The distinction seems clear enough, and dictionaries treat cases of multiple meaning either as polysemy or as homonymy. But in fact it is not always easy to decide which we are dealing with, and dictionaries sometimes differ in their decisions. Are *table* (furniture) and *table* (arrangement of data) two different words, or the same word with two meanings? Dictionaries usually go for the latter solution, on grounds of a shared etymology. On the other hand, *pupil* (in school) and *pupil* (of the eye) are usually listed as different words – though in fact they have the same historical origin. French *voler* 'fly' and *voler* 'steal' are similar: they are now thought of as different words, but both derive from Latin *volare*. There is often a conflict between historical criteria and present-day intuition, in sorting out cases of polysemy and homonymy.

Kinship contrasts

Another semantic field which has been much studied is that of kinship. Here too there are interesting differences between languages:

- Hungarian had no terms for 'brother' or 'sister' until the 19th century, though it did have separate terms for 'elder' and 'younger' brothers and sisters.

- Malay has a generic term for both 'sibling' and 'cousin'.
- There is no single term for 'grandfather' or 'grandmother' in Swedish: *farfar* = 'father's father', *morfar* = 'mother's father', *farmor* = 'father's mother', and *mor-mor* = 'mother's mother'.
- In Njama (Australia), some terms express generation distance, e.g. a man can use *maili* both for 'father's father' and 'daughter's son's wife's sister' – both are two generations away.
- Latin distinguished 'father's brother' (*patruus*), 'father's sister' (*matertera*), 'mother's brother' (*avunculus*), and 'mother's sister' (*amita*), but modern Romance languages have reduced these to two (e.g. French *oncle* and *tante*, derived from the maternal terms).

Deixis

Every language has a set of lexemes which can be interpreted only with reference to the speaker's position in space or time. These are known as *deictic* forms (from the Greek word for 'pointing'), and the conditions governing their use have attracted especial attention in recent semantics. They fall into three main types.

- Personal deixis* The use of pronouns, such as *I* and *you*, which identify who is taking part in the discourse.
- Spatial deixis* Forms that distinguish the position of the speaker in relation to other people or objects, such as *this/that, here/there* (p. 99), *bring/take, come/go*. *Come*, for example, implies direction towards the speaker – *Come here!* (but not **Go here!*).
- Temporal deixis* Forms that distinguish time with reference to the speaker, such as *now, yesterday, then*, and the various kinds of tense marker.

SEMANTIC COMPONENTS

A further way to study lexical meaning is by analysing lexemes into a series of semantic features, or components. *Man*, for example, could be analysed as ADULT, HUMAN, and MALE. The approach was originally devised by anthropologists as a means of comparing vocabulary from different cultures, and it has been developed by semanticists as a general framework for the analysis of meaning.

Whole systems of relationships can be established, using a small set of components. For example, the components ADULT/NON-ADULT and MALE/FEMALE can be used for the following:

man (ADULT, MALE), woman (ADULT, FEMALE)
boy (NON-ADULT, MALE), girl (NON-ADULT, FEMALE).

Many animals display a similar pattern (though lacking a male/female non-adult distinction):

MALE	FEMALE	NON-ADULT
bull	cow	calf
ram	ewe	lamb
boar	sow	piglet

In componential analysis, contrasts are usually presented in terms of + or –, and often drawn in a matrix. Thus, we could use +MALE and –MALE (or, of course, +FEMALE and –FEMALE) to summarize the above possibilities:

	bull	ram	boar	cow	ewe	sow	calf	lamb	piglet
MALE	+	+	+	–	–	–	++	++	++
FEMALE	–	–	–	+	+	+	+-	+-	+-

The analyses become more interesting, as the lexemes become more complex. Here, for instance, is a possible matrix for some human motion verbs.

	NATURAL	HURRIED	FORWARD	ONE FOOT ALWAYS ON GROUND
walk	+	–	+	+
march	–	+	+	+
run	–	+	+	–
limp	–	–	+	+

It is easy, using a system of this kind, to see what lexical gaps there are in a language. For example, this matrix suggests there is no single English lexeme expressing the notion of ‘human using legs to move backwards’. On the other hand, it is not always so easy to decide which are the relevant components of a lexeme and whether they can be applied in a binary (+/–) way. Would *swim* be +HURRIED or –HURRIED in this matrix? Or, in other fields, would *soup* be +EAT or –EAT, and *porridge* +LIQUID or –LIQUID?

SENTENCE MEANING

The study of meaning takes us by degrees through the whole of a language, and it proves difficult to draw a neat line around the semantic component of any linguistic framework (§13). Much of the focus of traditional semantics has been on vocabulary, but contemporary semantics is increasingly concerned with the analysis of sentence meaning – or, at least, of those aspects of sentence meaning that cannot be predicted from the ‘sum’ of the individual lexemes.

■ *Prosodic meaning* The way a sentence is said, using the prosody of the language (§29), can radically alter the meaning. Any marked change in emphasis, for example, can lead to a sentence being interpreted in a fresh light. Each of the following sentences carries a different implication, as the stress (indicated by capitals) moves:

John's bought a red CAR (not a red bicycle).
John's bought a RED car (not a green one).
JOHN's bought a red car (not Michael).

The prosody informs us of what information in the sentence can be taken for granted (is ‘given’) and what is of special significance (is ‘new’).

■ *Grammatical meaning* The categories that are established by grammatical analysis can also be analysed from a semantic point of view. A sentence such as *John read a book yesterday* consists of Subject + Verb + Object + Adverbial (p. 95); but it can also be analysed as an ‘actor’ performing an ‘action’ on a ‘goal’ at a certain ‘time’. There is a great deal to be said about the ‘semantic roles’ played by syntactic elements – an area of study that falls uneasily between semantics and grammar.

■ *Pragmatic meaning* The function performed by the sentence in a discourse needs to be considered. The meaning of the sentence *There's some chalk on the floor* seems plain enough; but in some situations it would be interpreted as a statement of fact (‘Have you seen any chalk?’) and in others as a veiled command (as when a teacher might point out the chalk to a child in class). The pragmatic study of sentence function is reviewed in §21, but it overlaps greatly with the field of semantics.

■ *Social meaning* The choice of a sentence may directly affect the social relationships between the participants. We may convey such impressions as politeness, rudeness, competence, or distance, and this will affect our status and role within a community. ‘What do you mean by talking to me like that?’ is a question that raises larger issues than the meaning of the individual lexemes and sentences that have been used.

■ *Propositional meaning* Perhaps the most important trend in modern semantics is the investigation of sentence meaning using ideas derived from philosophy and logic. In this kind of approach, a careful distinction is drawn between sentences (grammatical units, p. 94) and propositions. A proposition is the unit of meaning that identifies the subject matter of a statement; it describes some state of affairs, and takes the form of a declarative sentence, e.g. *Mary loves Michael*. In such theories as ‘truth-conditional semantics’, sentences are analysed in terms of the underlying propositions they express, and these propositions are then tested to see whether they would be true or false, in relation to the real world. The theories are controversial, and require not a little expertise in formal logic to be understood. But they may in due course provide a level of general explanation for semantic observations that the subject has hitherto lacked.

Grammar or semantics

The uncertain boundary between semantics and grammar is a classic problem in linguistic theory. It can be illustrated by the many sentences that are used in a habitual manner, and are thus semi-idiomatic in type, falling midway between the ‘straightforward’ idioms such as *raining cats and dogs* and clear cases of sentences which follow the normal rules of grammar, such as *The man kicked the ball*.

In one study, a large number of habitually used expressions were collected, based on the lexeme *think*. They included:

Come to think of it . . .
What do you think?
I thought better of it.
Think nothing of it.
Think it over.
It doesn't bear thinking about.
I thought you knew.
I think so.
What I think is . . .
I was just thinking aloud.
Who'd have thought it?
Who do you think you are?
(After A. Pawley & F. H. Syder, 1983, pp. 213–14.)

It is argued that people have memorized expressions of this kind, as part of the process of building up fluent connected speech (the phenomenon is less obvious in the written language). On the other hand, these ‘lexicalized sentence stems’, as they were called, are plainly not as ‘fixed’ in their structure as conventional idioms, and their meaning can be predicted quite accurately from their constituent lexemes (unlike, say, *raining cats and dogs*). The result is an area of usage that lies midway between the domain of grammar, which focusses on productive sentence types, and that of the lexicon, which focusses on the properties of particular lexical items.

18 Dictionaries

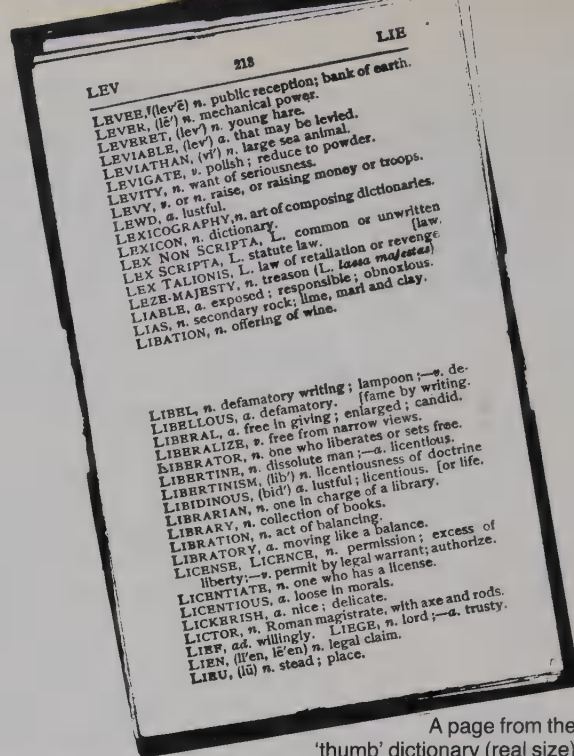
A dictionary is a reference book that lists the words of one or more languages, usually in alphabetical order, along with information about their spelling, pronunciation, grammatical status, meaning, history, and use. The process of compiling dictionaries is known as *lexicography*, and the people who carry out this task are *lexicographers* – ‘harmless drudges’, as Dr Johnson defined them.

In literate societies, most homes have a dictionary, but there is enormous variation in the way this is used. Some people constantly use them as a serious educational tool, aiming to improve their own or their children’s ‘word power’. Others use them only for fun – as the arbiter in a game of Scrabble, for instance (p.64). Others do not use them at all and do not replace them when they fall badly out of date. The continued use of 10- or 20-year-old dictionaries is by no means uncommon.

For a book that is viewed with a level of respect normally accorded only to the Bible, it is remarkable how casually dictionary-users treat their dictionaries. When people are asked what factors govern their choice of dictionary, most cite linguistically irrelevant matters, such as price, pictorial content, and size – not in terms of number of entries, but whether it would fit on a shelf, or in a pocket. Many people expect a dictionary to contain encyclopedic information about historical events, people, and places. Most admit they have never bothered to read the Preface to their dictionary – the place where the layout and conventions of the book are systematically explained. As a consequence they are unable to say what the various abbreviations and symbols mean, or why they are there. The general conclusion is inescapable: most people who would check out every tiny feature of their new car before buying it are unaware of the power that lies under the bonnet of their dictionary.

THE RANGE OF DICTIONARIES

Dictionaries come in all shapes and sizes, from the massive unabridged works, such as the 2,662-page Merriam-Webster *Third New International Dictionary of the English Language* (1961), to the tiniest of pocket-size works, such as the 386-page Nimmo’s *Thumb English Dictionary*, each page of which is less than 9 cm high. Coverage (the number of headwords the work contains) and treatment (the kind of information provided under each headword) thus vary enormously. The simplest way of showing this is to compare the amount of detail given for the same word in dictionaries of different sizes. Here are the entries for *insular* in a large, medium-sized, and small dictionary:



A page from the ‘thumb’ dictionary (real size)

The Random House Dictionary of the English Language (c. 260,000 headwords, 1987)

(in’səˌlɑːr, ins’yə-), *adj.* 1. of or pertaining to an island or islands: *insular possessions*. 2. dwelling or situated on an island. 3. forming an island: *insular rocks*. 4. detached; standing alone; isolated. 5. of, pertaining to, or characteristic of islanders. 6. narrow-minded or illiberal; provincial: *insular attitudes towards foreigners*. 7. *Pathol.* occurring in or characterized by one or more isolated spots, patches, or the like. 8. *Anat.* pertaining to an island of cells or tissue, as the islets of Langerhans. — *n.* 9. an inhabitant of an island; islander. [1605–15; <LL *insulār(is)*. See *INSULA*, -AR’] — in’suˌlar.izm, *n.* — in’suˌlar.i.ty, *n.* — in’suˌlar.ly, *adv.*

Longman Dictionary of the English Language (c. 90,000 headwords, 1984)

/ˈinsyoolə/ *adj* 1a of or being an island b living or situated on an island (~residents) 2 of a plant or animal having a restricted or isolated natural range or habitat 3a of island people (~surviving customs) b that results (as if) from lack of contact with other peoples or cultures; narrow-minded, illiberal 4 anatomy of an island of cells or tissue [LL *insularis*, fr L *insula* island] — *insularism n*, *insularly adv*, *insularity n*

Penguin English Dictionary (c. 40,000 headwords, 2nd edn, 1969)

[insewler] *adj* of or like an island; of or like inhabitants of an island; cut off from general currents of thought; narrow-minded, smugly intolerant.

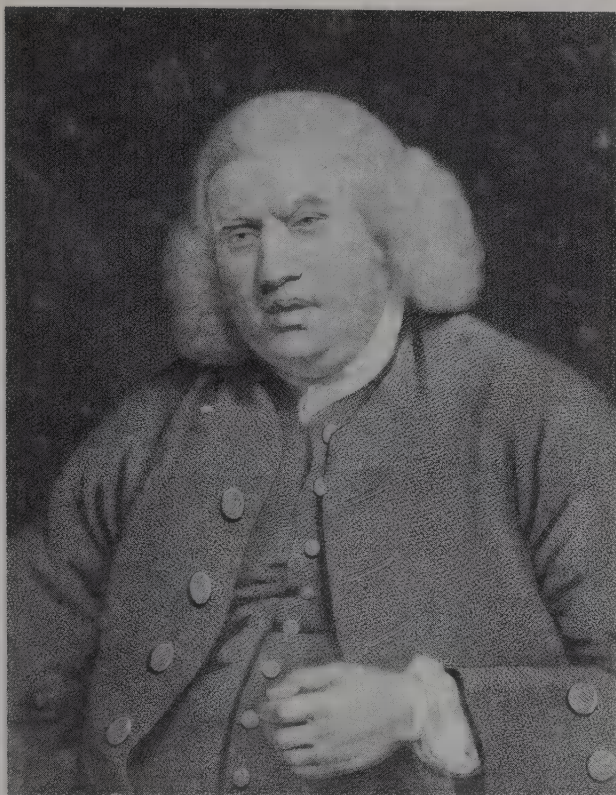
For further comparison, Nimmo’s tiny book says simply: ‘a. surrounded by water’.

Apart from variations of format – the use of bold face, numbered senses, etc. – there are major differences in the range and depth of information provided. It is worth spending five minutes making a point-by-point comparison, to see exactly how much information is lost as the dictionaries become smaller. And the moral is plain: for serious study of a language’s word-hoard, only the largest dictionaries will suffice.

How big is a dictionary?

Dictionaries usually claim to contain ‘X,000’ words. But this grand total can mean several different things. It might refer just to the number of *headwords* in the dictionary – that is, the bold-face items that occur at the beginning of each entry. Or it might include in addition all the subsidiary bold-face items that occur within an entry: under *quick*, for example, there will be ~ly and ~ness. Different word classes might be counted separately (e.g. *play* noun vs *play* verb), as might idioms, and irregular grammatical forms (e.g. *go*, *went*). Depending on what you decide to count, you can end up with two very different totals for the same dictionary. Claims about size should therefore be viewed with caution.

The best way to evaluate the coverage of a dictionary is to compare the words and senses it includes with another dictionary of about the same size. It is notable how even the largest dictionaries present great differences in their coverage – the variation being particularly noticeable in the way they treat world regional vocabulary (how many Australian, South African, or West Indian forms does an English dictionary include, for example?), local dialect words, abbreviations, slang and sub-standard forms, new coinages and borrowings. The use of illustrations and the inclusion of encyclopedic information (names of people, places, historical events, etc.) is also a major source of difference, especially between British and American dictionaries. It has been estimated that the lack of correspondence in large English dictionaries is often as great as 30% – indicating that a truly comprehensive dictionary of the language has yet to be compiled.



A
DICTIONARY
 OF THE
ENGLISH LANGUAGE:
 IN WHICH
 The WORDS are deduced from their ORIGINALS,
 AND
 ILLUSTRATED in their DIFFERENT SIGNIFICATIONS
 BY
 EXAMPLES from the best WRITERS.
 TO WHICH ARE PREFIXED,
 A HISTORY of the LANGUAGE,
 AND
 AN ENGLISH GRAMMAR.

BY SAMUEL JOHNSON, A.M.

IN TWO VOLUMES.

VOL. I.

Cum sabbat annuum cunctis fasset hostis:
 Audisti quocumque parum splendens habebat;
 Et sic posuit, et hunc indigne frenavit.
 Verba mox, laus, quanta coram oculis,
 Et venient adhuc intra parentis Verba;
 Celsitudo diu speravit hunc erant, neque
 Posset in lacum specula vocula erant;
 Quae prius membra Celsitudo neque Celsitudo,
 Nunc finis ultimum prius et dedita regulis.

LONDON,
 Printed by W. STRAHAN.

For J. and P. KNAPTON; T. and T. LONGMAN; C. HITCH and L. HAWES;
 A. MILLAR and R. and J. DODDLEY.

MDCCLV.

LEWDSTER. *n. f.* [from *lewd*.] A lecher one given to criminal pleasures. Against such lewdsters, and their lechery, Those that betray them do no treachery. *Shaksp.*
 LEWIS D'OR. *n. f.* [French.] A golden French coin, in value twelve livres, now settled at seventeen shillings. *Dr. B.*
 LEXICOGRAPHER. *n. f.* [λεξικον and γραφω; *lexicographe*, Fr.] A writer of dictionaries; a harmless drudge, that busies himself in tracing the original, and detailing the signification of words. Commentators and lexicographers acquainted with the Syriac language, have given these hints in their writings on Scripture.
 LEXICOGRAPHY. *n. f.* [λεξικον and γραφω.] The art or practice of writing dictionaries.
 LEXICON. *n. f.* [λεξικον.] A dictionary; a book teaching the signification of words. Though a linguist should pride himself to have all the tongues that Babel cleft the world into, yet if he had not studied the solid things in them as well as the words and lexicons, yet he were nothing so much to be esteemed a learned man as any yeoman competently wise in his mother dialect only. *Milton.*
 LEY. *n. f.* *lee*, *lay*, are all from the Saxon leag, a field or pasture, by the usual melting of the letter *g* or *g*. *Gibson's Camden.*
 LIABLE. *n. f.* [liable, from *lier*, old Fr.] Obnoxious; not exempt; subject: with *to*. But what is strength without a double share Of wisdom? vain, unwieldy, burthen some, Proudly secure, yet liable to fall

The title page and facing picture, together with an extract from Dr Samuel Johnson's *Dictionary of the English Language*

This great dictionary was published in two volumes in 1755, and its influence on subsequent lexicography was unequalled. Noah Webster went so far as to compare Johnson's contribution to Newton's in mathematics. The dictionary had four main features that set it off from previous English works:

- It aimed to be a scholarly record of the whole of a language – a marked contrast with the haphazard dictionaries of 'hard words' previously compiled.

- It was based on a corpus of examples of usage, largely from the period 1560 to 1660; certain types of words were excluded (e.g. proper names – a decision which resulted in a major difference between British and American dictionaries, for while the former followed Johnson, the latter did not).

- It introduced a literary dimension, departing from the previous concentration on technical language. Half of all Johnson's quotations come from Shakespeare, Dryden, Milton, Addison, Ba-

con, Pope, and the Bible.

The dictionary is very much the language of the 'best' authors.

- Dictionaries became more authoritative – and authoritarian – as a consequence. They became increasingly used in a normative way, as guides to *good* usage – a bias which 20th-century dictionaries are only just beginning to correct.

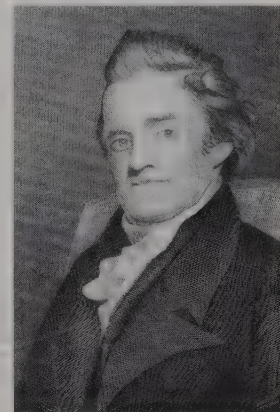
However, Johnson's was not the first monolingual English dictionary. The credit for this must go to Robert Cawdrey's *A Table Alphabeticall* ..., a 2,500-entry work printed in 1604.

From Johnson's Preface

My purpose was to admit no testimony of living authors, that I might not be misled by partiality, and that none of my contemporaries might have reason to complain... I have studiously endeavoured to collect examples and authorities from the writers before the restoration, whose works I regard as the wells of English undefiled, as the pure sources of genuine diction.



James Murray (1837–1915) The first editor of the *Oxford English Dictionary*, is seen at work in his Scriptorium. Murray, the son of a village tailor from Hawick, Scotland, was largely self-educated. He left school at 14, and was a teacher and bank clerk before becoming a lexicographer. His Scriptorium, where most of the editing took place, was built in the back garden of his house in Oxford. Murray planned the whole of the New English Dictionary, and he edited more than half of its first edition himself. The first instalment was published in 1884: A–ANT, 352 pages, price 12s. 6d. (or 62½p today). It took 44 years to complete the dictionary, in 125 instalments – four times longer than had been expected. The complete work, totalling 424,825 entries, was then published as the *Oxford English Dictionary* (OED) from 1933 onwards, with four supplements issued from 1972. The task of transferring the OED database to computer storage began in 1984.



Noah Webster (1758–1843)

Webster's works on spelling, grammar, and lexicon constituted the first major account of American English, and gave the variety a clear identity and status. His *An American Dictionary of the English Language*, published in two volumes in 1828, consisted of around 70,000 entries. Particular attention was paid to the inclusion of scientific terms, and to etymological background. The latest revision is the *Third New International Dictionary* (Merriam, 1961), containing over 450,000 entries, which took 757 editor-years to complete. A 6,000-word supplement appeared in 1976.

■ Vie de Laurent de Médis (1795); la Vie et le Pontifical de Léon X (1805).

ROSCOE (sir Henry Escriou), chimiste anglais, né à Londres en 1823, mort à West-Horley, près de Leatherhead (Surrey), en 1915. Professeur de chimie au Owens' College de Manchester de 1858 à 1886, membre de la Société royale de Londres (1898). Roscoe a publié de nombreux ouvrages, parmi lesquels nous signalons un : *Traité de chimie* en trois volumes (1877-1881); une biographie de *John Dalton* (1885); *Life and Experiences* (1908). Il a écrit aussi de nombreux mémoires sur la photochimie, l'analyse spectrale, la production artificielle de l'alcaline, la synthèse de l'indigo, les composés du tungstène et du vanadium, etc. Il fut correspondant de l'Académie des sciences de Paris.

ROSCOA (rosa-kô) n. m. Genre de zingibéracées, comprenant des herbes vivaces, à fleurs en épis terminaux. (On connaît trois espèces, des montagnes de l'Inde et de la Chine.)

ROSOLITZ (rô) n. f. Substance minérale appartenant à la famille des mica, variété variandite de lepidolite.

ROSCOFF, comm. du Finistère, arrond. n. 24 kil. de Morlaix, sur la Manche, en face de l'île de Batz. 4.320 hab. (Roscoffais). (Roscoffais). Petit port de commerce et de pêche (homard et langoustes). Bains de mer. Culture et exportation de fruits et primeurs. Laboratoire de zoologie maritime de la Faculté des sciences de Paris. Stationnaire naval. Église avec beau clocher (1560), ornée de la Renaissance. Vieilles maisons. Restes des remparts et de la chapelle Saint-Nicolas, élevée en 1548 à l'endroit où s'arrêta Marie Stuart après son débarquement. Dans l'enclos des capucins, figurent centenaire.

ROSDOMON, comté de l'Etat libre d'Irlande (prov. de Connaught), 2.435 km²; 83.500 hab. Pays plat et ouvert, sauf au N où s'élevaient les montagnes de Curlew (galements de fer). Vastes tourbières. Nombreux lacs. Climat tempéré. Sol fertile. Élevage de gros bétail. Fabrication de lainages et de toiles. Ch.-lieu Roscommon; 1.830 hab.

ROSDOMON (Wentworth Dillson, comte de), poète anglais, né en Irlande en 1838, mort en 1905. Neveu du comte de Stratford, il fut envoyé à l'école, puis voyagea en Italie après la mort tragique de son oncle. Il revint en Angleterre à l'époque de la Restauration, et, à la cour de Charles II, il perdit toute sa fortune au jeu. Entre temps, il s'occupa de littérature. On a de lui des *Essays* sur la traduction des vers (1890).

ROSDOHE (rosa) n. f. (lat. rosa). Fleur du rosier. V. ROSIER.

ROSDOHE, bourg de l'Etat libre d'Irlande (Munster, comté de Tipperary), sur le Little Breena, aff. du Shannon; 2.700 hab. Minoteries.

ROSE (rô) n. f. (lat. rosa). Fleur du rosier. V. ROSIER.

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rose, tout en rose, Voir tout en beau, n'avoir que des pensées riantes. || Découvrir le pot sous rose. V. pot. || C'est la plus belle rose de son chapeau. C'est le plus grand, le plus précieux avantage qu'il possède.

Alchim. Rose minérale. Poudre rouge qui se produit pendant la sublimation de l'or et du mercure.

— Archéol. Dans l'orfèvrerie médiévale, Médallion.

— Marque de teinture. V. ROSETE.

— Marque de laine ou de fil, dont les laines représentent des roses ou rosaces.

— Archéol. Petit ornement circulaire taillé dans les plafonds des corbeilles et dans les milieux de chaque face de l'abaque du chapiteau corinthien. || Dans les églises gothiques, Grande fenêtre circulaire, formée de vitraux, qu'on appelait aussi l'O. V. rose. || Rose de compartiment. Ornement formé en rayons et entouré d'une figure circulaire, au milieu d'un pavé de marbre ou d'un parquet de menuiserie.

— Blas. Meuble de l'écu, qui représente l'éclatante des haies, mais avec quatre pétales seuls.

— Comm. Sorte de tissu étoffe formée d'un mélange de laine, de fil et de soie, qui se fabrique en Angleterre et en Normandie.

— Liturg. V. la porte céleste.

— Mar. Rose des vents. Figure circulaire collée sur le cadran du compas, et marquée de trente-deux divisions.

V. COMPAS.

— Rose du gouvernement. Femelle des fureurs du gouvernement.

— (On dit aussi ROSSETTE).

— Pêche. Nom vulgaire de la bouillie.

— Pharm. anc. V. la partie encrée.

— Teinture. Ornement de fer à compartiments.

— On met dans les panneaux des grilles et dans les dormants des portes closes. || Tache jaune, orangée ou lilas, que présente quelquefois l'acier au milieu de sa cassure. || Mar. que nous que le teinturier laisse au bout de l'étoffe, pour distinguer les couleurs qui ont servi de fond. || Plante tournée que l'on met à un râtelier. || Pierrier monté en forme de rose. || Rose de diamant. — Diamant en rose, ou simple rose. Diamant qui est taillé en facettes par-dessus, et qui est plat en dessous. || Rose de luth. Rose de guitare. Ouvrière qui se trouve au milieu d'un luth, d'une guitare. || Ornement de velin, que l'on fait entrer dans la composition d'une frange de bassemontée.

— Adjectif. Qui a une couleur rose clair, semblable à celle de la rose commune : Des rubans roses. || Substantif. Couleur rouge clair, semblable à celle de la rose :

— Pharm. anc. Rose minérale ou précipité rose de Lemery. Composé de phosphate mercuriel, de calomel et d'autres sels de mercure, obtenu en précipitant un sulfate d'azotate mercuriel par de l'urine purgative.

— Archéol. Jusque sous la fin du xiv^e siècle, les ouvertures appelées roses, dépourvues de chaises de pierre, n'ont qu'un faible diamètre, mais à partir de cette époque elles prennent des dimensions de plus en plus considérables. Vers le milieu du xiv^e siècle, dans l'île de France, les roses s'ouvrent sous les voûtes dans toute la largeur de la plus tard, ces roses se taillent.

— Liturg. Rose d'or. On nomme ainsi une rose ou plutôt un bouquet de roses, au or, que le pape bénit solennellement le quatrième dimanche de Carême. La Rose bénite est placée dans un vase de prix, et envoyée par le pape à une prière catholique. (V. cette cérémonie date, dit l'éccl., du saint Léon IX.)

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Des étoffes roses tendre. || Ce qui est fait avec une étoffe, etc., de couleur rose : s'habiller de rose.

— Liturg. La plus belle rose du dyabole. V. dyabole.

— mol. aisé à un lit de rose. V. QUATROIN.

— ALLER LITTE.

— En rose, à la façon de ce qu'on vient les roses.

— L'aspect d'un matin.

Vers de l'ode fameuse de Malherbe à Dupuy sur la mort de son fils.

Malherbe, dit-on, avait d'abord écrit :

Et Rosette a reçu ce que vient les roses.

Le typographe commutua une s. rosaille. ... Neureuse :

Et rose, aida à voir.

C'était substituer à une expression banale une métaphore hardie et originale, que Malherbe trouva de son goût.

— Prov. Il n'y a point de roses sans épines, il n'y a point de plaisir sans peine. || Il n'est si belle rose qui ne devienne graine. La plus belle femme devient laide en vieillissant.

— Encre, Bot. V. ROSE.

Rose de Jéricho. — La rose de Jéricho est une très curieuse petite plante annuelle de la famille des crucifères, haute d'une dizaine de centimètres et qui croît dans les sables maritimes de la Syrie et de l'Arabie. Sa tige, divisée dès la base, se ramifie et se subdivise; les fleurs sont blanches, et très petites. A la fin de sa végétation, les feuilles tombent, les rameaux se rapprochent, s'entrecroisent de manière à former une pelote de la grosseur d'une orange, que les vents détachent et roulent sur les plages. On recueille la plante à cet état, et on l'apporte en Europe.

Placée dans une atmosphère humide, elle s'épanouit et reprend une apparence de vie; descolorée à nouveau elle se referme. Le charlatanisme a exploité et exploite encore ce phénomène hygroscopique, qui a donné naissance à une foule de fraudes.

Rose éternelle. — Cette plante, de la famille des malvacees, est commune dans les jardins, où elle donne, vers l'automne, une abondante floraison. Il en existe deux formes nombreuses, de couleurs très variées. La plante est buissonneuse, bien ramifiée, et se propage de souches.

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THE HISTORY OF LEXICOGRAPHY

The earliest dictionaries had a practical aim. They were often bilingual or polyglot word-lists aimed at the traveller and the missionary, or glossaries written to help people understand words which were dialectal, technical, or rare. From as early as the 5th century B.C., the Greeks were compiling *glossai*, explaining difficult words in such authors as Homer. The first vocabulary lists in English were similar: these were 8th-century Anglo-Saxon glosses, in which English words were written between the Latin lines. Later, these glosses were collected together as lists. But random collections of words or glosses are not dictionaries: to count as a dictionary, the words need to be organized in a systematic way — such as through the use of the alphabetic principle.

The history of lexicography goes back over 2,000 years, to ancient China, Greece, and Rome. But there has never been a time when some kind of lexicographical work was not in progress. Some periods were particularly fruitful.

- Arabic dictionaries flourished from around the 8th century onwards.

Left: a page from the *Larousse du XX siècle* (1966)

It shows the mixture of lexical, literary, and encyclopedic information which is the hallmark of this tradition.

Below: a page from a German-Latin school book, *Deutsch lateinisches Wörter-Büchlein*

Printed around 1722, it contains about 6,000 words, each of which is illustrated.

Electric Household Appliances

A The Freezer

1 the lock. 2 the bulk food storage. 3 the lid. 4 the quick-freezing compartment.

B The Stove (Range)

1 the lock. 2 the appliance outlets. 3 the fluorescent lamp. 4 the controls for the unit. 5 the griddle. 6 the burners. 7 the baking and broiling pan. 8 the deep well with warming oven. 9 the body. 10 the electric clock and timer. 11 the deep well.

German

Elektro-Haushaltsgeräte

A Die Kühlkiste

1 das Schloss. 2 das Hauptfach zur Aufbewahrung von Lebensmitteln. 3 der Deckel. 4 das Schlüsselfach.

B Der Kochherd

1 die Rückwand des Herdes. 2 die Gasanschlussleitung. 3 der Fluoreszenzleuchte. 4 der Regler für die verschiedenen Einrichtungen. 5 der Topf. 6 der Brenner. 7 der Back- und Bratofen. 8 die Pfanne zum Backen und Braten. 9 der elektrische Uhr und der Zestrierer. 10 das Gehäuse. 11 die elektrische Uhr und der Zestrierer. 12 das Gehäuse. 13 die elektrische Uhr und der Zestrierer.

Italian

Gli elettrodomestici

A Il congelatore

1 la maniglia con chiavere. 2 lo spazio per deposito cibi. 3 il coperchio. 4 il compartimento per congelatura rapida.

B La cucina economica

1 la spalla. 2 la presa di corrente. 3 la lampada fluorescente. 4/7 i comandi dell'apparecchio. 5 la griglia. 6 i bruciatori. 7 la piastra per cuocere. 8 la piastra per cuocere. 9 la piastra per cuocere. 10 la piastra per cuocere. 11 la piastra per cuocere. 12 il corpo. 13 l'orologio elettrico ed il marcatempo. 14 il pannello per riscaldamento. 15 il corpo. 16 il lato anteriore.

Spanish

Aparatos eléctricos para el hogar

A El congelador

1 la cerradura. 2 el compartimento de almacenamiento. 3 la tapa. 4 el compartimiento de congelación rápida.

B La estufa

1 la parte posterior. 2 los tomacorrientes para aparatos. 3 la lámpara fluorescente. 4/7 el control de las unidades. 5 la parrilla. 6 los quemadores. 7 el horno para hornear y asar. 8 el horno para pastelería y para calentar. 9 el cuerpo. 10 el cuerpo. 11 el cuerpo. 12 el cuerpo. 13 el cuerpo. 14 el cuerpo. 15 el cuerpo. 16 el cuerpo.

Above: a double-page spread from the *Duden pictorial Encyclopedia in Five Languages* (1958 edition)

- There was a flurry of activity in several languages following the invention of printing.
- The Accademia della Crusca produced its dictionary in 1612 (the first to be compiled by a team of people), and prompted several other national dictionary projects.
- Polyglot dictionaries were particularly numerous in the 17th century, with the development of trade and missionary activities around the world.
- The 18th century saw a fresh direction in lexicography, following the discoveries of the comparative philologists (§50), and the first major historical dictionaries began to be compiled.
- The 19th century saw many large-scale dictionary projects, produced by teams of compilers, and several specialized dictionaries (such as of dialect or technical words). Different kinds of dictionaries began to be produced, notably the Larousse series (from 1856), with its distinctive pictorial and encyclopedic character.
- The 20th century has seen the development of lexicography as a scholarly subject, largely under the influence of linguistics, and promoted especially by the growth of academic societies, such as the Dictionary Society of North America (1975), and the European Association for Lexicography (EURALEX, 1983)

Twenty questions to ask when you buy a dictionary

- 1 Is the paper of good, hard-wearing quality?
 - 2 Will the binding allow it to be opened flat?
 - 3 Are (especially long) entries clearly laid out?
 - 4 Does it have the words you most want to look up?
- (Keep a note of some words which have caused you problems, and use them as a quick check.)
- 5 Does it have good international coverage?
 - 6 Does it contain encyclopedic information?
 - 7 Does it have illustrations of difficult concepts?
 - 8 Are the definitions clearly distinguished, and organized on a sensible principle?
 - 9 Are the definitions easy to understand, and helpful (e.g. avoiding vicious circularity, as when X is defined as Y, and Y is then defined as X)?
 - 10 Does it give citations (examples of usage), and are they real or artificial?
 - 11 Does it give guidance about usage?
 - 12 Does it use ■ good set of stylistic labels (e.g. formal, slang, medical, archaic)?
 - 13 Does it give etymological information?
 - 14 Does it give guidance about capitalization, spelling variation, and where syllable boundaries go (i.e. where to hyphenate)?
 - 15 Does it give pronunciation variants, and is the phonetic transcription easy to follow?
 - 16 Does it contain idioms, phrases, proverbs, etc.?
 - 17 Does it contain lists of synonyms and antonyms?
 - 18 Does it give useful cross-references to other words of related meaning?
 - 19 Does it give information about word class, inflectional endings, and other relevant features of grammar?
 - 20 Are there useful appendices (e.g. abbreviations, measures)?

THE PRESENT ... THE FUTURE ...

Since the 1970s, the flow of dictionaries has been unabated, as publishers try to meet the needs of an increasingly language-conscious age. In English, for example, new editions and supplements to the well-known dictionaries have appeared, and several publishers have launched new general series (notably, Longman). Reader's Digest produced its *Great Illustrated Dictionary* in 1984, the first full-colour English dictionary, in the encyclopedic tradition of Larousse. Prominent also have been the dictionaries for special purposes (foreign language teaching, linguistics, medicine, chemistry, etc.). For the first time, spoken vocabulary has begun to find its way into dictionaries (though by no means all are yet willing to include the more colloquial words and uses).

But this outpouring is as nothing compared with the flood yet to come. The 1980s will one day be seen as a watershed in lexicography – the decade in which computer applications began to alter radically the methods and the potential of lexicography. Gone are the days of painstaking manual transcription and sorting on paper slips: the future is on disk, in the form of vast lexical databases, continuously updated, that can generate a dictionary of a given size and scope in a fraction of the time it used to take. Special programs will become available enabling people to ask the dictionary special questions (such as: 'find all words that entered the language in 1964' or 'find all words ending in -esse'). Access to large machine-dictionaries will become routine in offices and homes. One day, we shall not look up a word in a dictionary on a shelf but ask our home computer for the information we need. That day is not far off.

Words that have never been used – outside the dictionary!

Early dictionaries were often little more than lists of 'hard' words. After all, it was reasoned, why should a dictionary include the words everyone already knew? The result was the inclusion of many very rare words – and some whose usage has never been officially recorded, outside of the dictionaries in which they appear! Examples are *commemorabile* and *liquescenty*.

But for non-words, the prize must go to *Dord*, first used in a 1930s dictionary, and found subsequently in several others. It seems there was a file in the compiler's office which contained the entry 'D or d' as abbreviations for the word 'density'. The information was accidentally put into the dictionary as *Dord*, meaning 'density', and a new word was born.

Some important events BJ (Before Johnson)

- | | | |
|--|---|--|
| <i>5th c. BC</i> Protagoras of Abdera compiled a glossary of unfamiliar words in Homer. | Hindu grammarian, Amarasimha. | <i>tedesco</i> (Venice). |
| <i>3rd c. BC</i> The poet Philetos of Cos compiled a glossary of unusual poetic, technical, and dialect words. | <i>8th c.</i> The first general Arabic dictionary, <i>Kitāb al-'ayn</i> , compiled by Al-Khalil Ibn Ahmad. | 1499 Probably the first dictionary to be printed in England: the Latin–English <i>Promptorium parvulorum</i> (London, Richard Pynson). |
| <i>2nd c. BC</i> Aristophanes of Byzantium compiled a dictionary of current and obsolete words. | <i>10th–11th c.</i> Compilation of a Byzantine encyclopedic dictionary, the <i>Suidas</i> . | 1511 The first printed Dutch dictionary: Noël de Berlaumont's <i>Vocabulaire</i> . |
| <i>1st c. BC</i> Marcus Verrius Flaccus compiled the first Latin lexicon, <i>Libri de significatu verborum</i> . | <i>11th c.</i> First Chinese–Japanese encyclopedic dictionary, by Minimoto no Shitagō. | 1539 Compilation of Robert Estienne's <i>Dictionnaire françois-latin</i> . |
| <i>1st c.</i> Valerius Harpocration compiled a lexicon of the Attic orators. | <i>12th c.</i> Compilation of the Greek <i>Etymologicon magnum</i> , author unknown. | 1596 The first published Russian dictionary: Laurentii Zizanii's <i>Leksys ... synonyma sloveno-rosskaia</i> . |
| <i>2nd c.</i> First systematic Chinese dictionary, <i>Hsuo Wên</i> , compiled by Hsü Shên. | <i>13th c.</i> Joannes Balbus Januensis compiled the encyclopedic dictionary, the <i>Catholicon</i> , one of the most influential dictionaries of the middle ages, and the first to be printed (in 1460). | 1606 Publication of Jean Nicot's <i>Thresor de la langue françoise</i> , the first systematic French dictionary. |
| <i>5th c.</i> Hesychius of Alexandria compiled a large lexicon of Classical Greek. | <i>1477</i> The earliest printed bilingual dictionary: the <i>Vocabolista italiano-</i> | 1611 Publication of the first major Spanish dictionary, <i>Tesoro de la lengua castellana o española</i> of Covarrubias y Horozco. (After R. L. Collison, 1982.) |
| <i>6th c.</i> Compilation of a Sanskrit dictionary by the | | |

19 Names

A name is a word or phrase that identifies a specific person, place, or thing. We see the entity as an individual, and not as a member of a class: *Everest*, for example, is a unique name (a 'proper noun'), whereas *mountain* applies to a whole class of objects (a 'common noun'). In the written language, European languages generally recognize the distinction by writing names with an initial capital letter. But most other writing systems do not distinguish upper- and lower-case letters (§33), and even in Europe there are several arbitrary conventions and points of uncertainty. English, for example, is idiosyncratic in its use of capitals for days of the week and proper adjectives (as in *the Chinese language*) (p.194). And decisions have to be made over whether one writes *catholic* or *Catholic*, *the church* or *the Church*, *bible* or *Bible*.

The science that studies names is known as *onomastics*, usually divided into the study of personal names (*anthroponomastics*) and place names (*toponomastics*). In more popular usage, however, the term *onomastics* is used for the former, and *toponymy* for the latter. The division is ultimately an arbitrary one, as places are often named after people (e.g. *Washington*) and vice versa (e.g. *Israel* is sometimes used as a first name). Other categories of name (e.g. ships, trains, yachts, domestic pets, race horses, commercial products) also need to be taken into account. But most name studies fall under one of the two major headings.

Personal names

Most people are familiar with only one personal naming system, and are surprised to learn that practices differ greatly from language to language. Even such a basic distinction as 'given name' (or 'Christian name') and 'family name' (or 'surname') is not universal (in Europe, it began to be used in the late middle ages, reaching some areas only as recently as the 19th century). These names are also often referred to as 'first' and 'last' names; but this nomenclature is ambiguous when comparing languages, as there is considerable variation in the order in which such names occur. In most European languages, the family name follows the given name; but the reverse is the case in, say, Hungarian and Chinese (e.g. *Mao Ze-Dong*).

In some societies, a middle name is also regularly used. This is the case in America, for instance, where an initial is especially favoured (e.g. *John H. Smith*). In Europe, middle names are less common, unless acquired at a special occasion (such as the Catholic ceremony of Confirmation). Where there is a sequence of names, there may also be

variation in levels of importance. In Britain, for example, the first name is the important one – David Michael Smith would usually be referred to as 'David'; in Germany, the name nearest to the surname is more important – Johann Wolfgang Schmidt would usually be referred to as Wolfgang.

Some languages make use of *patronymics* – a name derived from the father's given name: in Russian, *Ivan*'s son would be known as *Ivanovich*, and his daughter as *Ivanovna*. The opposite practice, of naming a parent after a child (*teknonymy*) is less common, but is widespread in the Arab world, for example, where a parent is often called 'father of' or 'mother of' the eldest son. In Russian, the patronymic is placed between the child's given and family names. In Icelandic, the patronymic serves as the surname, which then changes with each generation. Amharic names consist simply of the child's given name plus the father's given name. In English, patronymic prefixes and suffixes are used only in family names (e.g. *Robertson*), and this is common throughout Europe (e.g. 'son of' appears in Scots *Mac/Mc-*, Irish *O'*, Welsh *Ap*, Polish *-ski*, Greek *-poulos*).

SIMILARITIES AND DIFFERENCES

There are some impressive similarities in naming practice across different languages, such as the use of names based on professions. *Smith*, and its foreign-language equivalents, is the best-known case, being the most common surname in many parts of Europe: Arabic *Haddad*, Hungarian *Kovács*, Russian *Kuznetsov*, Portuguese *Ferreiro*, German *Schmidt*, Spanish *Hernández/Fernández*, French *Le Fèvre/La Forge*, and so on. But the differences in naming practices are far more striking.

The possibilities of variation seem endless. We find the tripartite personal names of the Romans (e.g. *Gaius Julius Caesar*), the compound names of early Germans and Celts (e.g. *Orgetorix* 'king of killers'), and the use of 'by-names' to distinguish people who have the same name (e.g. Welsh *Dai Jones-the-milk* vs *Dai Jones-the-post*). In Europe, there is a great diversity of given and family names; by contrast, in several oriental societies the possibilities are highly restricted – for example, just three family names, Kim, Pak, and Yi, are used by most of the people of Korea.

We find children named after saints, events, places, omens, personal traits – even animals (as with north American Indians, e.g. *Little Bear*). In some societies, divine names can be used ('theophoric' names, such as Greek *Herodotus* 'given by Hera' or Arabic *Abd Allāh* 'slave of Allah'). At the opposite extreme, children might be named after unpleasant notions to make them undesirable

to evil spirits ('apotropaic' names, such as 'cripple' or 'ugly', p. 9). Where personal names are concerned, there seems to be no limit to parental idiosyncrasy and invention, two fine examples being the Puritan given name *Kill Sin*, and the Russian concoction *Mels* – an acronym for 'Marx-Engels-Lenin-Stalin'.

FIRST NAMES

In 1623, the historian and antiquary William Camden (1551–1623) published an appendix to his guide book to Britain, in which he included a long list of the most popular given names and surnames of his time. Since then, there have been several academic studies of given names in a wide range of European languages, and many popular accounts, aimed especially at providing information for parents who do not know what to call their baby.

The studies are both etymological and statistical. The former have universal appeal. People are fascinated by the history of names – in particular, where their own name comes from and how its usage has changed over the centuries. For example, *Hilary* is from Latin *hilaris*, meaning 'cheerful'. It has been used by three male saints (including one Pope), and it has continued as a male name in Europe. However, in Britain, it fell out of use in the 17th century, and when it revived in the 1890s,

it was usually as a female name. Its peak British usage was during the 1950s and 1960s.

Interesting though the origin of a name may be, it exercises very little influence on most parental choice and is of little value in the study of naming trends. Far more important is the recent history of the name in a society – whether it has been used by the parents or near relatives, or by famous individuals such as film stars, pop stars, or members of a royal family. Nations have different traditions in this respect. Britain and America permit all possible names, whereas in France and Germany there are approved lists of names that must be used if a child is to be legally recognized. The influence of a religious tradition (as in the Catholic use of saints' names) is often apparent. Statistical studies of name use are thus of particular significance.

Information about name use over the years comes from a variety of sources such as parish records, national censuses, newspaper birth announcements, and special surveys by name scholars and enthusiasts. There has, for example, been a survey of every first name used by the Smiths in England and Wales since 1837. In the case of English, it is also important to consider all parts of the English-speaking world to discover whether there have been directions of influence.

General findings about first names are tentative but intriguing. Names are much influenced by fashion, and very few names retain great popularity from one generation to the next. There is much greater variation in girls' names: in the lists (right), hardly any girls' names carry over from one generation to the next, whereas several boys' names do. The white/non-white difference in the USA is noticeable for girls, also. And in English, it seems that traditionally-male names are likely to be used for girls at any time, whereas female names are rarely used for boys (after L. Dunkling & W. Gosling, 1983).

Top ten first names

BOYS (England and Wales)

1925	1950
1 John	David
2 William	John
3 George	Peter
4 James	Michael
5 Ronald	Alan
6 Robert	Robert
7 Kenneth	Stephen
8 Frederick	Paul
9 Thomas	Brian
10 Albert	Graham

1965

1965	1975
1 Paul	Stephen
2 David	Mark
3 Andrew	Paul
4 Stephen	Andrew
5 Mark	David
6 Michael	Richard
7 Ian	Matthew
8 Gary	Daniel
9 Robert	Christopher
10 Richard	Darren

1981

1 Andrew
2 David
3 Daniel
4 Christopher
5 Stephen
6 Matthew
7 Paul
8 James
9 Mark
10 Michael

BOYS (USA)

1925	1950
1 Robert	Robert
2 John	Michael
3 William	James
4 James	John
5 Charles	David
6 Richard	William
7 George	Thomas
8 Donald	Richard
9 Joseph	Gary
10 Edward	Charles

1970

1970	1982 (white)
1 Michael	Michael
2 Robert	Christopher
3 David	Matthew
4 James	David
5 John	Jason
6 Jeffrey	Daniel
7 Steven	Robert
8 Christopher	Eric
9 Brian	Brian
10 Mark	Joseph

1982 (non-white)

1 Michael
2 Christopher
3 James
4 Jason
5 Robert
6 Anthony
7 Brandon
8 Kevin
9 David
10 Charles

GIRLS (England and Wales)

1925	1950
1 Joan	Susan
2 Mary	Linda
3 Joyce	Christine
4 Margaret	Margaret
5 Dorothy	Carol
6 Doris	Jennifer
7 Kathleen	Janet
8 Irene	Patricia
9 Betty	Barbara
10 Eileen	Ann

1965

1965	1975
1 Trac(e)y	Claire
2 Deborah	Sarah
3 Julie	Nicola
4 Karen	Emma
5 Susan	Joanne
6 Alison	Helen
7 Jacqueline	Rachel
8 Helen	Lisa
9 Amanda	Rebecca
10 Sharon	Karen

1981

1 Sarah
2 Emma
3 Claire
4 Kelly
5 Rebecca
6 Gemma
7 Rachel
■ Lisa
9 Victoria
10 Laura

GIRLS (USA)

1925	1950
1 Mary	Linda
2 Barbara	Mary
3 Dorothy	Patricia
4 Betty	Susan
5 Ruth	Deborah
6 Margaret	Kathleen
7 Helen	Barbara
8 Elizabeth	Nancy
9 Jean	Sharon
10 Ann(e)	Karen

1970

1970	1982 (white)
1 Michelle	Jennifer
2 Jennifer	Sarah
3 Kimberly	Nicole
4 Lisa	Jessica
5 Tracy	Katherine
6 Kelly	Stephanie
7 Nicole	Elizabeth
8 Angela	Amanda
9 Pamela	Melissa
10 Christine	Lindsay

1982 (non-white)

1 Tiffany
2 Crystal
3 Ebony
4 Erica
5 Lakisha
6 Latoya
7 Nicole
8 Candice
9 Danielle
10 Brandi

Place names

The names people give to their surroundings provide a unique source of information about a society's history, beliefs, and values. There are so many aspects of a country's development that achieve linguistic recognition in its place names. The various steps in the exploration of America, for example, can be seen reflected in the 'layers' of Spanish, French, Dutch, Indian, and English names introduced by different groups of explorers; and Celtic, Roman, Anglo-Saxon, Scandinavian, and Norman names provide a similar insight into British history. Often, a place name is the only record of a historical event or of a person's existence. The name of Rēada, 'the red', lives on in the town of Reading, in Berkshire ('the people of Rēada'); but of his life and deeds, nothing else is known.

The study of place names includes the 'small' places and institutions (such as the names of streets, houses, inns, and fields) as well as the main geographical features of the world (such as seas, rivers, mountains, cities, and towns); but most academic study has been in relation to the latter. Place names are sometimes fanciful and idiosyncratic (e.g. USA *Rabbit Hash*, Britain *Thertheoxlaydede* 'there the ox lay dead', or jocular house names such as *Webilit* and *Noname*), but the vast majority can be explained with reference to a small set of creative processes. With geographical names, some of the most widespread types of derivation include the following:

- natural features, such as hills, rivers, and coastlines, e.g. *Dover* (water), *Staines* (stones), *Honolulu* (safe harbour), *Rotorua* (two lakes), *Kalgoorlie* (a native shrub), *Twin Forks*, *South Bend*;
- special sites, such as camps and forts, e.g. *Doncaster* (camp on the Don), *Barrow* (burial mound);
- religious significance, such as gods, saints, and churches, e.g. *Providence*, *Godshall*, *Axminster*, *St Neots*, *Sacramento*, *Santa Cruz*, *Thorsley* (from Thor);
- royalty, e.g. *Queensland*, *Victoria Falls*, *New York*, *Carolina*, *Kingston*, *Louisiana*, *Maryland*, *Fredericksburg*;
- explorers, e.g. *America*, *Cookstown*, *Columbus*, *Flinders*;
- famous local people, such as presidents, politicians, tribesmen, e.g. *Delaware*, *Baltimore*,

Washington, *Everest*, *Reading*, *London* (town of Londinos – 'the bold one');

- memorable incidents or famous events, such as a battle, e.g. *Waterloo*, *Crimea*, *Blenheim*, *Cape Catastrophe*, *Anxious Bay*, *Manhattan* ('the place of great drunkenness'); and
- other place names, such as a famous city, or a town from an immigrant's home-land, e.g. USA *Paris*, *Memphis*, *Troy*, *Hertford*, *London*.

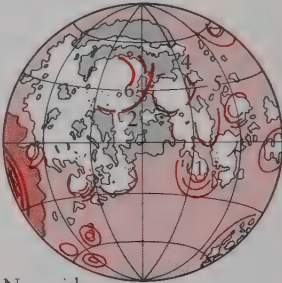
Many other factors have been recognized. There are the appealing names introduced by explorers as they encountered good and bad fortune on their travels (e.g. *Cape Tribulation* and *Weary Bay* in Australia). Animal names are sometimes used (e.g. *Beaver City*, *Buffalo*). And there are many names of a purely descriptive type, such as *North Sea*, *South Island*, and – perhaps the most common place name of all – the 'new town' (*Newtown*, *Neuville*, *Naples*, *Villanueva*, *Novgorod*, *Neustadt*, and – less obviously, because of its Phoenician origin – *Carthage*). By contrast, there seem to be few names derived from famous writers and artists: there is a distinct absence of towns called Shakespeare, Voltaire, or Tolstoy.

Place names have an intrinsic fascination, and many specialized studies have been undertaken. But it must not be forgotten that many thousands of names have an unclear or unknown etymology, and it is this which provides a continuing motivation for place-name study, such as is carried on by the English Place-Name Society, the American Name Society, and similar bodies. These studies also relate to matters of practical import. To facilitate international communication by post, telex, and telephone, the various problems posed by linguistic place-name variation need to be anticipated. Place names can vary greatly between languages (e.g. *Munich* vs *München*) and be unrecognizable in different scripts. Names can change along with governments (p. 9). New systems of naming may need to be introduced for special purposes, such as the means of designating stellar objects (e.g. *NGC 4565*, *M101*). There is thus a pressing need for international cooperation in the coining and use of place names – a need that can only become more urgent as the exploration of space proceeds.

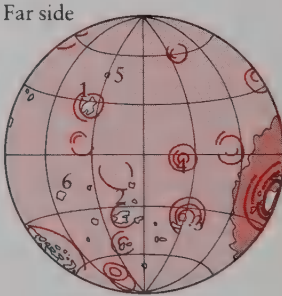
The old and the new

The two faces of the moon present a marked contrast in place names. The near side reflects 2,000 years of study, with most of the prominent features being of Latin or Greek origin. The far side reflects the results of 20th-century space exploration. Though some traditional labels are used (such as *Mare* 'sea'), the majority of new names are those of Soviet and American astronauts, astronomers, and scientists.

- 1 Mare Tranquillitatis
- 2 Montes Apenninus
- 3 Clavius
- 4 Lacus Somniorum
- 5 Cleomedes
- 6 Archimedes



Near side



Far side

- 1 Mare Moscovense
- 2 Gagarin
- 3 Apollo
- 4 Korolev
- 5 Campbell
- 6 Tsiolkovskiy



Some common place-name elements in English

Source	Language	Meaning	Common modern forms
<i>ác</i>	Anglo-Saxon	oak	Ac-, Aik-, Oak-, Oke-, -ock
<i>baile</i>	Gaelic	farm, village	Bally-, Balla-, Bal-
<i>beauru</i>	Anglo-Saxon	grove, wood	Barrow-, -bere, -beare, -ber
<i>beorg</i>	Anglo-Saxon	hill, burial-mound	Bar-, Berg-, -borough, -burgh
<i>brycg</i>	Anglo-Saxon	bridge	Brig-, -bridge, -brig
<i>burh</i>	Anglo-Saxon	fortified place	Bur-, -borough, -burgh, -bury
<i>burna</i>	Anglo-Saxon	stream, spring	Bourne-, Burn-, -burn, -borne
<i>by</i>	Old Norse	farm, village	-by
<i>caer</i>	Welsh	fortified place	Car-
<i>ceaster</i>	Latin	Roman town, fort	Chester-, -caster, -c(h)ester
<i>cot</i>	Anglo-Saxon	shelter, cottage	Coat-, Cote, -cot, -cote
<i>cwm</i>	Welsh	deep valley	Coombe-, Combe-, Comp-, -combe
<i>daire</i>	Gaelic	oak wood	Derry-, -derry, -dare
<i>dair</i>	Old Norse	dale, valley	Dal-, -dale
<i>denn</i>	Anglo-Saxon	swine pasture	-dean, -den
<i>dūn</i>	Anglo-Saxon	hill, down	Dun-, Down-, -down, -don, -ton
<i>ēa</i>	Anglo-Saxon	water, river	Ea-, -ey, Ya-, -eau
<i>ēg</i>	Anglo-Saxon	island	Ea-, Ey-, -ey, -y
<i>ey</i>	Old Norse	island	-ey, -ay
<i>gleann</i>	Gaelic	narrow valley	Glen-
<i>graf</i>	Anglo-Saxon	grove	Graf-, -grave, -greave, -grove
<i>hām</i>	Anglo-Saxon	homestead, vil- lage	Ham-, -ham
<i>hyrst</i>	Anglo-Saxon	wooded hill	Hurst-, -hurst, -hirst
<i>-ing</i>	Anglo-Saxon	place of	-ing
<i>lēah</i>	Anglo-Saxon	glade, clearing	Leigh, Lee, -leigh, -ley, -le
<i>loch</i>	Gaelic	lake, inlet	Loch-, -loch
<i>mere</i>	Anglo-Saxon	lake, pool	Mer-, Mar-, -mer, -mere, -more
<i>nes</i>	Old Norse	cape, headland	-ness, Nas-, Nes-
<i>pwll</i>	Welsh	pool, anchorage	Pol-, -pool
<i>rhos</i>	Welsh	moorland	Ros-, Ross, -rose
<i>stān</i>	Anglo-Saxon	stone	Stan-, Ston-, -stone, -ston
<i>stede</i>	Anglo-Saxon	place, site	-sted, -stead
<i>stoc</i>	Anglo-Saxon	meeting place	Stoke-, Stock-, -stock, -stoke
<i>stōw</i>	Anglo-Saxon	meeting place	Stow(e)-, -stow(e)
<i>stræt</i>	Latin	Roman road	Strat-, Stret-, Streat-, -street
<i>tūn</i>	Anglo-Saxon	enclosure, village	-ton, -town, Ton-
<i>þorp</i>	Old Norse	farm, village	Thorp(e), -thorpe, -throp, -trop
<i>þveit</i>	Old Norse	glade, clearing	Thwaite, -thwaite
<i>wic</i>	Anglo-Saxon	dwelling, farm	Wick-, Wig-, -wick, -wich

International brand names

International companies are finding it increasingly important to develop brand names that can be used in a wide range of countries. To have a product with a single, universally recognized name can lead to major savings in design, production, and promotion costs – especially now that satellite television has made world advertising a reality in such contexts as major sporting events. Also, from a legal point of view, an international trade mark has a clearer status than a national one, in cases of dispute.

It is said that more time is spent deciding the name of a new product than on any other aspect of its development. The problem is not easily solved. In the European Economic Community alone, there are over 5 million registered trade marks, and inventing a new name that does not conflict with existing practice is a highly complex and time-consuming process. Several hundred names may need to be proposed, each of which has to be checked from a linguistic, marketing, and legal viewpoint. In such fields as cars, perfumes, and soft drinks, thousands of possible names may need to be investigated to find one that is internationally acceptable and registrable.

An indication of the scope of the problem can be seen from the experience of Dunlop, who spent over two years researching a name for a new tyre, to no avail. They then launched an international competition amongst their employees, receiving over 10,000 entries. Around 30 names were selected from the enormous number submitted – but not one was found to be legally available in more than a small number of countries. After further work, a viable name was found (the tyre was called Denovo); but often companies are not so successful, ending up with a name that is unusable for legal or linguistic reasons. A word that is pronounceable in one language may be quite impossible to say in another; and there is always the danger of unfortunate connotations creeping in, because of the name overlapping with words of an irrelevant or taboo meaning.

The longest place name

A long place name would appear to be an unnecessary complication, and it is usually shortened to a more speakable and writable size. In this way, 'El Pueblo de Nuestra Señora la Reina de los Ángeles de Porciúncula' has been reduced to the more manageable 'Los Angeles'.

However, an exceptionally long place name proves to be a tourist attraction, and in 1984 a new candidate for longest place name emerged. A station on the

Fairbourne narrow track railway in North Wales was deliberately renamed, so as to be longer than the previous British record-holder.

Gorsafawddacha 'idraigodanheddogleddolônpenrhynareurdraethceredigion
'The Mawddach station and its dragon teeth at the Northern Penrhyn Road on the golden beach of Cardigan Bay'

Llanfairpwllgwyngyllgogerychwyrndrobwllllantysiliogogogoch
'St Mary's Church in a hollow by the white hazel, close to the rapid whirlpool, by the red cave of St Tysilio'

Taumatawhakatangihangakoauauotamatea(turipukakapikimaungahoronuku)pokaiwhenuakitanatahu
'The place where Tamatea, the man with the big knee who slid, climbed and swallowed mountains, known as Land-eater, played on his flute to his loved one'

The new name has 66 letters, thus beating the Anglesey village whose unofficial name of 58 letters had also been artificially constructed

(in the 19th century). But the unofficial name of a 300 m hill in Southern Hawke's Bay, New Zealand, has 85 letters.

Country etymologies

Argentina (Spanish) 'the silver republic'
Canaries (Latin) 'dogs' (not canaries)
Chile (Araucanian) 'end of the land'
Cyprus (Greek) 'copper'
Ethiopia (Greek) 'burning face'
Jamaica (Carib) 'well watered'
Japan (Chinese) 'sun-root' (the sun rose over Japan)
Mexico (Aztec) 'war god, Mextli'
Pakistan (an acronym) P(unjab) + A(fghan tribes) + K(ashmir) + S(ind) + (Baluchis)tan

GORSFAWDDACHA'IDRAIGODANHEDDOGLEDDOLONPENRHYNAREURDRAETHCEREDIGION

20 Discourse and text

The traditional concern of linguistic analysis has been the construction of sentences (§16); but in recent years there has been an increasing interest in analysing the way sentences work in sequence to produce coherent stretches of language.

Two main approaches have developed. *Discourse analysis* focusses on the structure of naturally occurring spoken language, as found in such 'discourses' as conversations, interviews, commentaries, and speeches. *Text analysis* focusses on the structure of written language, as found in such 'texts' as essays, notices, road signs, and chapters. But this distinction is not clear-cut, and there have been many other uses of these labels. In particular, both 'discourse' and 'text' can be used in a much broader sense to include *all* language units with a definable communicative function, whether spoken or written. Some scholars talk about 'spoken and written discourse'; others about 'spoken and written text'. In Europe, the term *text linguistics* is often used for the study of the linguistic principles governing the structure of all forms of text.

The search for larger linguistic units and structures has been pursued by scholars from many disciplines. Linguists investigate the features of language that bind sentences when they are used in sequence. Ethnographers and sociologists study the structure of social interaction, especially as manifested in the way people enter into dialogue. Anthropologists analyse the structure of myths and folk-tales. Psychologists carry out experiments on the mental processes underlying comprehension. And further contributions have come from those concerned with artificial intelligence, rhetoric, philosophy, and style (§12).

These approaches have a common concern: they stress the need to see language as a dynamic, social, interactive phenomenon – whether between speaker and listener, or writer and reader. It is argued that meaning is conveyed not by single sentences but by more complex exchanges, in which the participants' beliefs and expectations, the knowledge they share about each other and about the world, and the situation in which they interact, play a crucial part.

Conversation

Of the many types of communicative act, most study has been devoted to conversation, seen as the most fundamental and pervasive means of conducting human affairs (p. 52). These very characteristics, however, complicate any investigation. Because people interact linguistically in such a wide

range of social situations, on such a variety of topics, and with such an unpredictable set of participants, it has proved very difficult to determine the extent to which conversational behaviour is systematic, and to generalize about it.

There is now no doubt that such a system exists. Conversation turns out, upon analysis, to be a highly structured activity, in which people tacitly operate with a set of basic conventions. A comparison has even been drawn with games such as chess: conversations, it seems, can be thought of as having an opening, a middle, and an end game. The participants make their moves and often seem to follow certain rules as the dialogue proceeds. But the analogy ends there. A successful conversation is not a game: it is no more than a mutually satisfying linguistic exchange. Few rules are ever stated explicitly (some exceptions are 'Don't interrupt', and 'Look at me when I talk to you'). Furthermore, apart from in certain types of argument and debate, there are no winners.

Conversational success

For a conversation to be successful, in most social contexts, the participants need to feel they are contributing something to it and are getting something out of it. For this to happen, certain conditions must apply. Everyone must have an opportunity to speak: no one should be monopolizing or constantly interrupting. The participants need to make their roles clear, especially if there are several possibilities (e.g. 'Speaking as a mother/linguist/Catholic...'). They need to have a sense of when to speak or stay silent; when to proffer information or hold it back; when to stay aloof or become involved. They need to develop a mutual tolerance, to allow for speaker unclarity and listener inattention: perfect expression and comprehension are rare, and the success of a dialogue largely depends on people recognizing their communicative weaknesses, through the use of rephrasing (e.g. 'Let me put that another way') and clarification (e.g. 'Are you with me?').

There is a great deal of ritual in conversation, especially at the beginning and end, and when topics change. For example, people cannot simply leave a conversation at any random point, unless they wish to be considered socially inept or ill-mannered. They have to choose their point of departure (such as the moment when a topic changes) or construct a special reason for leaving. Routines for concluding a conversation are particularly complex, and cooperation is crucial if it is not to end abruptly, or in an embarrassed silence. The parties may prepare for their departure a long way in advance, such as by looking at their watches or

Conversation analysis

In recent years, the phrase 'conversation analysis' has come to be used as the name of a particular method of studying conversational structure, based on the techniques of the American sociological movement of the 1970s known as *ethnomethodology*.

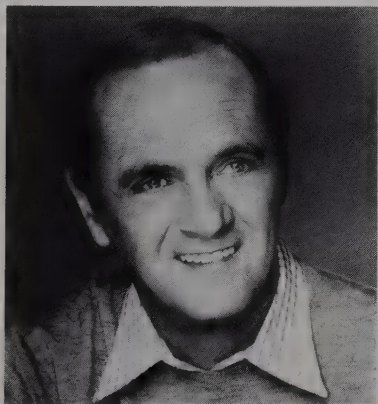
The emphasis in previous sociological research had been deductive and quantitative, focussing on general questions of social structure. The new name was chosen to reflect a fresh direction of study, which would focus on the techniques (or 'methods') used by people themselves (oddly referred to as 'ethnic'), when they are actually engaged in social – and thus linguistic – interaction. The central concern was to determine how individuals experience, make sense of, and report their interactions.

In conversation analysis, the data thus consist of tape recordings of natural conversation, and their associated transcriptions. These are then systematically analysed to determine what properties govern the way in which a conversation proceeds. The approach emphasizes the need for empirical, inductive work, and in this it is sometimes contrasted with 'discourse analysis', which has often been more concerned with formal methods of analysis (such as the nature of the rules governing the structure of texts).

giving a verbal early warning. A widespread convention is for visitors to say they must leave some time before they actually intend to depart, and for the hosts to ignore the remark. The second mention then permits both parties to act.

The topic of the conversation is also an important variable. In general it should be one with which everyone feels at ease: 'safe' topics between strangers in English situations usually include the weather, pets, children, and the local context (e.g. while waiting in a room or queue); 'unsafe' topics include religious and political beliefs and problems of health. There are some arbitrary divisions: asking what someone does for a living is generally safe: asking how much they earn is not. Cultural variations can cause problems: commenting about the cost of the furniture or the taste of a meal may be acceptable in one society but not in another.

It is difficult to generalize about what is normal, polite, or antisocial in conversational practice, as there is so much cultural variation. Silence, for example, varies in status. It is an embarrassment in English conversations, unless there are special reasons (such as in moments of grief). However, in some cultures (e.g. Lapps, Danes, the Western Apache) it is quite normal for participants to become silent. Often, who speaks, and how much is spoken, depends on the social status of the participants – for example, those of lower rank may be expected to stay silent if their seniors wish to speak (p. 38). Even the basic convention of 'one person speaks at a time' may be broken. In Antigua, for example, the phenomenon of several people speaking at once during a whole conversation is a perfectly normal occurrence.



Bob Newhart

Newhart's comedy routines often rely on the audience's awareness of discourse conventions. His 'driving instructor' sketch, for example, gives us only half of the conversation, from the instructor's viewpoint, leaving the responses of the learner driver to our imagination. Joyce Grenfell's 'teaching young children' sketches were based on the same principle.

CONVERSATIONAL MAXIMS

The success of a conversation depends not only on what speakers say but on their whole approach to the interaction. People adopt a 'cooperative principle' when they communicate: they try to get along with each other by following certain conversational 'maxims' that underlie the efficient use of language. Four basic maxims have been proposed (after H. P. Grice, 1975):

- The *maxim of quality* states that speakers' contributions to a conversation ought to be true. They should not say what they believe to be false, nor should they say anything for which they lack adequate evidence.
- The *maxim of quantity* states that the contribution should be as informative as is required for the purposes of the conversation. One should say neither too little nor too much.
- The *maxim of relevance* states that contributions should clearly relate to the purpose of the exchange.
- The *maxim of manner* states that the contribution should be perspicuous – in particular, that it should be orderly and brief, avoiding obscurity and ambiguity.

Other maxims have also been proposed, such as 'Be polite', 'Behave consistently.' The principle of relevance is currently attracting most attention, as it has been proposed as a fundamental explanatory principle for a theory of human communication (D. Sperber & D. Wilson, 1986).

Listeners will normally assume that speakers are following these criteria. Speakers may of course break (or 'flout') these maxims – for example, they may lie, be sarcastic, try to be different, or clever – but conversation proceeds on the assumption that they are not doing so. Listeners may then draw inferences from what speakers *have* said (the literal meaning of the utterance) concerning what they have *not* said (the implications, or 'implicatures' of the utterance). For example,

A: I need a drink.

B: Try The Bell.

If B is adhering to the cooperative principle, several implicatures arise out of this dialogue: for example, The Bell must be a place that sells drinks; it must be open (as far as B knows); it must be nearby. If B is not being cooperative (e.g. if he knows that The Bell is closed, or is the name of a greengrocer's), he is flouting the maxims of quality and relevance.

Deliberate flouting of this kind is uncommon, of course, and only occurs in such special cases as sarcasm, joking, or deliberate unpleasantness. More likely is the inadvertent flouting of conversational maxims – as would happen if B genuinely did not know that The Bell was closed, and accidentally sent A on a wild goose chase. In everyday conversation, misunderstandings often take place as speakers make assumptions about what their listeners know, or need to know, that turn out to be wrong. At such points, the conversation can break down and may need to be 'repaired', with the participants questioning, clarifying, and cross-checking. The repairs are quickly made in the following extract, through the use of such pointers as 'I told you' and 'sorry'.

A: Have you got the time?

B: No, I told you, I lost my watch.

A: Oh, sorry, I forgot.

But it is quite common for participants not to realize that there has been a breakdown, and to continue conversing at cross purposes.

CONVERSATIONAL TURNS

Probably the most widely recognized conversational convention is that people take turns to speak. But how do people know when it is their turn? Some rules must be present, otherwise conversations would be continually breaking down into a disorganized jumble of interruptions and simultaneous talk. In many formal situations, such as committee meetings and debates, there are often explicit markers showing that a speaker is about to yield the floor, and indicating who should speak next ('I think Mr Smith will know the answer to that question'). This can happen in informal situations too ('What do you think, John?'), but there the turn-taking cues are usually more subtle.

People do not simply stop talking when they are ready to yield the floor. They usually signal some way in advance that they are about to conclude. The clues may be semantic ('So anyway, ...', 'Last but not least ...'); but more commonly the speech itself can be modified to show that a turn is about to end – typically, by lowering its pitch, loudness, or speed. Body movements and patterns of eye contact are especially important. While speaking, we look at and away from our listener in about equal proportions; but as we approach the end of a turn, we look at the listener more steadily. Similarly, when talking to a group of people, we often look more steadily at a particular person, to indicate that in our view this should be the next speaker.

Listeners are not passive in all of this. Here too there are several ways of signalling that someone wants to talk next. Most obviously, the first person in a group actually to start speaking, after the completion of a turn, will usually be allowed to hold the floor. More subtly, we can signal that we want to speak next by an observable increase in body tension – by leaning forward, or producing an audible intake of breath. Less subtly, we can simply interrupt – a strategy which may be tolerated, if the purpose is to clarify what the speaker is saying, but which more usually leads to social sanctions.

EXCHANGES

Because conversational discourse varies so much in length and complexity, analysis generally begins by breaking an interaction down into the smallest possible units, then examining the way these units

are used in sequences. The units have been called 'exchanges' or 'interchanges', and in their minimal form consist simply of an initiating utterance (I) followed by a response utterance (R), as in:

I: What's the time?

R: Two o'clock.

Two-part exchanges (sometimes called 'adjacency pairs') are commonplace, being used in such contexts as questioning/answering, informing/acknowledging, and complaining/excusing. Three-part exchanges are also important, where the response is followed by an element of feedback (F). Such reactions are especially found in teaching situations:

TEACHER: Where were the arrows kept? (I)

PUPIL: In a special kind of box. (R)

TEACHER: Yes, that's right, in a box. (F)

What is of particular interest is to work out the constraints that apply to sequences of this kind. The teacher–feedback sequence would be inappropriate in many everyday situations:

A: Did you have a good journey?

B: Apart from a jam at Northampton.

A: *Yes, that's right, a jam at Northampton.

Unacceptable sequences are easy to invent:

A: Where do you keep the jam?

B: *It's raining again.

On the other hand, with ingenuity it is often possible to imagine situations where such a sequence could occur (e.g. if B were staring out of the window at the time). And discourse analysts are always on the lookout for unexpected, but perfectly acceptable, sequences in context, such as:

A: Goodbye.

B: Hello.

(used, for example, as A is leaving an office, passing B on his way in). Many jokes, too, break discourse rules as the source of their effect:

A: Yes, I can.

B: Can you see into the future?

Misunderstandings

An important aim of discourse analysis is to find out why conversations are not always successful. Misunderstanding and mutual recrimination is unfortunately fairly common. Participants often operate with different rules and expectations about the way in which the conversation should proceed – something that is particularly evident when people of different cultural backgrounds interact. But even within a culture, different 'rules of interpretation' may exist.

It has been suggested, for example, that there are different rules governing the way in which men and women participate in a conversation (p. 21). A common source of misunderstanding is the way both parties use head nods and *mhm* noises while the other is speaking – something that women do much more frequently than men. Some analysts have suggested that the two sexes mean different things by this behaviour. When a woman does it, she is simply indicating that she is listening, and encouraging the speaker to continue, but the male interprets it to mean that she is agreeing with everything he is saying. By contrast, when a man does it, he is signalling that he does not necessarily agree, whereas the woman interprets it to mean that he is not always listening. Such interpretations are plausible, it is argued, because they explain two of the most widely reported reactions from participants in cross-sex conversations – the male reaction of 'It's impossible to say what a woman really thinks', and the female reaction of 'You never listen to a word I say.' (After D. N. Maltz & R. A. Borker, 1982.)

Conversation manoeuvres

Conversational turn-taking is often marked by clear signals of direction.

Openings

Guess what ...
Sorry to trouble you ...
Lovely day!
Got a match?
Can I help you?
Good morning.
Excuse me ...

Did you hear the one about ...
Can you spare a minute?
Halt! Who goes there?
But not: *How much do you earn?

Ongoing checks

By the speaker:
Do you see?
Can you guess what he said?

Are you with me?
Do I make myself clear?
Don't you think?
Let me put it another way ...
Don't get me wrong ...
What I'm trying to say is ...
By the listener:
You mean ...
Have I got you right?
Mhm.
I don't get you.
Let's get that straight ...

Changing topic

Introducing a new topic:
That reminds me ...
Incidentally ...
That's a good question.
By the way ...
Speaking of John ...
Where was I?
Concluding a topic:
So it goes.
That's life.
Makes you think, doesn't it.

Let's wait and see.

Ending

Sorry, but I have to go now.
Nice talking to you.
Well, must get back to work.
Gosh, is that the time?
I mustn't keep you.

Textual structure

To call a sequence of sentences a 'text' is to imply that the sentences display some kind of mutual dependence; they are not occurring at random. Sometimes the internal structure of a text is immediately apparent, as in the headings of a restaurant menu; sometimes it has to be carefully demonstrated, as in the network of relationships that enter into a literary work. In all cases, the task of textual analysis is to identify the linguistic features that cause the sentence sequence to 'cohere' – something that happens whenever the interpretation of one feature is dependent upon another elsewhere in the sequence. The ties that bind a text together are often referred to under the heading of *cohesion* (after M. A. K. Halliday & R. Hasan, 1976). Several types of cohesive factor have been recognized:

- **Conjunctive relations** What is about to be said is explicitly related to what has been said before, through such notions as contrast, result, and time:

I left early. *However*, Mark stayed till the end. *Lastly*, there's the question of cost.

- **Coreference** Features that cannot be semantically interpreted without referring to some other feature in the text. Two types of relationship are recognized: *anaphoric* relations look backwards for their interpretation, and *cataphoric* relations look forwards:

Several people approached. They seemed angry. Listen to this: *John's getting married*.

- **Substitution** One feature replaces a previous expression:

I've got a pencil. Do you have *one*? Will we get there on time? I think *so*.

- **Ellipsis** A piece of structure is omitted, and can be recovered only from the preceding discourse:

Where *did you see the car*? ^ In the street.

- **Repeated forms** An expression is repeated in whole or in part:

Canon Brown arrived. Canon Brown was cross.

- **Lexical relationships** One lexical item enters into a structural relationship with another (p. 105): The *flowers* were lovely. He liked the *tulips* best.

- **Comparison** A compared expression is pre-supposed in the previous discourse:

That house was *bad*. This one's far *worse*.

Cohesive links go a long way towards explaining how the sentences of a text hang together, but they do not tell the whole story. It is possible to invent a sentence sequence that is highly cohesive but nonetheless incoherent (after N. E. Enkvist, 1978, p. 110):

A week has seven *days*. Every *day* I feed my *cat*. *Cats* have four legs. *The cat* is on the *mat*. *Mat* has three letters.

A text plainly has to be *coherent* as well as cohesive, in that the concepts and relationships expressed should be relevant to each other, thus enabling us to make plausible inferences about the underlying meaning.

Two ways of demonstrating cohesion

Paragraphs are often highly cohesive entities. The cohesive ties can stand out very clearly if the sentences are shuffled into a random order. It may even be possible to reconstitute the original sequence solely by considering the nature of these ties, as in the following case:

1. However, nobody had seen one for months.
2. He thought he saw a shape in the bushes.
3. Mark had told him about the foxes.
4. John looked out of the window.
5. Could it be a fox?

(The original sequence was 4,2,5,3,1.)

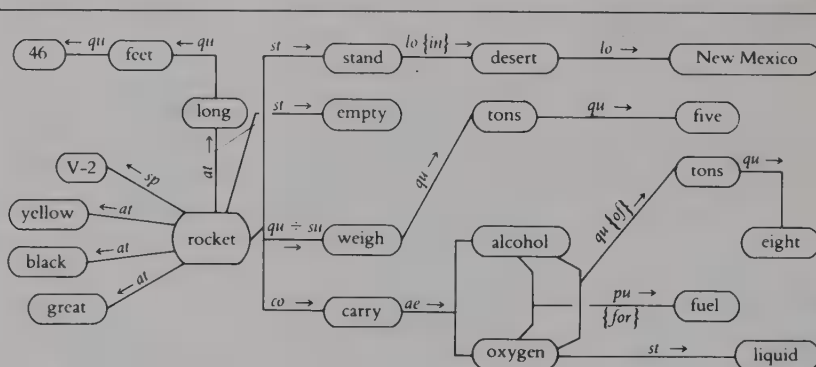
We can use graphological devices to indicate the patterns of cohesion within a text. Here is the closing paragraph of James Joyce's short story 'A Painful Case'. The sequence of pronouns, the anaphoric definite articles, and the repeated phrases are the main cohesive features between the clauses and sentences. Several of course refer back to previous parts of the story, thus making this paragraph, out of context, impossible to understand.

He turned back the way he had come, the rhythm of the engine pounding in his ears. He began to doubt the reality of what memory told him. He halted under a tree and allowed the rhythm to die away. He could not feel her near him in the DARKNESS nor her voice touch his ear. He waited for some minutes listening. He could hear NOTHING: the NIGHT was perfectly silent. He listened again: perfectly silent. He felt that he was ALONE.

Macrostructures

Not all textual analysis starts with small units and works from the 'bottom up' (p. 71); some approaches aim to make very general statements about the macrostructure of a text. In psychology, for example, attempts have been made to analyse narratives into schematic outlines that represent the elements in a story that readers remember. These schemata have been called 'story-grammars' (though this is an unusually broad sense of the term 'grammar', cf. §16).

In one such approach (after P. W. Thorndyke, 1977), simple narratives are analysed into four components: *setting*, *theme*, *plot*, and *resolution*. The setting has three components: the *characters*, a *location*, and a *time*. The theme consists of an *event* and a *goal*. The plot consists of various *episodes*, each with its own *goal* and *outcome*. Using distinctions of this kind, simple stories are analysed into these components, to see whether the same kinds of structure can be found in each (p. 79). Certain similarities do quickly emerge; but when complex narratives are studied, it proves difficult to devise more detailed categories that are capable of generalization, and analysis becomes increasingly arbitrary.



Conceptual structure One way of representing the conceptual structure of a text (after R. de Beaugrande & W. Dressler, 1981, p. 100). This 'transition network' summarizes the following paragraph:

A great black and yellow V-2 rocket 46 feet long stood in

a New Mexico desert. Empty, it weighed five tons. For fuel it carried eight tons of alcohol and liquid oxygen.

The abbreviations identify the types of semantic links which relate the concepts (following the direction of the arrows):

ae affected entity
at attribute of
co containment of
lo location of
pu purpose of
qu quantity of
sp specification of
st state of
su substance of

21 Pragmatics

Pragmatics studies the factors that govern our choice of language in social interaction and the effects of our choice on others. In theory, we can say anything we like. In practice, we follow a large number of social rules (most of them unconsciously) that constrain the way we speak. There is no law that says we must not tell jokes during a funeral, but it is generally 'not done'. Less obviously, there are norms of formality and politeness that we have intuitively assimilated, and that we follow when talking to people who are older, of the opposite sex, and so on. Writing and signing behaviour are constrained in similar ways.

Pragmatic factors always influence our selection of sounds, grammatical constructions, and vocabulary from the resources of the language. Some of the constraints are taught to us at a very early age – in British English, for example, the importance of saying *please* and *thank you*, or (in some families) of not referring to an adult female in her presence as *she*. In many languages, pragmatic distinctions of formality, politeness, and intimacy are spread throughout the grammatical, lexical, and phonological systems, ultimately reflecting matters of social class, status, and role (§10, p. 99). A well-studied example is the pronoun system, which frequently presents distinctions that convey pragmatic force – such as the choice between *tu* and *vous* in French.

Languages differ greatly in these respects. Politeness expressions, for instance, may vary in frequency and meaning. Many European languages do not use their word for *please* as frequently as English does; and the function and force of *thank you* may also alter (e.g. following the question 'Would you like some more cake?', English *thank you* means 'yes', whereas French *merci* would mean 'no'). Conventions of greeting, leave-taking, and dining also differ greatly from language to language. In some countries it is polite to remark to a host that we are enjoying the food; in others it is polite to stay silent. On one occasion, at a dinner in an Arabic community, the present author made the mistake of remarking on the excellence of the food before him. The host immediately apologized, and arranged for what was there to be replaced!

Pragmatic errors break no rules of phonology, syntax, or semantics. The elements of *How's tricks, your majesty?* will all be found in English language textbooks and dictionaries, but for most of us the sequence is not permissible from a pragmatic viewpoint. Pragmatics has therefore to be seen as separate from the 'levels' of language represented in linguistic models of analysis (§13). It is not a 'part' of language structure, but its domain is so closely

bound up with structural matters that it cannot be ignored in this section of the encyclopedia.

THE IDENTITY OF PRAGMATICS

Pragmatics is not at present a coherent field of study. A large number of factors govern our choice of language in social interaction, and it is not yet clear what they all are, how they are best inter-related, and how best to distinguish them from other recognized areas of linguistic enquiry. There are several main areas of overlap.

Semantics (§17) Pragmatics and semantics both take into account such notions as the intentions of the speaker, the effects of an utterance on listeners, the implications that follow from expressing something in a certain way, and the knowledge, beliefs, and presuppositions about the world upon which speakers and listeners rely when they interact.

Stylistics (§12) and *sociolinguistics* (§§10, 63) These fields overlap with pragmatics in their study of the social relationships which exist between participants, and of the way extralinguistic setting, activity, and subject-matter can constrain the choice of linguistic features and varieties.

Psycholinguistics (§§7, 38) Pragmatics and psycholinguistics both investigate the psychological states and abilities of the participants that will have a major effect upon their performance – such factors as attention, memory, and personality.

Discourse analysis (§20) Both discourse analysis and pragmatics are centrally concerned with the analysis of conversation, and share several of the philosophical and linguistic notions that have been developed to handle this topic (such as the way information is distributed within a sentence, deictic forms (p. 106), or the notion of conversational 'maxims' (p. 117)).

As a result of these overlapping areas of interest, several conflicting definitions of the scope of pragmatics have arisen. One approach focusses on the factors formally encoded in the structure of a language (honorific forms, *tu/vous* choice, and so on). Another relates it to a particular view of semantics: here, pragmatics is seen as the study of all aspects of meaning other than those involved in the analysis of sentences in terms of truth conditions (p. 107). Other approaches adopt a much broader perspective. The broadest sees pragmatics as the study of the principles and practice underlying *all* interactive linguistic performance – this including all aspects of language usage, understanding, and appropriateness. Textbooks on pragmatics to date, accordingly, present a diversity of subject matter,

and a range of partially conflicting orientations and methodologies, which proponents of the subject have yet to resolve. However, if we take diversity of opinion to be a sign of healthy growth in a subject, it must be said that few other areas of language study have such a promising future.

Speech acts

The British philosopher J. L. Austin (1911–1960) was the first to draw attention to the many functions performed by utterances as part of interpersonal communication. In particular, he pointed out that many utterances do not communicate information, but are equivalent to actions. When someone says ‘I apologize ...’, ‘I promise ...’, ‘I will’ (at a wedding), or ‘I name this ship ...’, the utterance immediately conveys a new psychological or social reality. An apology takes place when someone apologizes, and not before. A ship is named only when the act of naming is complete. In such cases, to say is to perform. Austin thus called these utterances *performatives*, seeing them as very different from statements that convey information (*constatives*). In particular, performatives are not true or false. If A says ‘I name this ship ...’, B cannot then say ‘That’s not true’!

In speech act analysis, we study the effect of utterances on the behaviour of speaker and hearer, using a threefold distinction. First, we recognize the bare fact that a communicative act takes place: the *locutionary* act. Secondly, we look at the act that is performed as a result of the speaker making an utterance – the cases where ‘saying = doing’, such as betting, promising, welcoming, and warning; these, known as *illocutionary* acts, are the core of any theory of speech acts. Thirdly, we look at the particular effect the speaker’s utterance has on the listener, who may feel amused, persuaded, warned, etc., as a consequence: the bringing about of such effects is known as a *perlocutionary* act. It is important to appreciate that the illocutionary force of an utterance and its perlocutionary effect may not coincide. If I warn you against a particular course of action, you may or may not heed my warning.

There are thousands of possible illocutionary acts, and several attempts have been made to classify them into a small number of types. Such classifications are difficult, because verb meanings are often not easy to distinguish, and speakers’ intentions are not always clear. One influential approach sets up five basic types (after J. R. Searle, 1976):

- **Representatives** The speaker is committed, in varying degrees, to the truth of a proposition, e.g. *affirm, believe, conclude, deny, report*.
- **Directives** The speaker tries to get the hearer to do something, e.g. *ask, challenge, command, insist, request*.
- **Commissives** The speaker is committed, in varying degrees, to a certain course of action, e.g. *guarantee, pledge, promise, swear, vow*.

- **Expressives** The speaker expresses an attitude about a state of affairs, e.g. *apologize, deplore, congratulate, thank, welcome*.
- **Declarations** The speaker alters the external status or condition of an object or situation solely by making the utterance, e.g. *I resign, I baptize, You’re fired, War is hereby declared*.

FELICITY CONDITIONS

Speech acts are successful only if they satisfy several criteria, known as ‘felicity conditions’. For example, the ‘preparatory’ conditions have to be right: the person performing the speech act has to have the authority to do so. This is hardly an issue with such verbs as *apologize, promise, or thank*, but it is an important constraint on the use of such verbs as *fine, baptize, arrest, and declare war*, where only certain people are qualified to use these utterances. Then, the speech act has to be executed in the correct manner: in certain cases there is a procedure to be followed exactly and completely (e.g. *baptizing*); in others, certain expectations have to be met (e.g. one can only *welcome* with a pleasant demeanour). And, as a third example, ‘sincerity’ conditions have to be present: the speech act must be performed in a sincere manner. Verbs such as *apologize, guarantee, and vow* are effective only if speakers mean what they say; *believe* and *affirm* are valid only if the speakers are not lying.

Ordinary people automatically accept these conditions when they communicate, and they depart from them only for very special reasons. For example, the request *Will you shut the door?* is appropriate only if (a) the door is open, (b) the speaker has a reason for asking, and (c) the hearer is in a position to perform the action. If any of these conditions does not obtain, then a special interpretation of the speech act has to apply. It may be intended as a joke, or as a piece of sarcasm. Alternatively, of course, there may be doubt about the speaker’s visual acuity, or even sanity!

This notice is cast in the form of a statement, but there is no doubt as to the directive illocutionary force intended by the writer. The perlocutionary effect, however, is not as anticipated!



Indirect speech acts

Some speech acts directly address a listener, but the majority of acts in everyday conversation are indirect. For example, there are a very large number of ways of asking someone to perform an action. The most direct way is to use the imperative construction (*Shut the door*), but it is easy to sense that this would be inappropriate in many everyday situations – too abrupt or rude, perhaps. Alternatives stress such factors as the hearer’s ability or desire to perform the action, or the speaker’s reasons for having the action done. These include the following:

I’d be grateful if you’d shut the door.

Could you shut the door?

Would you mind shutting the door?

It’d help to have the door shut.

It’s getting cold in here.

Shall we keep out the draught?

Now, Jane, what have you forgotten to do?

Brrr!

Any of these could, in the right situation, function as a request for action, despite the fact that none has the clear form of an imperative. But of course, it is always open to the hearer to misunderstand an indirect request – either accidentally or deliberately.

Teacher: Johnny, there’s some chalk on the floor.
Johnny: Yes, there is, sir.
Teacher: Well, pick it up, then!



PART IV

The medium of language: speaking and listening

The core of language study is the analysis of meaning and its grammatical expression – matters that are treated under the heading of ‘The Structure of Language’ in Part III. These properties of language underlie all forms of linguistic communication, and must be recognized whether we choose to communicate through the medium of speech, writing, signing, or any other. At the same time, each medium has its own distinctive properties that require independent study. These are the subject matter of Parts IV–VI.

We begin with the study of sound, which is the most universal and natural medium for the transmission and reception of language. Writing holds a less central place, in the history of both the individual and the human species. No community has ever been found to lack spoken language, but only a minority of languages have ever been written down. Likewise, the vast majority of human beings learn to speak (for those who do not, see Part VIII); but it is only in recent years that some of these people have learned to write.

Part IV provides an account of the chief factors involved in the production, transmission, and reception of speech. It begins with a description of the aspects of human anatomy and physiology involved in speech production – the vocal organs (§22). This is followed by an account of the acous-

tic properties of speech – the nature of the sound waves that are set in motion as a result of vocal organ activity (§23). Some of the main instruments used in the study of speech physiology and acoustics are reviewed in §24. The process of speech reception is then introduced (§25), with reference to both the mechanism of hearing and the little-understood task of speech perception. And all three stages – production, transmission, and reception – are brought together, in order to attack the problem of how to promote speech interaction with machines (§26).

Phonetics, the science of speech sounds, provides the framework for §27, which reviews the whole range of sounds that the vocal tract can produce, and presents the symbols used in making a phonetic transcription. This leads naturally to a discussion of the kinds of sound most commonly used in the world’s languages, and of the way sounds interrelate as part of a language system (§28). The main notions in the subject of phonology, which studies the properties of sound systems, are introduced during this section. Part IV then concludes with an account of such effects as intonation, rhythm, and tones of voice – the ‘suprasegmental’ aspects of spoken language (§29) – and a discussion of sound symbolism (§30).

An X-ray radiographic slide showing a speaker pronouncing an [i] vowel.

22 The anatomy and physiology of speech

The vocal organs

The vocal organs are those parts of the body that are involved in the production of speech. The name 'vocal organs' is not entirely appropriate, as their main function is in fulfilling the basic biological needs of breathing and eating. But there seems to have been considerable evolutionary development in their form, which enables them to function efficiently for the act of speech (§49).

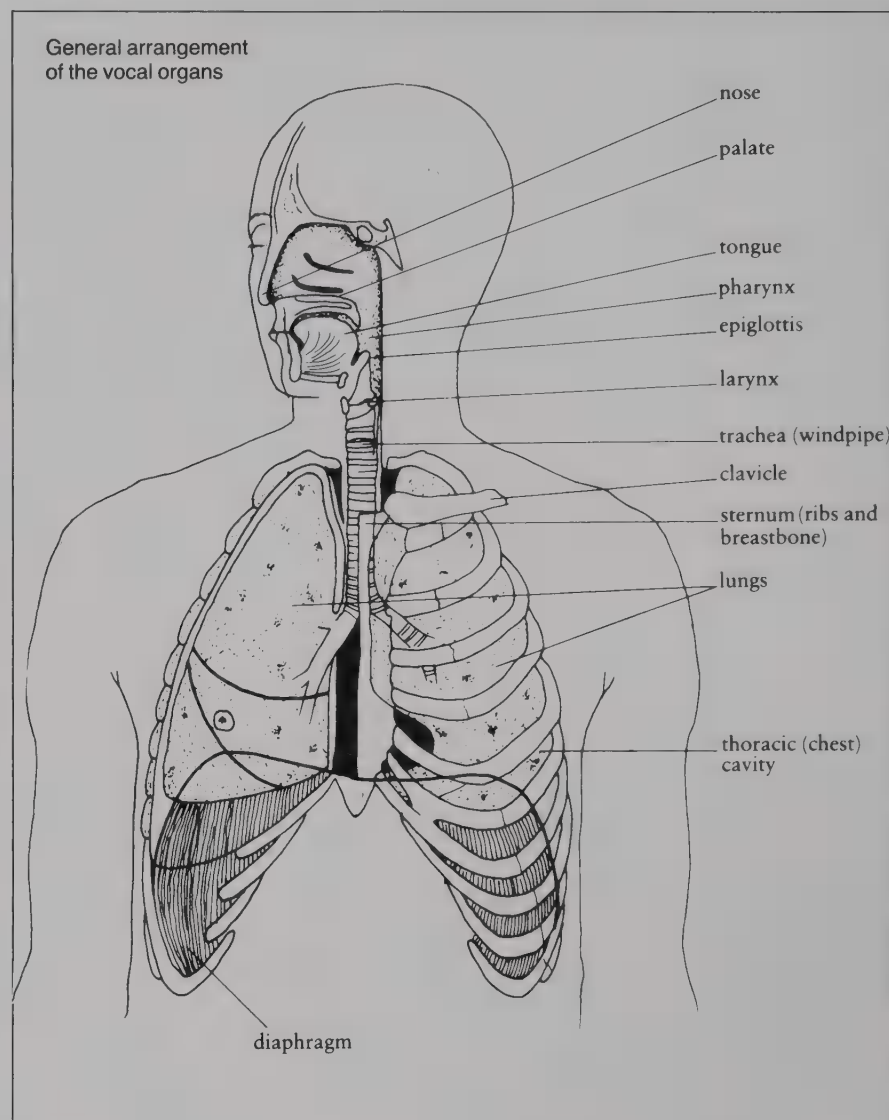
Perhaps the most striking feature of any diagram of the vocal organs is the amount of the body involved in speech. It is not simply the mouth and throat; we have to show the involvement of the *lungs*, the *trachea* (or windpipe) and the *nose*. Inside the mouth, we have to distinguish the *tongue*, and the various parts of the *palate*. Inside the throat, we need to distinguish the upper part, or *pharynx*, from the lower part, or *larynx*, which contains the *vocal folds* – commonly called the vocal 'cords'. The pharynx, mouth, and nose form a system of hollow areas, or *cavities*, known as the *vocal tract* (though this term sometimes includes larynx and lungs as well). When we move the organs in the vocal tract, we alter its shape, and it is this which enables the many different sounds of spoken language to be produced.

THE LUNGS

Before any sound can be produced at all, there has to be a source of energy (p. 132). In speech, the energy takes the form of a stream of air, which has in normal circumstances been set in motion by the lungs.

The lungs are found in a cavity in the chest (or *thorax*) known as the *thoracic cavity*. This cavity is bounded at the back by the spinal column, at the front by the ribs and breastbone (or *sternum*), and at the bottom by the dome-shaped muscle known as the *diaphragm*, which separates the lungs from the lower cavities of the abdomen. The structure surrounding the thoracic cavity is referred to as the *thoracic cage*. The act of respiration takes place through the action of the thoracic cage, which enables the lungs to act as a kind of bellows, allowing air to flow inwards and outwards.

In order to speak, we must first inhale. Signals from the nerve centre in the brain stem (where respiration is controlled) cause the muscles of the thoracic cage to contract: in particular, the muscles between the ribs (the *intercostal* muscles) cause the ribs to move upwards and outwards, and the diaphragm to move downwards. The result is to expand the chest, and thus the lungs, temporarily causing the air pressure in the lungs to be reduced. Air immediately flows into the lungs, in order to



equalize the pressure with that of the atmosphere outside the body.

We then exhale. We contract the chest, and thus the lungs, by lowering the ribs and raising the diaphragm, forcing the air out. But we never exhale all the air. Only about a quarter of the air in the lungs is used while we are engaged in normal conversation – though the amount increases to some extent if our speech becomes loud or effortful, as in shouting, acting, public speaking, or producing a 'stage whisper'.

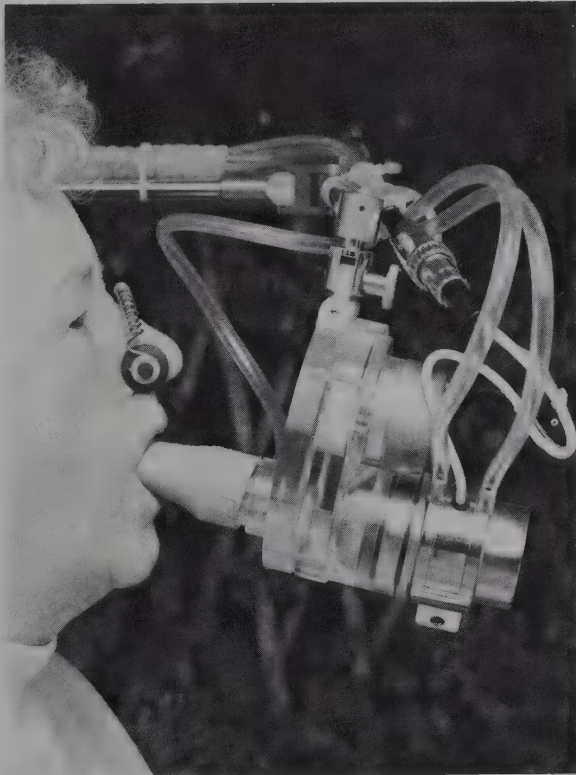
USING THE LUNGS FOR SPEECH

Lung air is often referred to as *pulmonic* air. When pulmonic air flows outwards, it is said to be *egressive*. The vast majority of speech sounds are made using pulmonic egressive air.

It is also possible – though not usual – to speak while the air stream is flowing inwards to the lungs (pulmonic *ingressive* air). We occasionally hear this air stream used in English when someone is trying to talk while laughing or crying, or when out of breath. Words such as *yes* and *no* are sometimes said with an ingressive air stream, when we use a ‘routine’ tone of voice to acknowledge what someone is saying. An alternate use of egressive and ingressive air streams is sometimes heard when people are counting rapidly, ‘under their breath’. But ingressive speech is of poor quality, muffled, and croaky, and many people find it unpleasant to listen to. It is never put to routine use in everyday English speech.

Pneumotachograph (Right) Inside the face mask of this instrument there are separate meters for monitoring the volume of air flow from the mouth and the nose.

Spirometer (Below) The spirometer measures the volume of air produced by the lungs. The information is plotted on a revolving drum.

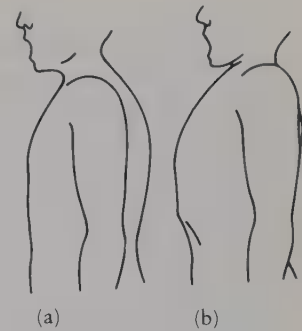


The respiratory cycle

The sequence of events involved when we breathe in (*inspiration*) and out (*expiration*) is known as the *respiratory cycle*. Normally, the two halves of this cycle are nearly equal in duration; but when we speak, the pattern changes to one of very rapid inhalation and very slow exhalation. The rate at which we breathe also changes. When we are silent and at rest, our average rate is 12 breaths a minute, so the time we take to inhale and exhale is about $2\frac{1}{2}$ seconds each. During speech, we cut down the time for inhaling to as little as a quarter of a second, and we regularly extend the time for exhaling to 5 or 10 seconds – even 20 seconds is possible, depending on the speaker’s voice control, emotional state, and other such factors. This altered pattern of breathing enables our exhalations to ‘carry’ much larger amounts of speech than would otherwise be the case. In everyday conversation, it is quite normal to produce from 250 to 300 syllables in a minute.



An 18th-century plethysmograph Plethysmography is a technique for determining the size of a part of the body, and it can be used to investigate the lung volume. This plethysmograph was simply a barrel with an airtight collar at the neck. The act of breathing alters the subject’s body volume, which in turn alters the amount of air in the barrel. A small pipe at the top of the barrel permits the passage of air. Monitoring the changes in airflow through the pipe thus provides a measure of the changes in lung volume. A development of the same technique is still used today.



Right and wrong ways to breathe

Techniques of breath control form an essential part of any training programme to improve the use of the voice – as in singing, drama, or speech therapy (§46). The most efficient breathing requires a rapid inspiration and a measured expiration that exactly meets the needs of the voice. The careful control of rib and diaphragm movement is the main feature of the *intercostal diaphragmatic* method of breathing, which specialists consider to be the most efficient for most purposes. It contrasts with several less efficient methods, such as the tense, nervous form of breathing in the upper part of the chest, known as *clavicular* breathing. If it is habitually used during speech, the excessive muscular tension required to maintain this breathing pattern can strain the vocal folds, causing hoarseness and other abnormal voice qualities. The diagrams above show correct (a) and incorrect (b) body positions for singing.

Speaking without the lungs

The vowels and consonants of English, as of most languages, are all made using pulmonic egressive air. But there are several other types of speech sound which do not use an air-stream from the lungs, and these are encountered in many languages of the world.

CLICKS

One of the most distinctive types of non-pulmonic sound is the click. Click sounds are sharp, suction noises, made by the tongue or lips. For example, the noise we write as *tut tut* (or *tsk tsk*) is a pair of click sounds, made by the tongue against the top teeth. While making a click sound, it is possible to breathe in and out, quite independently, showing that the lungs are not involved in their production.

In European languages, isolated click sounds are often heard as meaningful noises, but they are not part of their system of vowels and consonants (§28). The *tut tut* click, for example, expresses disapproval in English, but the sound is not used as part of a word, in the way that /t/ and /p/ are. However, in many other languages, clicks are used as consonants. Most well known are some of the languages of southern Africa, often referred to as 'click languages'. !Xū is one such language, with as many as 48 clicks (p. 168). The Khoisan languages, which include the languages of the Khoikhoi (Hottentot) and San (Bushmen) tribes, have the most complex click systems, using many different places of articulation in the mouth, and involving the simultaneous use of other sounds made in the throat or nose.

GLOTTALIC SOUNDS

The space behind the Adam's apple, between the vocal folds, is known as the *glottis*. We can use the glottis to start an air-stream moving, and several languages make use of sounds based on this principle, referred to as the *glottalic* air-stream mechanism. When the glottis makes the air move inwards, the sounds are called *implosives*. An implosive consonant is a glottalic ingressive sound. When the air is made to move outwards, the sounds are called *ejectives*. An ejective consonant is a glottalic egressive sound.

Implosive consonants occur in many languages, but are particularly common in American Indian and African languages (such as Shona and !jǝ). Ejective consonants are widely used in the languages of the Caucasian family, and also in many American Indian and African languages (such as Hausa and Amharic). They may even be heard in certain accents and styles of English. Speakers from the north of England quite often use them at the ends of words, in place of the usual pulmonically produced [p], [t] or [k]. And regardless of the accent we use, if we speak in a tense, clipped manner, these sounds will often be 'spat' out at the end of a word.



Miriam Makeba Her recordings of 'click songs' were popular in the 1960s. A native speaker of Xhosa, she used words containing click consonants in her songs, achieving notable effects by articulating them with great resonance.

How click sounds are made

A click sound is produced solely in the mouth. The air flow is controlled by movements which take place against the back part of the roof of the mouth, known as the *velum* (p. 130). Because of this, click sounds are described as using a *velaric* air-stream mechanism. *Tut tut* is an example of a double *dental* click (phonetic symbol [ɬ]), because the teeth have been involved in its production. A single dental click is widely used as a noise expressing negation throughout the

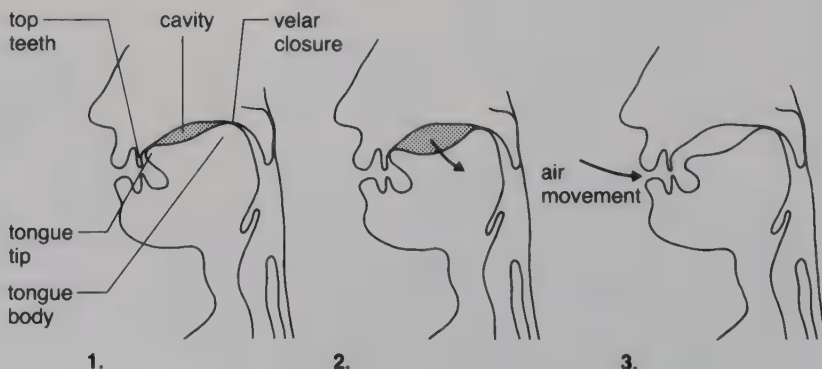
Near East. *Lateral* clicks (phonetic symbol [ɬ]) are made with the sides of the tongue, and are heard in the noises of encouragement made to horses or other animals (including the human). A click sound made at the lips would be known as a *bilabial* click – made with the lips puckered, it is often used as a 'kiss at a distance'.

made at the front of the mouth, using the tongue or lips. This forms a cavity in the mouth, cut off from the air outside.

2. The body of the tongue is moved slightly downwards and backwards, so as to form a partial vacuum inside the cavity.

3. When the tongue is suddenly lowered, or the lips opened, air rushes in from outside, to produce the sound we hear as a click.

1. The back of the tongue is raised so that it presses against the velum. At the same time, a closure is



How ejective sounds are made

The essential feature of an ejective sound is that the glottis is tightly closed, so that no air can get to or from the lungs. We are, in effect, 'holding our breath' for a brief moment.

1. At the same time as the glottis closes, we make ready to articulate a consonant sound – for [p] we close the lips, for [t] or [k] we raise the tongue. A body of air is thus trapped in the cavity between the

glottis and the closure higher up the vocal tract.

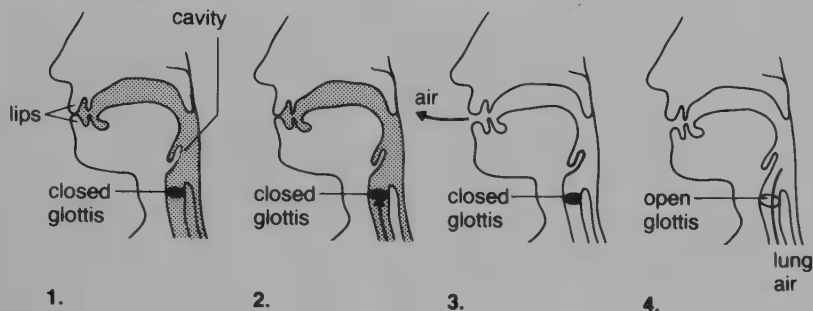
2. We contract some of the muscles of the larynx, so as to make the glottis move in an upwards direction – a movement which compresses the air in the cavity.

3. The increased pressure is suddenly released by removing the closure in the mouth – opening the lips, or lowering the tongue –

and the sound 'pops' out.

4. The glottis opens, and lung air rushes up the vocal tract, to act as a source of power for the next speech sound.

The whole process, from initial glottal closure to final glottal release takes on average only a twentieth of a second, though there is a great deal of timing variation among languages.



How implosive sounds are made

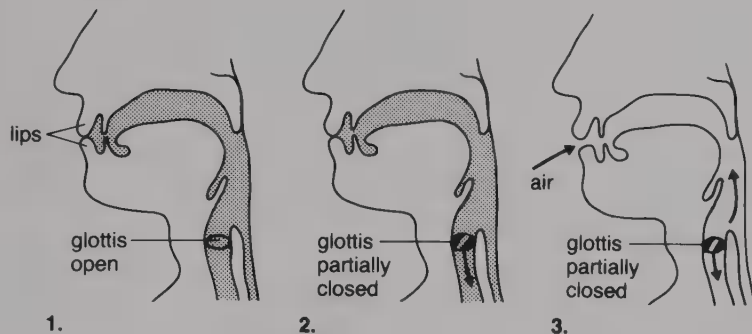
Implosive sounds use a process that is to a large extent the reverse of that used for ejectives.

1. We make a closure in the vocal tract – for [b] at the lips, for [d] or [g] with the tongue. Note the special phonetic symbols, to distinguish these sounds from pulmonic [b], [d] and [g].

2. The muscles of the larynx are used to partially close the glottis, and move it in a downwards direction, so that air pressure in the cavity above the glottis is somewhat reduced. The glottis is not closed completely (unlike ejective sounds), so that a certain amount of lung air is still able to move between the

vocal folds, causing them to vibrate.

3. When we open the lips, or lower the tongue, we release the vocal tract closure, and outside air is sucked into the mouth. This mixes with the lung air in the glottis, to produce a sound which has a muffled, hollow resonance.



OTHER TYPES OF SOUND

The vocal tract can produce many other kinds of sound, but they do not seem to be used with any regularity in spoken language. Scraping the teeth together, flapping the tongue against the floor of the mouth, or making a sucking noise with the tongue against the inside of the cheek – sounds like these are perceived as idiosyncrasies of the speaker. The listener does not usually interpret them as attempts at communication.

On the other hand, other air-stream mechanisms are occasionally used when people communicate. A velaric egressive sound (the same mechanism as for a click, but with the sound sent outwards rather than sucked inwards), made with the lips, is fairly common in French, where, along with a distinctive hand gesture and shrug of the shoulders, it means roughly 'I couldn't care less' or 'It's not my fault.' The similar sound, but with the tongue protruding slightly, is a signal of contempt in many languages – what in Britain is called a 'raspberry'.

Abnormal air-stream mechanisms are also used in special circumstances. It is possible to compress air within the cheek-space and use it to carry speech – so-called *buccal* voice, most well-known through the voice of Walt Disney's Donald Duck. It is also possible to make sounds using air rising from the stomach or oesophagus (the pipe leading from the pharynx to the stomach), as in a belch. *Oesophageal* voice is used in a sophisticated way by many people whose diseased larynx has been surgically removed (p. 276).

It is usual for a language to use only one or two air-stream mechanisms for the production of vowels and consonants. All languages make use of pulmonic egressive air. Glottalic egressive air (for ejectives) is also widely used (though not in European languages). Glottalic ingressive air (for implosives) is much rarer; and velaric air (for clicks) is used only in a small number of African languages. It is uncommon to find a language using more than one or two of these mechanisms regularly. A few languages use three. Damin, a ritual language of a north Australian aboriginal tribe, the Lardil, is unique in that it is reported to use no fewer than five air-stream mechanisms. Pulmonic egressive, glottalic egressive and velaric ingressive sounds are used, but this language also has a pulmonic *ingressive* [l] sound, and a velaric *egressive* [p] sound. No other languages have been discovered with consonants involving these latter types of sound, which has led some scholars to speculate that perhaps the sound system of this language was specially invented to perform some ritual function.

THE LARYNX

Before we can speak, lung air has to be converted into audible vibrations, using the various organs within the vocal tract. The most important source of vibration for the production of speech sounds is in the lower region of the tract, at the larynx.

The larynx is located in the upper part of the trachea. It is a tube consisting of cartilages with connecting ligaments and membranes, within which are housed the two bands of muscular tissue known as the vocal folds. The location of the larynx can be easily felt because its front part, the *thyroid* (or 'shield-like') cartilage, forms a prominent angle in the neck, known as the 'Adam's apple' (it stands out more sharply in men). Two other cartilages work along with the thyroid to define the area of the larynx – the *cricoid* (or 'ring-like') cartilage, and the two *arytenoid* (or 'ladle-shaped') cartilages. The movements of all three help to control the way the vocal folds vibrate. Their anatomical arrangement is shown (right).

The opening between the vocal folds, known as the *glottis*, is quite a small area. In men, the inner edge of the folds is usually between 17 and 24 mm; in women it is even smaller, from about 13 to 17 mm. The folds at the glottis are often referred to as the 'true' vocal folds because slightly above them in the larynx is a second constriction, called the 'false' vocal folds, or 'ventricular' folds. It is uncommon to hear these used in speech sound production, though they are often involved in certain types of voice quality (a notable example being the 'gravelly' voice of the jazz musician, Louis Armstrong), and the effect of 'two-toned' voice is heard in certain types of voice disorders (p. 276).

The vocal folds

The vocal folds are remarkably versatile. Their tension, elasticity, height, width, length, and thickness can all be varied, owing to the complex interaction

of the many sets of muscles controlling laryngeal movement. These movements take place very rapidly during speech, and account for several kinds of auditory effect.

Voicing The most important effect is the production of audible vibration – a buzzing sound, known as *voice* or *phonation*. All vowels, and most of the consonants (e.g. [m], [b], [z]) make use of this effect. It is in fact possible to feel the vibration – for example, by placing the forefinger and thumb on either side of the Adam's apple, and comparing the effect of saying [zzz] and [sss] loudly. Alternatively, the resounding effect of vocal fold vibration can be sensed by making these sounds while closing one's ears with the fingers.

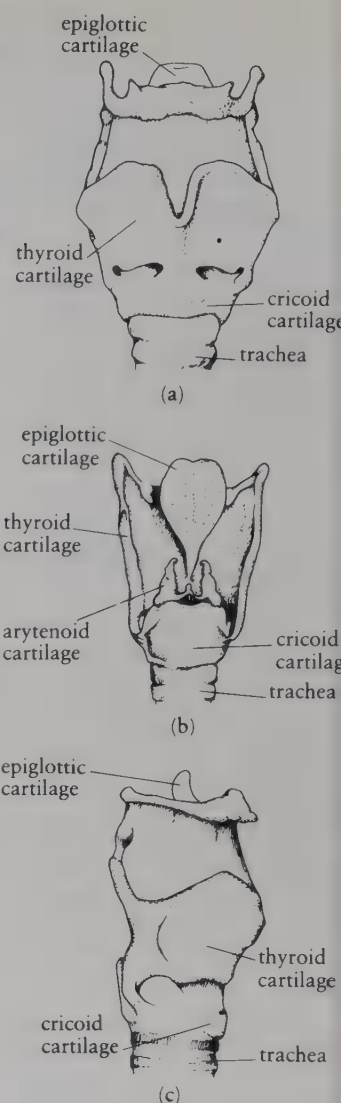
Each pulse of vibration represents a single opening and closing movement of the vocal folds. In adult male voices, this action is repeated on average about 120 times (or 'cycles') a second – corresponding to a note on the piano about an octave below middle C. In women, the average is just less than an octave higher, about 220 cycles a second. The higher the pitch of the voice, the more vibrations there will be (p. 133). A new-born baby's cry averages 400 vibrations a second.

Pitch We are able to alter the frequency of vocal fold vibration at will, within certain limits, to produce variations in pitch and loudness. The linguistic use of these features (in connection with 'intonation', 'stress', and the 'tones' of tone languages) are described separately in §29.

Glottal stop The vocal folds may also be held tightly closed (when holding one's breath, for example). When they are opened, the released lung air causes the production of a glottal stop [ʔ], heard most clearly in the sharp onset to a cough, but also commonly used as a sound unit in many languages and dialects (§27). In British English, for example, the glottal stop is most commonly heard in those dialects that have been influenced by London speech (in such words as *bottle*, where it replaces the sound [t]).

Glottal friction If the vocal cords are kept wide apart, air expelled with energy will produce audible glottal friction – an effect that is often used as an [h] sound in languages.

Voice qualities Other vocal fold movements can be initiated to produce such sound effects as *whisper*, *breathy* voice (heard in the 'bedroom' voice of many female film stars and singers), and *creaky* voice (heard, for example, in the menacing low tones of the horror-film actor, Vincent Price), where the vibrations are extremely slow (about 30 times a second). These and other similar effects involve complex patterns of vibration, and their physiological mechanism is not entirely understood.



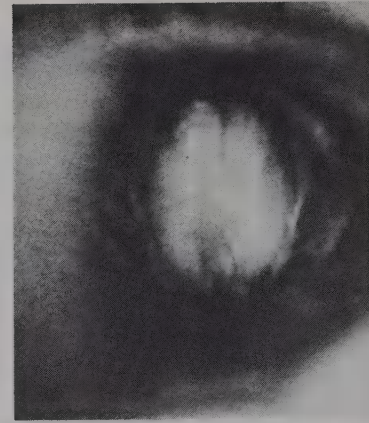
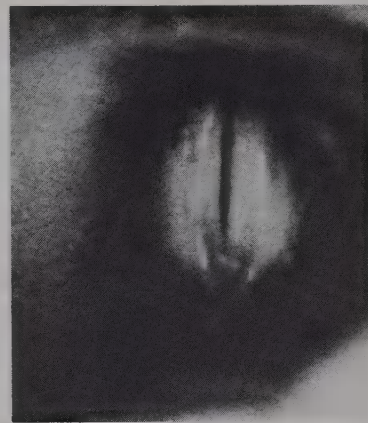
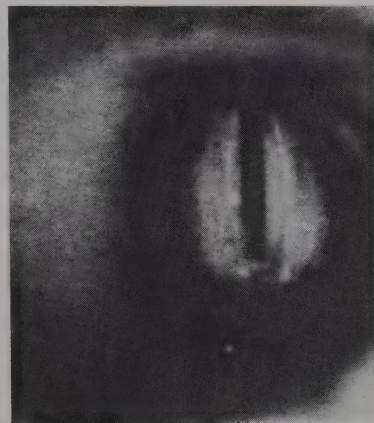
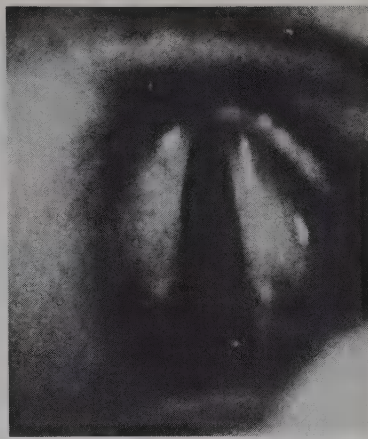
The structure of the larynx

- (a) front view
- (b) back view
- (c) side view

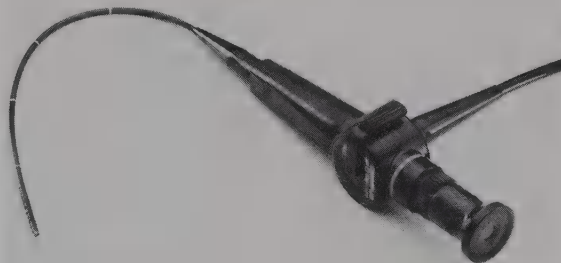
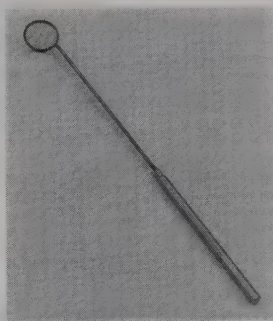
An evolutionary perspective

From a biological point of view, the larynx acts as a valve, controlling the flow of air to and from the lungs, and preventing food, foreign bodies, or other substances from entering the lungs. Also, by closing the vocal folds, it is possible to build up pressure within the lungs, such as would be required for all forms of muscular effort (e.g. lifting, defecation, coughing).

In the course of evolution, the larynx has come to be adapted to provide the main source of sound for speech. However, its position in front of the lower pharynx (which leads to the stomach) presents a complication, because food and liquids must therefore pass the entrance to the trachea on their way to the stomach. (This complication does not exist in other animals, where the larynx is positioned higher up (§49).) To solve the problem, a leaf-shaped cartilage known as the *epiglottis* is pulled across the entrance to the larynx as part of the mechanism of swallowing, thus preventing these substances going in the wrong direction.



The movement of the vocal folds, filmed by a high-speed camera (10,000 frames per second) before the start of phonation, as the vocal folds are in the process of closing (above), and during phonation, with the folds open and then closed (below). The posterior part of the folds is towards the bottom of each frame.



A laryngeal mirror (Above, left) The mirror is carefully inserted through the mouth until it is above the larynx. The angle of the mirror then permits a clear view. The investigator needs to hold down the tongue, and must be careful not to let the mirror touch the walls of the throat, which would produce a 'gagging' reflex in the subject.

A fibre-optic laryngoscope (Above, right) The flexible tube is inserted up through the nose and nasal cavity until it hangs down behind the soft palate. Some of the glass filaments in the tube provide a strong light source; others bring an image back to the eye-piece (which can be linked to a camera, p. 141). The main advantage of this approach, compared with the laryngeal mirror, is that the subject is able to speak with the device in place.

How is vocal fold vibration produced?

It is possible to see vocal fold vibration using a laryngeal mirror or a fibre-optic laryngoscope. Rapid vibrations appear as a trembling movement, somewhat like that of a vibrating guitar string. To study the effects in detail, the vibrations need to be filmed, and observed in slow motion, and this is now routinely done in instrumental phonetics (§24).

Several theories of vocal cord vibration have been proposed. At first, it was thought that the vocal folds vibrated in the manner of a stringed instrument – the direct result of nerve impulses moving the muscles of the larynx (a theory that in more recent times has been called the 'neurochronaxiac' theory). The contemporary view, however, explains vocal fold activity in terms of the way the laryngeal muscles change the folds' tension and elasticity in response to the air stream from the lungs: the 'myoelastic aerodynamic' theory of phonation.

In this view, air pressure causes the vocal folds to open for each vibration; they then close, partly because the natural elasticity of the folds makes them 'bounce back', and partly because the folds are 'sucked' together, due to a sudden drop in air pressure in the glottis, as the air rushes through the narrowed larynx (the 'Bernoulli effect', named after the Swiss mathematician Daniel Bernoulli (1700–82)).

ARTICULATION

Once the air stream passes through the larynx, it enters the long tubular structure known as the vocal tract. Here it is affected by the action of several mobile vocal organs – in particular, by the tongue, soft palate, and lips – which work together to make a wide range of speech sounds. The production of different speech sounds through the use of these organs is known as *articulation*.

In addition, sounds produced within the larynx or vocal tract are influenced by the inherent properties of the cavities through which the air stream passes – the pharyngeal, oral, and (from time to time) nasal cavities. These cavities give sounds their resonance. Several kinds of resonance can be produced because the vocal tract is able to adopt many different shapes.

In describing articulation, it is usual to distinguish between those parts of the vocal tract that are immobile ('passive articulators') and those that can move under the control of the speaker ('active articulators'). Within the first category, we need to recognize:

- the upper teeth, especially the incisors, which are used to form a constriction for several sounds, such as the first sound of *thin* [θ];
- the ridge behind the upper teeth, known as the *alveolar ridge*, against which many speech sounds are made, such as [t], [s]; and
- the bony arch behind the alveolar ridge, known as the *hard palate*, which is used in the articulation of a few sounds, such as the first sound of *you* [j].

All other organs are mobile, to a greater or lesser extent.

Active articulators

Pharynx This is a long muscular tube leading from the laryngeal cavity to the back part of the oral and nasal cavities. The areas adjacent to these cavities provide a means of dividing the pharynx into sections: the laryngopharynx, oropharynx, and nasopharynx. The pharynx can be narrowed or widened. Certain types of consonant can be produced by making a constriction here (p. 155), and movements of the larynx, soft palate, and tongue may also involve pharyngeal modifications that affect the quality of a sound. 'Pharyngealized' consonants and vowels can be heard in several languages (e.g. Arabic).

Soft palate, or velum This is a broad band of muscular tissue in the rear upper region of the mouth, whose most noticeable feature is the uvula – an appendage that hangs down at the back of the mouth, easily visible with the aid of a mirror.

In normal breathing, the soft palate is lowered, to permit air to pass easily through the nose – though of course the mouth may be open as well. In speech, there are three main positions that affect the quality of sounds:

- (i) The soft palate may be raised against the nasopharyngeal wall to make a 'velopharyngeal closure', so that air escapes only through the mouth. This produces a range of *oral* sounds – such as all the vowels and most of the consonants of English.
- (ii) The soft palate may be lowered to allow air to escape through mouth and nose. This is the position required to produce *nasalized vowels*, as in French (e.g. *bon* 'good'), Portuguese, and many other languages.
- (iii) The soft palate may be lowered, but the mouth remains closed. In this case, all the air is released through the nose, as in such *nasal consonants* as [m] and [n].

Lips The *orbicularis oris* ('muscle that encircles the mouth') is the main muscle controlling lip movement, though several other facial muscles are also involved. The lips may be completely closed (as for [p] or [m]), or held apart in varying degrees to produce the different kinds of rounding or spreading used on vowels (e.g. [u] vs [i], p. 153) or the friction of certain kinds of consonant (as in the *b* of Spanish *saber* 'know'):

Jaw The mandible bone permits a large degree of movement. It controls the size of the gap between the teeth and strongly influences the position of the lips. Speakers sometimes adopt open or closed jaw positions – as when someone speaks 'through gritted teeth'.



An X-ray radiograph giving a side view of the organs of speech during the articulation of an [i] vowel. The 'humped' outline of the tongue can be clearly seen. For a traditional anatomical diagram of this area, see p. 383.

The tongue

Of all the mobile organs, the tongue is the most versatile. It is capable of adopting more shapes and positions than any other vocal organ, and thus enters into the definition of a very large number of speech sounds: all vowels, and the majority of consonants. The tongue is a three-dimensional muscle, the whole of which can move in any of three main directions through the action of the various 'extrinsic' muscles: upwards/forwards (e.g. for [i]); upwards/backwards (e.g. for [u]); and downwards/backwards (e.g. for [a]). In addition, several 'intrinsic' muscles determine the shape of the tongue, in any position. For example, some muscles raise or lower the tongue tip, or move it to the left or the right. Others move the tongue sideways, or form a groove along the middle (as is needed for the articulation of [s]).

There are no obvious anatomical sections to the tongue, so to classify sounds, arbitrary divisions have to be made using the position of the tongue in relation to the upper part of the mouth. The main areas are best located when the tongue is at rest, with its tip behind the lower teeth.

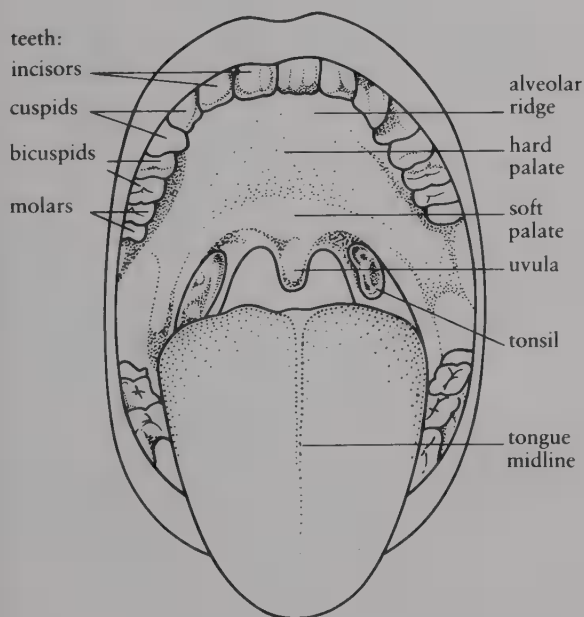
- *front* the part opposite the hard palate
- *back* the part opposite the soft palate
- *centre* the part opposite where the hard and soft palate meet

(Front, back, and centre are often jointly called the *dorsum* of the tongue.)

- *blade* the tapering part opposite the teeth ridge
- *tip* or *apex* the front extremity
- *rim*s the edges of the tongue

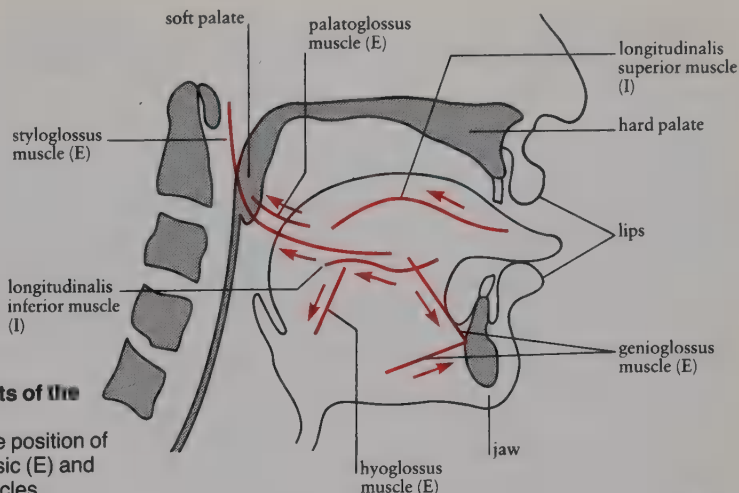
(Variations in tongue size are discussed in §6.)

The structures of the oral cavity



The movements of the tongue

In relation to the position of the main extrinsic (E) and intrinsic (I) muscles.



The nerves that control the vocal organs

There are twelve *cranial* nerves, whose role is to link the brain with the head and neck. Some perform a 'motor' function, controlling the action of muscles; others perform a 'sensory' function, sending signals to the brain. (The main areas of the brain involved in the production and perception of speech are introduced in §45.) Seven of the cranial nerves are brought into service as part of the process of speech and hearing, and the relevant functions of these nerves are listed below. (It is usual to use roman numerals when

listing cranial nerves.)

V The *trigeminal* nerve acts as a motor nerve to the muscles of the jaw and to one of the muscles controlling the soft palate. It also acts as a sensory nerve from the back two-thirds of the tongue.

VII The *facial* nerve is a motor nerve supplying the muscles of the lips.

VIII The *auditory* or *acoustic* nerve acts as a sensory nerve from the ear (p. 143).

IX The *glossopharyngeal* nerve acts both as a motor nerve to the pharynx, and as a sensory nerve from

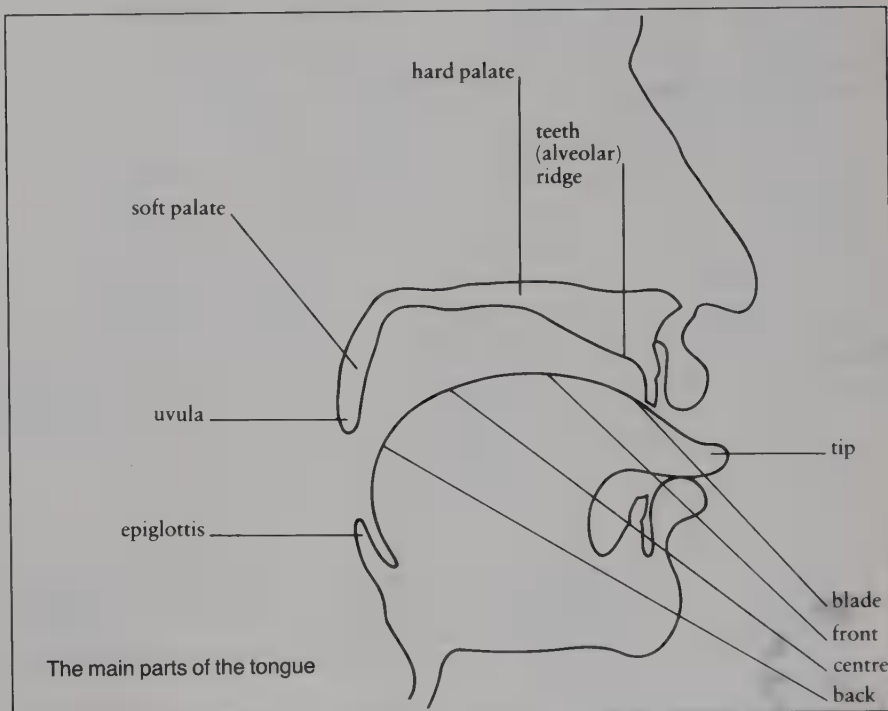
the back of the tongue.

X The *vagus* nerve is a motor nerve that supplies the muscles of the pharynx and larynx.

XI The *accessory* nerve acts as a motor nerve to the muscle that controls the raising of the soft palate.

XII The *hypoglossal* nerve is a motor nerve that supplies the muscles of the tongue.

In addition, the relevance of several *spinal* nerves should be noted, some of which control the chest muscles involved in respiration (p. 124).



23 The acoustics of speech

Sound energy is a pressure wave consisting of vibrations of molecules in an elastic medium – such as a gas, a liquid, or certain types of solid. For the study of speech production, we usually deal with the propagation of sound through the air: air particles are disturbed through the movements and vibrations of the vocal organs, especially the vocal folds (§22). But when we study speech reception (§25), air is not the only medium involved. The process of hearing requires the sound vibrations in air to be transformed into mechanical vibrations (through the bony mechanism of the middle ear), hydraulic changes (through the liquid within the inner ear), and electrical nerve impulses (along the auditory nerve to the brain).

When an object vibrates, it causes to-and-fro movements in the air particles that surround it. These particles affect adjacent particles, and the process continues as a chain reaction for as long as the energy lasts. If there is a great deal of energy in the original vibration, the wave of sound that is produced may be transmitted a great distance, before it dies away. But the air particles themselves do not travel throughout this distance. The movement of each particle is purely local, each one affecting the next, in much the same way as a long series of closely positioned dominoes can be knocked over, once the first domino is moved. However, unlike dominoes, air particles move back towards their original position once they have transmitted their movement to their neighbours.

The movement of sound waves in air is sometimes explained by analogy with a stone dropped into a pool of water, causing ripples, or waves; but this ignores the essentially three-dimensional nature of the activity. The domino simile, likewise, gives only a limited impression of the movement involved. A better parallel would be with an expanding balloon, which grows in all directions at once. Sound waves, too, move simultaneously in all directions from their source.

WAVEFORMS

The way air particles move can be compared to a pendulum or a swing. At rest, a swing hangs down vertically. When it is put in motion, a backwards movement is followed by a forwards movement, on either side of the rest point, as long as there is energy available to keep the swing moving. This to-and-fro movement is known as *oscillation*. Similarly, air particles oscillate around their rest point. As a particle moves forward, it compresses the adjacent particles and causes a tiny increase in the air pressure at that point. As it moves back, it decompresses these particles and causes a decrease in pressure. The motion is wave-like, as can

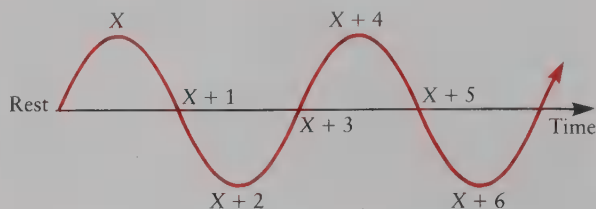
be seen if we follow the progress of a series of particles, once they have been set in motion by a source of vibration. In the following diagram, the movement of each particle is plotted at successive moments of time ($X + 1$, $X + 2$, etc.), imagining the source of vibration to be on the left.

Source of vibration	Air particles						
	P1	P2	P3	P4	P5	P6 ... (etc.)	
Air particles (P) at rest	○	•	○	•	○	•	
I Vibration starts at time X	○	○	○	○	○	○	I P1 hits P2.
II Time $X + 1$	○	○	○	○	○	○	II P2 hits P3; P1 returns towards its rest point.
III Time $X + 2$	○	○	○	○	○	○	III P3 hits P4; P2 returns towards its rest point; P1 has passed its rest point.
IV Time $X + 3$	○	○	○	○	○	○	IV P4 hits P5; P3 returns towards its rest point; P2 has passed its rest point; P1 returns towards its rest point.

If we draw a line between the position of each particle, the wave-like motion will be apparent, here presented vertically.

	Air particles						
	P1	P2	P3	P4	P5	P6 ... (etc.)	
At rest	○	○	○	○	○	○	
Time X	○	○	○	○	○	○	
Time $X + 1$	○	○	○	○	○	○	
Time $X + 2$	○	○	○	○	○	○	
Time $X + 3$	○	○	○	○	○	○	
Time $X + 4$	○	○	○	○	○	○	
Time $X + 5$	○	○	○	○	○	○	
Time $X + 6$	○	○	○	○	○	○	
Time $X + 7$	○	○	○	○	○	○	
(etc.)							

A graph can be drawn of the pressure wave that is built up when particles move in this way, and this is known as a *waveform*. It is usual to draw waveforms as patterns from left to right, on either side of a horizontal line representing the passage of time. The simple movement of a single particle would look like this:



Pure tones

The simplest waveforms, such as those illustrated on this page, are sinusoidal in shape, and known as *sine waves*. They consist of a single pulse of vibration that repeats itself at a constant rate and produces a *pure tone*.

Pure tones are rarely heard in everyday life. Most sounds are complex, consisting of several simultaneous patterns of vibration. To produce a pure tone, you need a special electronic machine, or a device such as a tuning fork.

When a tuning fork (below) is struck, it vibrates with a single tone. The prongs of the fork move to and fro at a fixed rate. When the fork is held to the ear, a pure tone can be heard.



FREQUENCY

A single to-and-fro movement of an air particle is called a *cycle*, and the number of cycles that occur in a second is known as the *frequency* of a sound. Frequency used to be measured in 'cycles per second' (cps), but this unit has been renamed *hertz* (after the German physicist, Heinrich Rudolf Hertz (1857–94), who first broadcast and received radio waves), and abbreviated as Hz. The basic frequency at which a sound vibrates is known as the *fundamental* frequency, generally abbreviated as F_0 and pronounced 'F nought'.

The range of frequencies that a young normal adult can hear is extremely wide – from about 20 to 20,000 Hz. It is not possible to hear vibrations lower ('infrasonic') or higher than this ('ultrasonic'). However, the frequencies at both ends of this range are of little significance for speech: the most important speech frequencies lie between 100 and 4,000 Hz. The fundamental frequency of the adult male voice, for example, is around 120 Hz; the female voice, around 220 Hz (p. 128).

The frequency of a pure tone correlates with the sensation of pitch – our sense that a sound is 'higher' or 'lower'. On the whole, the higher the frequency of a sound, the higher we perceive its pitch to be. But our perception of pitch is also affected by the duration and intensity of the sound stimulus. The notions of 'frequency' and 'pitch' are not identical: frequency is an objective, physical fact, whereas pitch is a subjective, psychological sensation (p. 144).

Wavelength

The rate at which sound energy travels through air is known as its *velocity*, and this is a constant – usually (depending on temperature conditions) about 343 metres per second. All sounds that have the same energy will get from A to B in the same time.

During the time it takes for there to be a single cycle of vibration, a sound wave travels a certain distance. This is known as the *wavelength* of the sound. Because of the constant rate of sound travel, it thus follows that the higher the frequency of a tone, the shorter its wavelength will be. A simple formula expresses this relationship: $\lambda = (C/F)$, where C is sound velocity, F is frequency, and λ is the wavelength. Thus, a tone of 500 Hz has a wavelength of $(343 \text{ m}/500 \text{ m}) = 69 \text{ cm}$; a tone of 1,000 Hz would be 34 cm.

The importance of wavelength can be seen in relation to the way we receive sound. When a sound wave approaches an object, if its wavelength is greater than the size of the object, it will tend to 'bend' around it; if the wavelength is smaller, it will tend to be reflected. Thus, for example, as sound waves approach the head, the lower frequencies, having a longer wavelength, will be more likely to be retained, whereas the higher frequencies will not – a factor that may be of considerable significance when considering how to assist people whose hearing is impaired (p. 266).

COMPLEX TONES

Most sources of sound produce complex sets of vibrations, and this is always the case with speech. Speech involves the use of complex waveforms because it results from the simultaneous use of many sources of vibration in the vocal tract (§22). When two or more pure tones of different frequencies combine, the result is a *complex tone*.

There are two kinds of complex tone. In one type, the waveform repeats itself: a *periodic* pattern of vibration. In the other, there is no such repetition: the vibrations are random, or *aperiodic*. Speech makes use of both kinds. The vowel sounds, for example, display a periodic pattern; sounds such as [s] are aperiodic.

Harmonics

The sound produced by an object vibrating in a periodic way involves more than the simple sine wave (p. 132). Other amounts of energy are also generated by the same vibration, all of which are correlated with the basic sine wave in a simple mathematical relationship: they are all multiples of the fundamental frequency. Thus an F_0 of 200 Hz will set up a 'sympathetic' set of frequencies at 400 Hz, 600 Hz, and so on. These multiples are known as *overtones*, or *harmonics*, and numbered in sequence. In physics (but not in music), F_0 counts as the first harmonic. So, in this example, 400 Hz would be the 'second harmonic', 600 Hz the 'third harmonic', and so on. This kind of framework is especially useful in analysing vowels, certain consonants, and intonation patterns (pp. 135–7).

Depending on the nature of the vibrating object (for example, the material it is made of, or its thickness), different sets of harmonics are established, and these are heard as differences in sound *quality*, or *timbre*. The difference we hear between two voices, or two musical instruments, when they produce a sound of the same pitch and loudness, is a contrast of timbre caused by the different harmonics.

Familiar frequencies

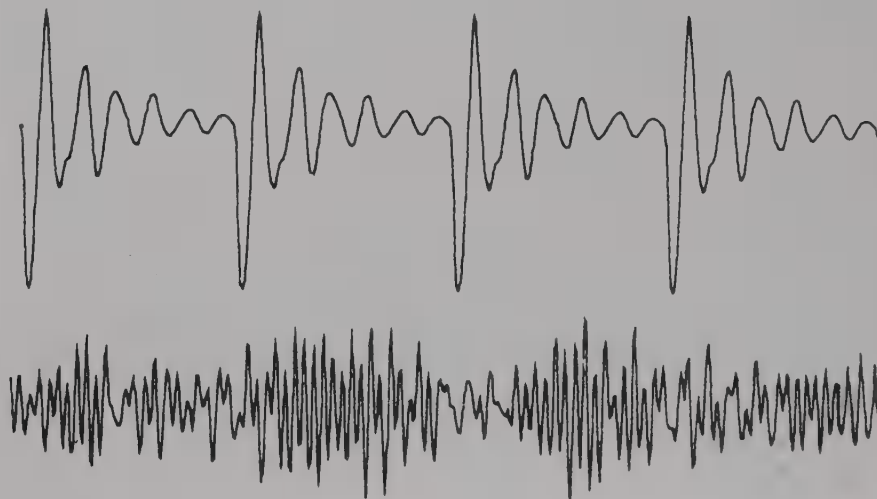
One way of relating the physical notion of frequency to our sense of pitch is to relate familiar musical notes to fundamental frequency. Middle C has a frequency of 264 Hz, and the notes above it in the diatonic scale of C have frequencies as follows:

	C	528 Hz
	B	495 Hz
	A	440 Hz
	G	396 Hz
	F	352 Hz
	E	330 Hz
	D	297 Hz
	C	264 Hz

A is the note sounded by the oboe when an orchestra is tuning up. By comparison, the top note of a seven-octave piano is 3,520 Hz, and the bottom note is 27.5 Hz.

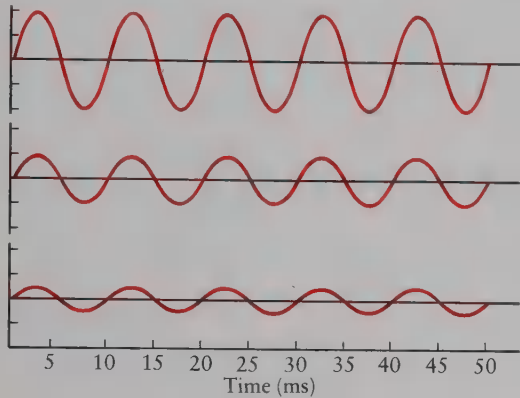
Vocal waveforms

A typical waveform of the vowel [a:] and of the consonant [s]. The time segments displayed are the same for each sound. The periodic pattern can clearly be seen in the case of the vowel sound, but no pattern is visible in the case of [s].



AMPLITUDE AND INTENSITY

The extent to which an air particle moves to and fro around its rest point is known as the *amplitude* of the vibration. The greater the amplitude, the greater the intensity of the sound, and along with other factors (such as frequency and duration) the greater our sensation of loudness. In the following diagram, we see three sine waves of equal frequency but of different amplitude. In each case, one complete vibration lasts 10 msec (the frequency is thus 100 per second, or 100 Hz). But (a) has twice the amplitude of (b), and (b) twice that of (c).



To measure the loudness of a sound, we need to take into account the contribution of both amplitude and frequency – factors that relate to the energy with which the sound is produced. The term *intensity* is used to refer to the overall power of a sound – a useful notion for the study of speech, where sound waves are complex, and the loudness of a sound does not relate clearly to any one of its acoustic components.

Decibels

To measure sound intensity, we need a basic, internationally accepted reference level for sound pressure in air. This reference sound pressure level (or SPL) identifies the threshold at which a sound can be heard (it is traditionally defined as 0.0002 dynes per square centimetre, *dyne* being the unit of measurement for pressure). Departures from this reference level are then measured in units known as *decibels* (dB) (named after Alexander Graham Bell (1847–1922), the American inventor of the telephone). Thus, to say that a sound is 90 dB means

that it has an intensity which is 90 dB greater than the reference level.

We are able to hear a vast range of sound intensities. A loud shout is a million times more powerful than a whisper. It has been estimated that the human ear is sensitive to about 10 million million (10^{13}) units of intensity. To enable analysts to cope with such large amounts, sound intensities are related to each other as ratios, using a logarithmic scale. An increase of 10 dB is equivalent to a *doubling* of loudness. 30 dB is twice as loud as 20 dB, 40 dB is twice as loud as 30 dB, and so on. In this way, 10^{13} units can be 'reduced' to a scale of 130 decibels – a scale that more accurately reflects the way in which we sense differences of loudness between sounds.

It is possible to work out average intensity values for individual speech sounds. In the following table (after D. B. Fry, 1979, p. 127), the values for English sounds, expressed in decibels, have been related to the sound with the lowest intensity, [θ] (as in *thin*), which is given the value 0. Open vowels are the most intense sounds, followed by close vowels and continuants; the weak fricatives and plosives occur at the opposite end of the scale (§27; for transcription conventions, see Appendix 2). In a word like *thorn*, accordingly, the increase in intensity from the first sound to the second is nearly 30 dB.

ɔ:	29	e	23	l	20	ʒ	13	ð	10
ɒ	28	i:	22	ʃ	19	z	12	b	8
ɑ:	26	u:	22	ŋ	18	s	12	d	8
ʌ	26	ɪ	22	m	17	t	11	p	7
ɜ:	25	w	21	tʃ	16	g	11	f	7
a	24	r	20	n	15	k	11	θ	0
ʊ	24	j	20	ʤ	13	v	10		

Speech and everyday sounds

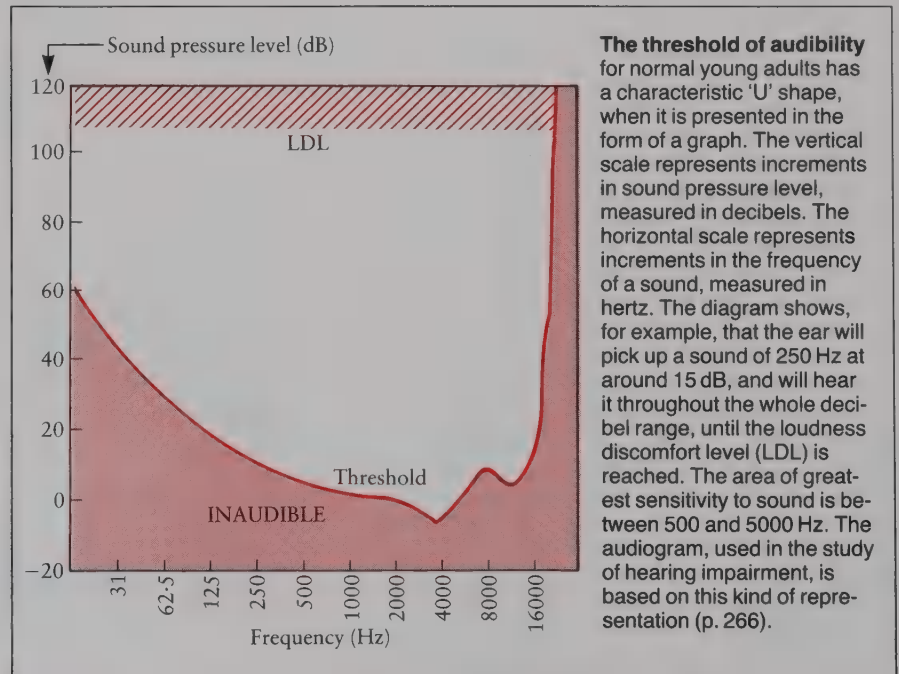
The relative intensity of different kinds of speech can be seen by relating them to the average intensities of some everyday sounds (after D. B. Fry, 1979).

- 0 threshold of audibility
- 10 rustle of leaves
- 20 ticking of watch (at ear); radio studio
- 30 quiet garden; whispered conversation
- 40 residential area, no traffic
- 50 quiet office; typewriter
- 60 conversation at 1 m; car at 10 m
- 70 very busy city traffic at 30 m
- 75 telephone bell at 3 m; shouting
- 80 noisy tube train; loud radio music
- 90 pneumatic drill at 1 m
- 100 car horn at 5 m; orchestra fortissimo
- 110 boilermakers' shop
- 120 pneumatic hammer, 1 m; amplified rock band
- 130 four-engined jet aircraft, 30 m

At around 120 dB, the sensation of hearing is replaced by that of pain.

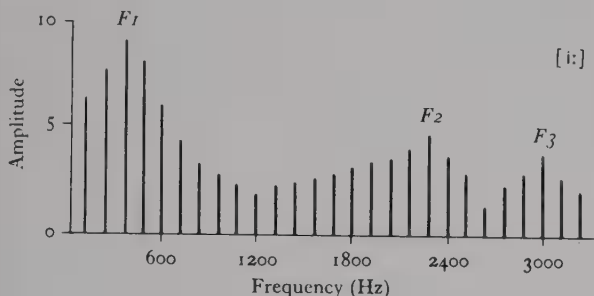
The sound around us

The time it takes for sound waves to die away to an inaudible level is known as the 'reverberation time'. In a room, the walls and furnishings cause the energy to be absorbed. Fibrous materials, such as curtains and carpets, absorb sound well, whereas hard, dense surfaces cause sound to be reflected. Modern classrooms tend to use the latter material, thus producing high levels of noise ('ambient noise') that can often make it difficult for children to hear what is being said.

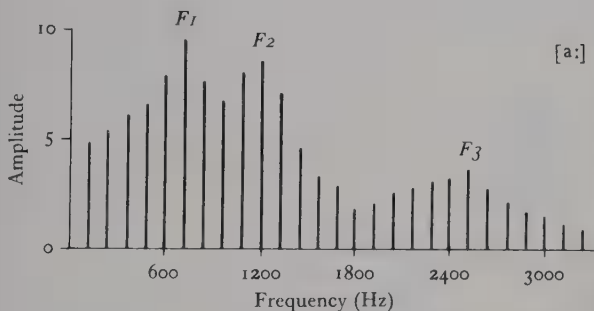


SPECTRA

It is possible to make an acoustic analysis of a complex wave and present its various components in the form of a sound *spectrum*. A spectral analysis is a graph in which the horizontal axis represents frequency and the vertical axis represents amplitude. For example, the many acoustic components of the vowel [i:], representing the way the vocal tract resonates during its articulation, can be shown as a *spectrogram* in the following manner:



The vowel [a:] has a quite distinct spectral character, reflecting the very different configuration of the vocal tract.



Note that, in these spectra, the amplitude of some frequencies is much greater than others. In fact, it is possible to see various 'peaks' of acoustic energy in each case, reflecting the main points of resonance in the vocal tract. These peaks are known as *formants*, and they are numbered from lowest to highest: the 'first formant' (F₁), the 'second formant' (F₂), and so on. In the spectrum of [i] above (which was spoken by a man at a fundamental frequency of 120 Hz), F₁ peaks at 360 Hz, F₂ at 2,280 Hz, and F₃ at 3,000 Hz.

Formant structure is a major feature of speech sounds. All vowels and some consonants have formants. It is the formant pattern (especially the disposition of the first two formants) that enables us to differentiate vowels, or to recognize repetitions of a vowel as being the 'same', even when produced by different speakers. And vowel formants can also help in identifying the character of adjacent consonant sounds.

Relating acoustics to articulation

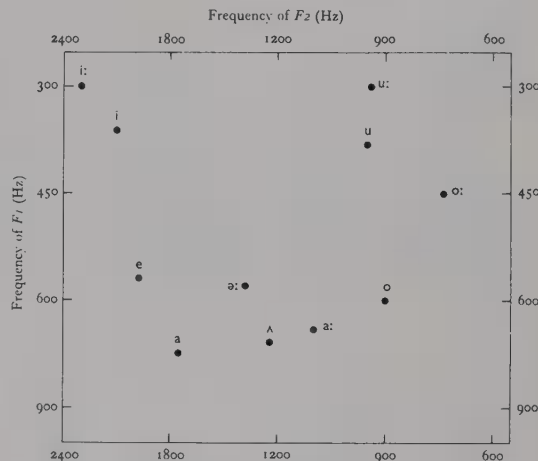
By studying several speakers, it is possible to work out the mean frequencies of the first and second formants of the vowels in a language. This has been done for British English, with the following results (after J. C. Wells, 1962):

	F ₁	F ₂
i:	heed 300 Hz	2300 Hz
ɪ	hid 360 Hz	2100 Hz
e	head 570 Hz	1970 Hz
æ	had 750 Hz	1750 Hz
ɑ:	hard 680 Hz	1100 Hz
ɒ	hod 600 Hz	900 Hz
ɔ:	hoard 450 Hz	740 Hz
ʊ	hood 380 Hz	950 Hz
u:	who 300 Hz	940 Hz
ə	hub 720 Hz	1240 Hz
ɜ:	herb 580 Hz	1380 Hz

We may now transfer such figures onto a graph in which the frequency of F₁ is displayed vertically and F₂ horizontally. The resulting pat-

tern is remarkably similar to that displayed when vowels are described according to their place of articulation in the vocal tract (the vowel 'quadrilateral', p. 154). However, the match is not exact

because the articulatory chart is based only on the point of greatest tongue constriction, whereas the acoustic chart derives from the resonances of the whole vocal tract.



A real-time spectral analyser This instrument uses a cathode ray tube to display the continuously changing spectra of complex waveforms. Because the changes take place so quickly, further analysis requires that the investigator 'stop the action' – for example, by holding the waveform in a storage oscilloscope, photographing the screen, or providing a computer display.

THE SOUND SPECTROGRAPH

During the 1940s, the *sound spectrograph* was designed to analyse and display speech spectra. This machine records speech, analyses the sound waves into their different frequencies using an array of electronic filters, measures the intensity of each frequency, and then presents the result as a visual display, using a stylus to make marks on a strip of specially coated paper. Spectrograms illustrating a variety of sounds are shown on this and the opposite page.

Three dimensions of sound are represented on this kind of spectrogram.

1. Time is displayed horizontally: in the most widely used spectrograph (the Kay Sona-Graph), it is possible to record 2.4 seconds of speech on the paper strip, which is 'read' from left to right. Each half-inch of paper thus displays a tenth of a second of speech.
2. The vertical dimension displays information about frequency – from 0 Hz (the bottom line) to 8,000 Hz. The scale is linear: each vertical inch of paper represents 2,000 Hz.
3. The third dimension is intensity, represented by the degree of darkness of the marks on the paper. The more intense the signal, the blacker the mark

made by the stylus. Frequencies of little or no intensity thus appear as areas of clear paper.

Although the limitations of the instrument do not allow perfect accuracy of measurements from the paper strip, the visual display allows an immediacy of recognition, to anyone trained in acoustic analysis, which has made it a popular research tool. Contrasts between individual sounds can be clearly shown, as can the way sounds influence each other as they combine in connected speech. These days, too, there have been developments in spectrographic design that permit more accurate and extensive analyses, using computational techniques. In particular, digital spectrographs are now available that can store two spectrograms on a screen, thus enabling a more systematic and precise comparison of points of detail.

How a spectrogram is made

1. A stretch of speech is recorded on the spectrograph, either through a microphone or from a tape recorder.
2. A specially coated paper is placed around the drum at the top of the machine, and a stylus is placed against the paper.
3. When the machine is

switched on, the drum revolves. The stylus then moves up the drum, analysing the different frequencies in the speech. If there is energy present at a given frequency, the stylus marks the paper.

4. When the stylus has reached the top of the drum, the machine is switched off, and the paper is removed. The spectrogram is now available to be interpreted.

Types of spectrogram

It is possible to choose one of two settings when making a spectrogram. If the machine is set to 'narrow', it will analyse the range of speech frequencies into small bands (usually 45 Hz), and this will make individual harmonics show up very clearly. If the machine is set to 'wide', an analysis is made using

much broader bands of frequency (usually 300 Hz), and this will make the formants stand out clearly. For most purposes, wide-band analysis is more useful in speech science.

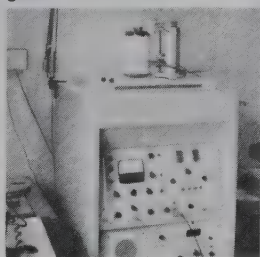
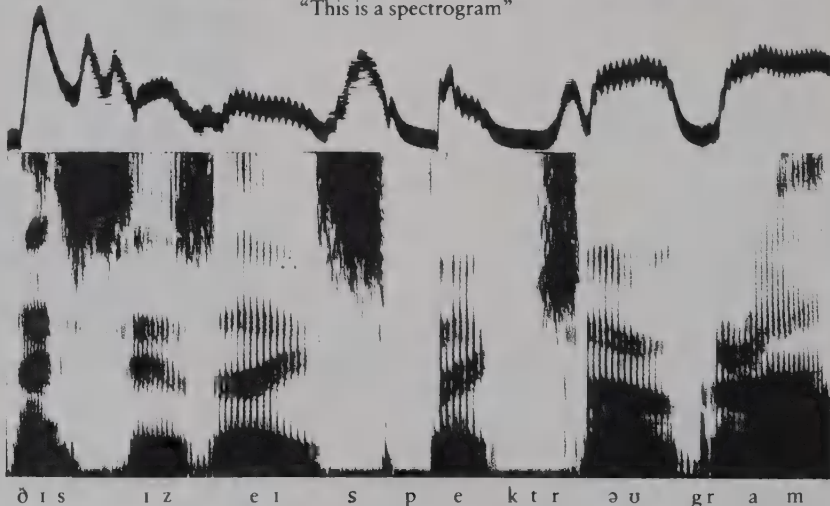
It is also possible to obtain information about the amplitude of a sound using a spectrograph. The intensity of each frequency com-

ponent is analysed and printed out as an amplitude display along the top of the spectrogram.

Narrow-band and wide-band versions of the sentence 'This is a spectrogram' are shown below, the latter accompanied by an amplitude display.



"This is a spectrogram"



The acoustic features of vowels and consonants

Vowels All vowel sounds in normal speech display two, and usually three, formants. These appear on a wide-band spectrogram as thick dark bars. They can be clearly seen in the spectrograms of the long vowels [i:], [a:], and [u:], said in isolation. The vertical striations represent vocal fold vibration.

Semi-vowels The sounds [j] and [w] (as in *you* and *we*) function as consonants in many languages, but they have the acoustic features of vowels – [i] and [u] respectively – and are thus often called ‘semi-vowels’ (p. 152). Their vowel-like character can be clearly seen on a spectrogram where they are articulated between [a] vowels. In both cases, the formants are bent as the vowel changes its quality. For example, during [ajə], the first formant bends downwards, and the second formant bends upwards as the tongue moves from [a] to [i]; they then bend back as the tongue resumes its original position. The bend also affects the third formant; but a fourth formant, higher up, is much less affected.

Plosive consonants A plosive consonant is typically

identified by a short period of silence, while a closure is made in the mouth, followed by a short burst of noise, when the closure is released (p. 157). Both of these features can be clearly seen on a spectrogram, especially when these consonants are articulated between vowels. The silence is shown by the vertical strip of clear paper; and the release by a thin ‘spike’ of marks spread quite widely across the spectrum. The onset of the following vowel is shown by the appearance of the black formant bands.

The differences between voiceless [p, t, k] and voiced [b, d, g] plosives (p. 128) can be clearly seen.

- In the voiced sounds, the intensity of the noise burst is much less than in the voiceless sounds.
- The duration of the silence is shorter for voiced sounds.
- An important variable is the time between the release of the plosive and the onset of vocal cord vibration (which is represented by the formants). This is known as ‘voice onset time’, or VOT. There is a noticeable VOT gap in the case of each voiceless plosive (marked as X on the spectrograms); but the voiced plosives have little or no gap. In such cases, the

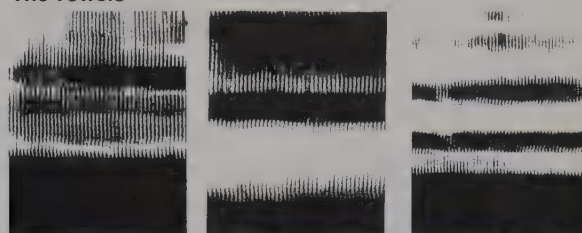
voicing may actually begin *before* the noise burst.

The different places of articulation of plosive consonants can also be seen from spectrograms. The bilabial sounds [p, b] have a burst of noise at low frequencies; the alveolar sounds [t, d] have the burst at high frequencies; and the velar sounds [k, g] have the burst within the middle range. There is also a clear difference at the point of transition between consonant and vowel: a rapid articulatory movement is involved, and this is reflected in the sharp bend in the formants at the onset of the vowel – a bend that varies in direction between each pair of consonants.

Fricative consonants

These consonants make use of random acoustic energy, or *noise*, which is represented on the spectrogram as a broad area of disturbance at certain frequencies. This is most clearly seen in the case of sibilant fricatives, such as [s] and [ʃ], which are high-energy sounds. The energy for [s] is largely above 4000 Hz; that for [ʃ] begins lower, at around 2500 Hz. The contrast is presented here between [a] vowels.

The vowels

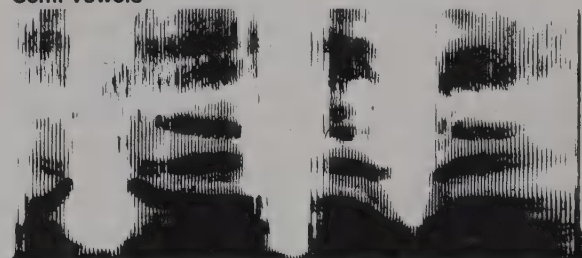


a:

i:

u:

Semi-vowels



a

j

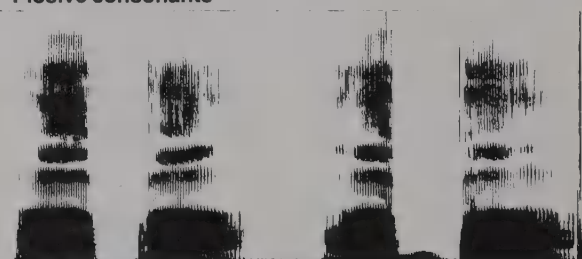
a

a

w

a

Plosive consonants



a

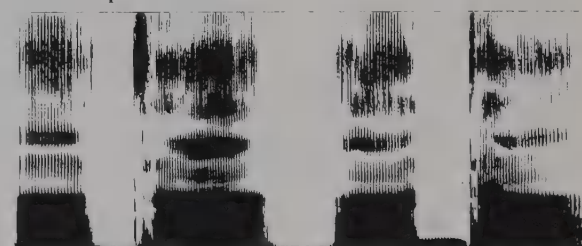
p

a

a

b

a



a

t

a

a

d

a



a

k

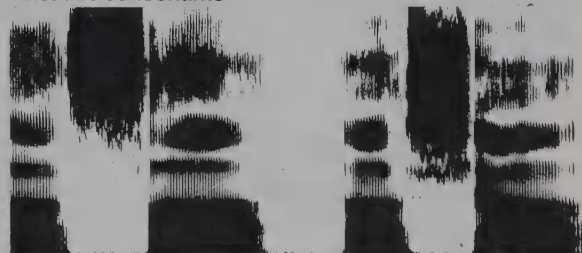
a

a

g

a

Fricative consonants



a

s

a

a

ʃ

a

Connected speech

The spectrograms at right are of carefully articulated sound units, said in isolation. In connected speech, the sounds are produced more rapidly, they influence each other, and the boundaries

between them become more difficult to distinguish. Spectrograms of connected speech (see facing page) emphasize the essential continuity of spoken language – the fact that

articulation is a process of continuous change. It is a fact we should always bear in mind as we read the neat, separate symbols of a phonetic transcription.



“The study of acoustic phonetics”

24 The instrumental analysis of speech

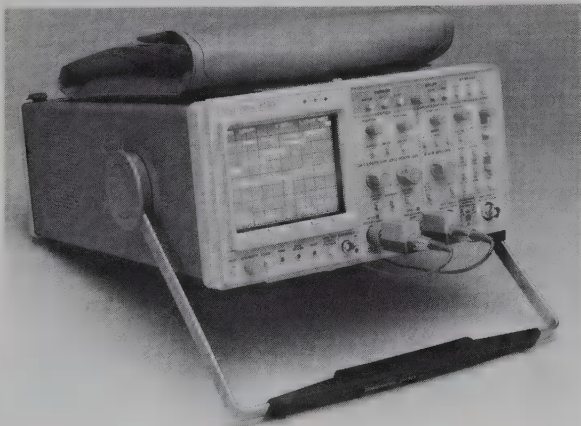
A vast array of instruments is today available for the study of speech production. A well-equipped phonetics laboratory includes equipment for recording speech, analysing the acoustic properties of the sound signal (§23), and investigating the physiology of the vocal organs (§22). Related techniques are available for the study of hearing and speech reception (§25). The field as a whole is known as *instrumental* (or *experimental*) *phonetics*.

RECORDING SPEECH

Any scientific investigation into the nature of speech requires the keeping of permanent records. The speech signal itself can be recorded on disk or (more usually) audiotape, and displayed in visual form on a paper chart, computer printout, or screen (which can then be photographed). Similarly, photographic and other techniques are available for recording and displaying the speaker's physiological activity.

The careful choice of methods and instruments is of the highest priority in acoustic research. Unless special precautions are taken, recordings may not be sufficiently clear to enable accurate acoustic analysis to be carried out. If a recording contains a lot of background noise, or if the signal is weak or distorted, the speech sound waves will be obscure. Particular attention must therefore be paid to the limitations of the recording instrument (usually a tape recorder), the microphone, the playback system, and the location in which the recording is made.

For best results, recordings should be made in a special studio, which has been shielded from external sounds and which has sound-absorbent walls. If this is not available, recordings should be made in a quiet room containing sound-absorbent material (such as soft furnishings). In this way, it should be possible to minimize problems of echo and other interference.



DISPLAYING SPEECH SIGNALS

The most commonly used instrument for observing sound waves is the *oscilloscope*, which displays the frequency and amplitude of a waveform. Some scopes provide only a temporary image; others (storage oscilloscopes) are able to hold a waveform on the screen for more detailed study. In these cases, the images can be photographed directly, or some kind of chart recorder can be used to obtain a visual trace on paper.

There are many kinds of chart recorder, reflecting various technologies. All involve the use of a mechanically unrolling sheet of paper, on which a trace can be made with one or more ink jets or pens (depending on how many channels are being recorded simultaneously), or using a system based on heat recording, fibre-optics, or ultraviolet light. Various forms of computer processing of speech signals are now routinely available, in which information can be rapidly displayed in graphic or numerical form.

The sound spectrograph, the most valuable of all instruments for the visual display of speech, is illustrated on p. 136.



An anechoic chamber (above).
The ceiling, walls, and floor have been covered with a material designed to absorb sound and cut out reverberation.

A Visicorder (below).
In this technique, a light beam responds to the electrical characteristics of the speech signal and makes traces on light-sensitive paper.



A storage oscilloscope (left)

Physiological investigations

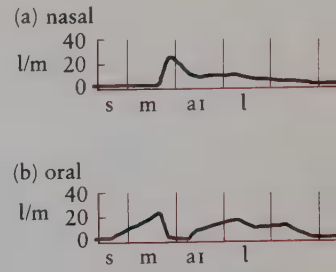
Speech physiology studies all aspects of the disposition and use of the vocal organs during the act of speaking. Precise information can be obtained about the functioning of the larynx, soft palate, tongue, and lips, and the role of other organs and cavities in the production of individual sounds and in connected speech. Particular attention is paid to patterns of air pressure, volume, and flow, and to the activity of the underlying muscles and nerves – including the way in which speech movements are controlled by the brain (§45). The work involves both the analysis of natural speech samples and the experimental investigation of sound production under carefully controlled conditions.

AIR FLOW

How is breathing modified in order to facilitate speech? What happens to the air stream as it passes

through the vocal tract? The field of *aerometry* investigates these questions, and some of its most important instruments are illustrated on p. 125.

Several instruments provide air-flow data, such as the *electroaerometer* and the *pneumotachograph*. In pneumotachography, for example, a specially designed face-mask provides separate measures of air flow from the mouth and nose. For example, the following traces were obtained from a speaker uttering the word *smile*. Trace (a) shows the amount of nasal air flow, measured in litres per minute (l/m) – absent for [s], strong for [m], then gradually reducing during the rest of the word. Trace (b) shows the corresponding amount of oral air flow – strong at the beginning and end, but completely absent for [m], where the lips are closed. What is interesting, in this speaker, is the continued nasality throughout the vowel, which shows the influence of the preceding [m].



Muscle movement A hooked-wire electrode, as fine as a human hair, is inserted into the neck of a subject, to monitor the activity of a laryngeal muscle. This is one of the techniques available for use in *electromyography* (EMG).

Muscles produce tiny amounts of electrical activity when they contract. This can be monitored by placing an electrode on the skin, or (to produce a clearer and more specific signal) directly into a muscle. If the muscle is involved in the production of a speech sound, it sends signals to a monitoring device; the signals are amplified and then displayed on an oscilloscope or on paper.



THE TONGUE AND PALATE

It is easy enough to see the tongue in a mirror, but it is one of the most difficult organs to monitor during speech. Many techniques have been tried, with varying levels of success.

Direct photography This has been possible in a few cases where a subject has had an operation involving the partial removal of the cheek. The movements of the tongue can be clearly seen, but the data are of limited value, because a subject's speech is never normal in such circumstances.

Intraoral devices A mechanical device can be placed inside the mouth to monitor aspects of tongue movement, such as a miniature camera, a pneumatic bulb, a wire electrode, or an instrument for recording pressure. The main problem with such procedures is that the presence of a foreign body inside the mouth is likely to interfere with normal articulation. Microelectronic techniques are likely to make this problem less serious in future.

Plaster casts A three-dimensional impression of the front part of the tongue during the articulation of a sound can be obtained in the form of a plaster cast. However, the method has many limitations. Only single sounds can be studied, and even in these cases, the tongue position is likely to be abnormal, because of the weight of the material pressing down on it.

Plastographic techniques A material is placed in the mouth that deforms during tongue contact. An early user of this technique was Erasmus Darwin (1731–1802), who used tinfoil to study vowel sounds in this way. An obvious limitation is that only one extreme movement of the tongue can be recorded at any time.

X-rays Several X-ray studies have been made using static, cine, and video photography, and there are many specialized techniques. For example, in *cinefluorography*, X-ray images are photographed after being projected onto a fluorescent screen. However, the radiation hazard severely limits the amount of data that can be obtained, and it is not always easy to identify soft-tissue areas clearly, even when the surface of the tongue is outlined with a radio-opaque material. This difficulty can be overcome to some extent through the use of *tomographic* (or *laminagraphic*) techniques, which enable an X-ray to be taken of a predetermined layer of body structure. Recently, too, computer-controlled X-ray *microbeams* have been devised, which track the movements of the tongue through the use of small lead pellets fixed to its surface. This technique involves very low doses of radiation. But even the best pictures cannot provide a sense of the three dimensions involved in tongue movement (p. 131).

Palatography This is the main technique for obtaining information about the exact location of tongue contact with the palate. In 'direct' palatography, the palate is painted with a special mixture; if the tongue makes contact with the palate during the articulation of a sound, some of the mixture will be wiped off, and the pattern can then be photographed. 'Indirect' palatography uses an artificial palate, which fits over the subject's palate, and is painted with material that adheres to the tongue after a contact is made. The palate can then be removed from the mouth for a detailed examination. A great deal of data about individual articulations can be obtained using these approaches, but the technique can provide no information about the movement of the articulators in connected speech.

Electropalatography By contrast, this technique gives detailed information in real time about the location and sequence of tongue–palate contacts. An artificial palate is used, which incorporates an array of metal contacts. When the tongue touches a contact, a signal is sent to a recording device. Different patterns of contact can then be displayed on a screen or printed out on paper. Computer processing enables large quantities of data to be quickly analysed (see illustration [facing page]).

Ultrasonics In recent years, researchers have begun to use ultrasound techniques, in which a beam of very high frequency sound waves is used to monitor the position and movement of internal structures. Although it is still in the experimental stage, the safety of this approach makes it one of the most promising avenues for future speech research.

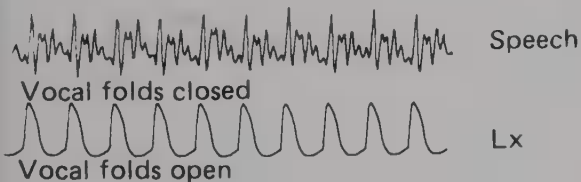
Monitoring an ultrasonic echo of the vocal tract
(p. 277).



THE LARYNX

The larynx can be observed through a laryngeal mirror or a fibre-optic laryngoscope (both illustrated on p. 129). High-speed films can then be made of the vocal fold vibrations and replayed at normal speed to give a slow-motion effect, or analysed frame by frame. A similar effect can be obtained by using a *stroboscope* to illuminate the folds: the frequency of its flashing light is adjusted until it corresponds to that of the fold vibrations, at which point the folds appear to vibrate slowly. A *glottograph* can also be used – a device that monitors the amount of light passing through the glottis, and thus indicates the extent of glottal opening during speech.

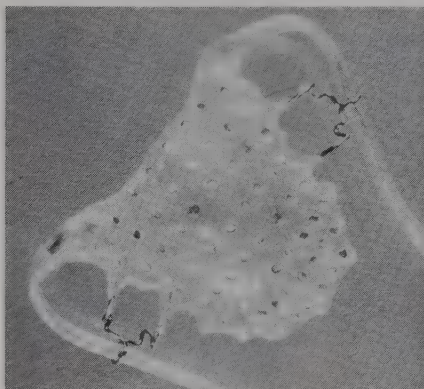
The main disadvantage of laryngoscopic techniques arises from their invasive character: they are introduced into the vocal tract and thus to a greater or lesser extent interfere with the comfort of the speaker and the naturalness of speech. A technique of larynx observation that avoids this problem is provided by *electrolaryngography*. Two small electrodes are applied to the skin of the neck on either side of the thyroid cartilage (p. 128). During speech, information about the way the vocal folds come together is displayed on a screen as a waveform (*Lx*). Here is the *Lx* waveform of an adult female speaker producing a steady [a] vowel; the full speech waveform is also given for comparison.



When the electrolaryngograph is incorporated into a device known as a Voiscope®, it is possible to display fundamental frequency (*Fx*) on an oscilloscope screen in a manner that corresponds to our perception of pitch. High fundamentals appear towards the top of the screen; low ones towards the bottom. The *Fx* contour of an utterance is given below, showing two falling-rising pitch patterns on the first four words, and a falling pitch at the end. The breaks in the trace are due to the occurrence of the sounds [st] and [h], where there is no vocal fold vibration.

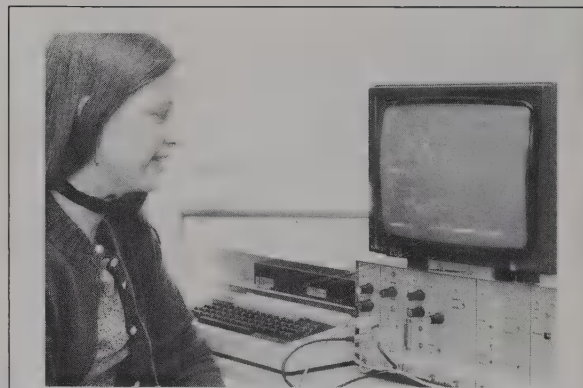
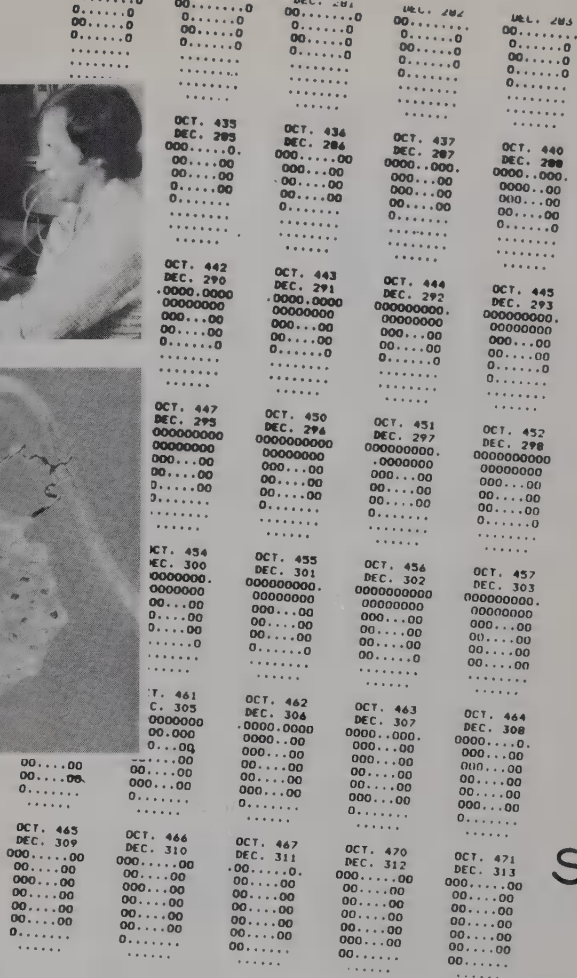


s u n w a s s t r o n g e r t h a n h e w a s



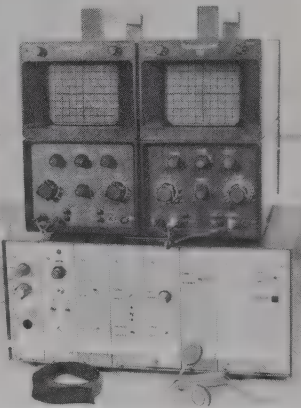
Electropalatography The top illustration shows a subject making an electropalatograph recording. This system uses 64 electrodes arranged to cover the surface of the artificial palate (above). Patterns of contact are then displayed as a changing pattern of lights on a display screen.

Alternatively, a computer printout can be made, in which tongue contacts are represented by zeros (see illustration above right). The velar area of the palate is at the top of each small diagram, and the alveolar area is at the bottom. The printout is read from left to right, with samples occurring at 10 msec intervals. The illustration shows the articulation of the word *pigsty*, from the release of the [p] to the [s]. The sequence of tongue-palate contacts made during the word can be clearly seen. Note, in particular, the clear velar closure made for [g]. (After W. J. Hardcastle & R. A. Morgan, 1982, p. 51.)



A subject making an electrolaryngograph recording

The screen shows two intonation patterns (§29), one above the other, for the sentence 'It's easy, isn't it?' The contrast between rising and falling tones can be clearly seen. Right: Lying in front of the equipment are the guard-ring electrodes used, which are held in place by an elastic band.



25 Speech reception

The ear

The first step in the reception of speech takes place when sound waves arrive at the ear. From there, sound is transmitted along the auditory nerve to the brain (§45). The process is a complex one, involving several distinct stages which reflect the main anatomical division of the ear into *outer ear*, *middle ear*, and *inner ear*.

THE OUTER EAR

The outer ear consists of two parts. The visible part is known as the *auricle*, or *pinna* – a structure consisting of several rounded prominences formed mainly from cartilage. The pinna has a minor role to play in the reception of sound: it helps to focus sound waves into the ear, and assists our ability to detect the source of a sound. It also protects the entrance to the auditory canal, both from physical attacks and from excessive amounts of sound. By pressing the central part of the pinna with the finger, it is possible to cover the entrance to the canal, thus considerably reducing the amount of sound entering the ear.

From here, the *external auditory canal* leads to the eardrum. The canal is about 2.5 cm long and contains hairs and glands that secrete wax (*cerumen*), a substance that acts as a filter for dust, insects, and other tiny substances that might approach the eardrum. The canal acts as a small amplifier for certain sound frequencies (between

3,000 and 4,000Hz, p. 135), thus making weak sounds at these frequencies more perceptible. It also helps to protect the eardrum to some extent from changes in temperature and humidity as well as from physical damage (though no canal has yet proved capable of withstanding the ingenious attempts of young children to insert all kinds of implements inside their ears!).

THE MIDDLE EAR

The eardrum, or *tympanic membrane*, separates the outer ear from the middle ear. It is roughly circular in shape, lying at an angle of about 55° across the whole of the external auditory canal. It consists of a fibrous tissue with important elastic properties that enable it to vibrate when sound waves reach it. The shape and tension of the eardrum cause the vibrations to be focussed at a prominence near its centre, from where they are transferred to the first of the bones of the middle ear, which is firmly attached to the membrane.

The chamber of the middle ear, known as the *tympanic cavity*, lies within the bones of the skull, about 15 mm high. It is filled with air, because there is a direct connection to the nose and throat via the Eustachian tube (named after the Italian anatomist, G. E. Eustachio (1520–74)). This tube is normally closed, but such activities as yawning or swallowing open it. In this way, the air pressure level on either side of the eardrum is maintained.

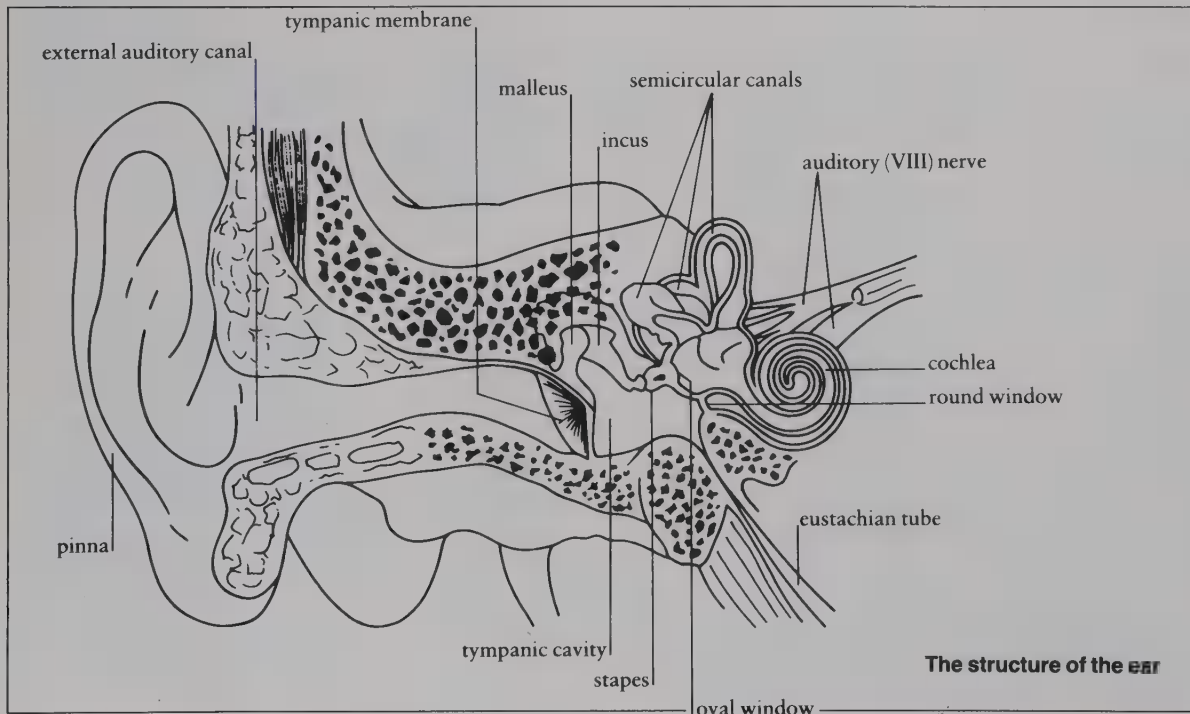
The primary function of the middle ear is to turn

Do we need two ears?

Two ears – *bilateral* hearing – are a great asset. They enable us to be more precise in our judgment of the position of a sound source – an important factor in listening to people in a group, or heeding the direction of a vocal warning. This happens because a sound source is usually nearer one ear than the other; as a result, the signals to each ear will be slightly out of phase, and one will be more intense. The brain resolves these differences and makes a judgment about localization. Sometimes there is ambiguity (when a sound is reflected by a nearby object, for example), in which case we have to 'search' for the sound source by moving the head.

The value of two ears is most evident in cases of hearing loss in one ear (*unilateral* loss, p. 266). The 'good' ear copes well with a single speaker in a quiet room; but in contexts where sound is coming in from several directions (such as in a meeting), the listener finds localizing the source of sound very difficult, and may look for the speaker in the wrong direction.

We should also note that the brain uses our two ears in different ways. One ear may have an advantage over the other for certain types of sound. This can be shown in tests of *dichotic* listening, where different signals are presented simultaneously to each ear, and listener responses show that one ear transmits a sound to the brain more readily than the other (p. 259).



the sound vibrations at the eardrum into mechanical movement – which will in turn be transmitted to the fluid-filled inner ear. It does this using a system of three tiny bones, known as the auditory *ossicles*. These bones are the smallest in the body and are the only bones to be fully formed at birth. They are suspended from the walls of the tympanic cavity by ligaments, and are delicately hinged together so that vibrations can pass smoothly between them into the inner ear. The three bones have been named according to their shape: the *malleus* ('hammer'), which is attached to the eardrum, the *incus* ('anvil'), and the *stapes* ('stirrup'). The stapes fits into the *oval window* – an opening in the bony wall separating the middle ear from the inner ear.

This may seem an unnecessarily complicated system of getting vibrations from point A to point B, but it is known to have several advantages. In particular, the process acts as a kind of leverage system, enabling the vibrations to be greatly amplified (by a factor of over 30 dB) by the time they reach the inner ear. As the inner ear is filled with fluid, vibrations would very readily get lost without this amplification. Also, the bony network of the middle ear helps to protect the inner ear from sudden, very loud sounds. The muscles that control the movement of the eardrum and the stapes function in such a way that they lessen the chances of massive vibrations damaging the inner ear (the 'acoustic reflex'). However, the time it takes for these muscles to react is not so rapid that the inner ear can be protected from all such sounds; and cases of damage to the eardrum or inner ear do occur.

THE INNER EAR

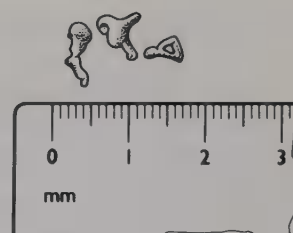
This is a system of small interconnecting cavities and passageways within the skull. It contains the *semi-circular canals*, which control our sense of balance, and the *cochlea*, a coiled cavity about 35 mm long, resembling a snail's shell. The main function of the cochlea is to turn the mechanical vibrations produced by the middle ear into electrical nerve impulses capable of being transmitted to the brain.

The cochlea is divided along most of its length into an upper chamber (the *scala vestibuli*) and a lower chamber (the *scala tympani*), separated by the *cochlear duct*. Both chambers are filled with a clear, viscous fluid known as *perilymph*. Vibrations enter this fluid via the oval window and the scala vestibuli, and are transmitted all the way around the cochlea. They pass from upper to lower chamber through an opening in the cochlear duct at its apex, and finish at a sealed opening in the wall of the middle ear, called the *round window*. This structure can be clearly seen in a diagram of an uncoiled cochlea (above right).

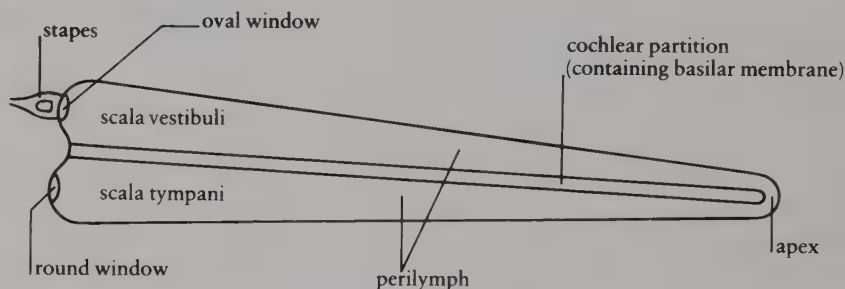
The cochlear duct is separated from the scala tympani by the *basilar membrane*, and is filled with fluid known as *endolymph*. This membrane is very

thin at the base of the cochlea (about 0.04 mm) and gets thicker as it approaches the apex (about 0.5 mm). It is thus able to respond differentially to incoming vibratory pressures: high frequencies primarily affect the narrow end; certain low frequencies the thicker end; and other low frequencies activate the entire membrane (p. 144).

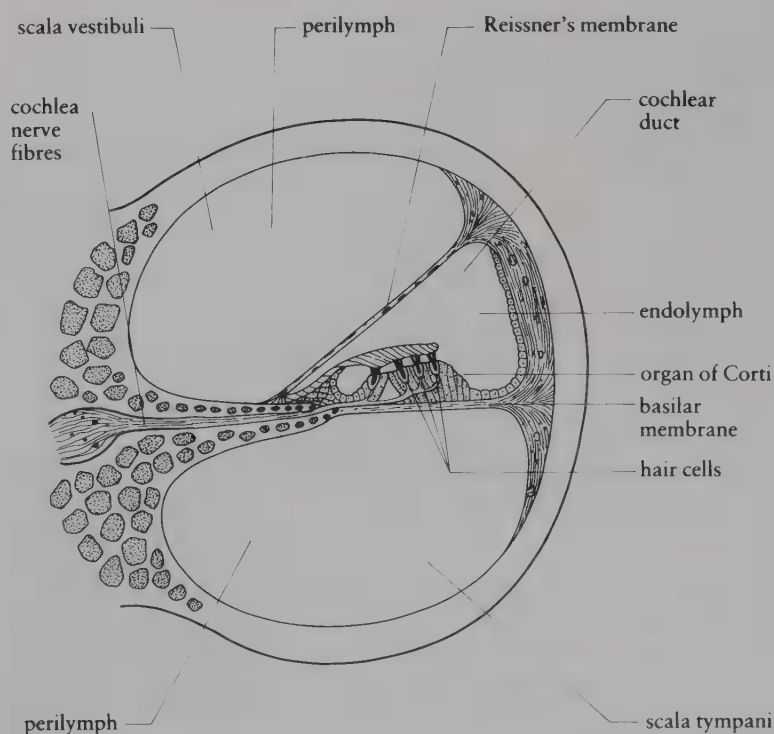
Resting on this membrane is the highly sensitive organ of hearing, called the *organ of Corti* (discovered by the Italian anatomist, Alfonso Corti (1822–76)), which translates the mechanical movements of the membrane into nerve impulses. It contains a systematic arrangement of cells covered with very fine hairs, distributed in rows and layers along the membrane. These *hair cells* act as sensory receptors, picking up the pressure movements in the endolymph. Electrochemical changes take place, which activate the fibres of the auditory nerve (the VIII cranial nerve, p. 131). The signals are then sent the short distance along this nerve to the temporal lobe, via the brain-stem and mid-brain (p. 258).



The tiny size of the ossicles can be seen in this drawing.



A schematic view of an uncoiled cochlea The movement of the stapes at the oval window is transmitted to the cochlear duct via the fluid (perilymph) in the two chambers.



A cross-section through one cochlear duct, showing the location of the organ of Corti.

THEORIES OF HEARING

Pitch perception

How does the frequency information in a sound wave as it enters the cochlea (p. 143) come to be transformed into a pattern of nerve impulses that will enable the sound to be perceived? Several theories have been proposed since the matter was first systematically investigated in the mid-19th century.

Resonance or place theory This is the classical theory of pitch perception, deriving from the work of the German scientist, Hermann von Helmholtz (1821–94). In this approach, individual fibres in the cochlea were thought to resonate to a particular frequency. As the frequency changed, so the place of vibration along the basilar membrane would change. However, it has since been demonstrated that the basilar membrane vibrates, not at single points, but along most of its length.

Temporal or frequency theory In this view, first proposed by William Rutherford in 1886, the frequency of a wave was thought to be transmitted by the number of pulses per second in a nerve fibre. Every hair cell was thought to respond to every tone, the cochlea acting as a kind of telephone transmitter, directly passing on frequency information to the auditory nerve. This view had to be modified when it was discovered that no nerve fibre is capable of firing at more than 1,000 Hz, and that most firings take place at much lower rates. As humans can respond to speech frequencies ranging up to 20,000 Hz, a purely temporal theory is inadequate.

Volley theory This view, proposed by E. G. Wever in 1949, represents a compromise between place and temporal theories. It proposes that below 5,000 Hz temporal patterning is important, with pitch perception being dependent on the synchronized action of several nerve fibres, firing in volleys. Above 5,000 Hz, place analysis is well preserved.

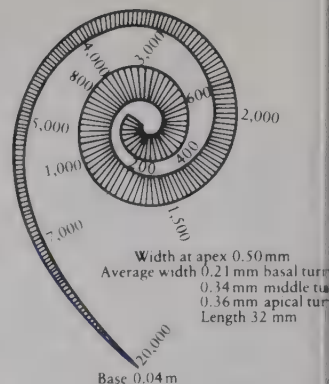
Travelling wave theory This account was proposed by the Hungarian physiologist Georg von Békésy (1899–1972). By illuminating the vibrating basilar membrane with a stroboscopic light, he was able to show that sound vibrations move through the cochlea in the form of a wave. The point on the basilar membrane at which the wave amplitude is greatest corresponds to the frequency of the signal.

After a century of debate and experimentation, it is still not possible to be sure about the relative roles of spatial and temporal factors in the hearing process. The acoustic and physiological aspects of the speech signal do not seem to interact in a simple or direct way; the patterns of fluid movement in the cochlea do not relate clearly to patterns of nerve

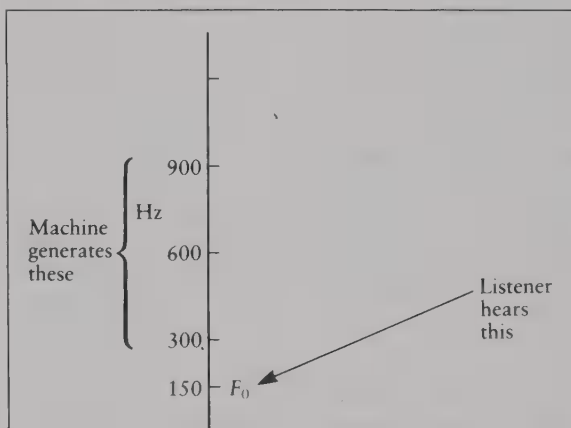
impulses. More complex theories of pattern-recognition seem to be required, involving both place and temporal elements, and perhaps involving central as well as peripheral neural processes. A great deal of research therefore continues to be devoted to this topic.

Loudness perception

It is unclear how the cochlea detects the loudness of a sound. One factor is the rate at which individual nerve fibres fire: the louder a sound stimulus, the faster the rate of firing. But this cannot be the whole explanation, as individual fibres seem able to cope with changes of only around 40 dB. Other mechanisms have to be involved. One proposal arises out of the finding that some of the hair cells are tuned to respond to certain frequencies. A very loud sound at a given frequency would quickly 'use up' the coding potential of that fibre; and other fibres might then be brought in as 'reinforcement', thereby transmitting a proportionately greater stimulus to the brain. The study of such matters provides another important focus of contemporary research into auditory perception.



The basilar membrane A schematic diagram showing the points at which tones of different frequencies cause maximum amplitude of vibration (from O. Stuhlman, 1952).



The case of the missing fundamental The place theory of pitch perception encounters a problem with the case of the missing fundamental. If a complex tone is generated, consisting (for example) of three pure tones at 300, 600, and 900 Hz, a listener will perceive the tone as having a pitch which corresponds to the fundamental frequency of these harmonics – 150 Hz – despite the fact that no energy has been generated at that frequency.



Hermann von Helmholtz (1821–1894)



Georg von Békésy (1899–1972)

Speech perception

Just as the vocal organs have evolved to facilitate the production of speech, so the auditory system seems 'tuned' to receive speech patterns. When we hear sounds, we hear them as either speech or non-speech; there seems to be no middle ground. No matter how hard we try, we cannot hear speech as a series of acoustic hisses and buzzes, but only as a sequence of speech sounds. This is the kind of observation that has motivated the field of *speech perception* – the study of the way speech sounds are analysed and identified by ears and brain.

Even after several years of research, the process of speech perception is little understood. Several questions illustrate the problems faced by researchers in this area.

- We hear a sequence of sounds, words, and other units in speech; but when we look for these units in the speech waveform, it is difficult to see them. The linguistic units are not neatly demarcated by pauses or other boundary markers: the speech signal varies continuously (p. 137). How, then, is the brain able to analyse this signal so that the language units can be identified?
- When several people are talking at once in a crowded room, we are able to 'tune in' to one speaker and to ignore the others. How does the brain select auditory information so impressively?
- When we hear different instances of a sound, we have no difficulty recognizing them as 'the same'; but when we examine the waveforms, we find that they are not physically identical. A [b] before an [i] vowel does not have exactly the same waveform as [b] before [a], or [b] at the end of a word. Moreover, the articulation of [b] by different people will result in different waveforms because their regional accents and individual voice qualities will not be the same (p. 20). It will vary, further, when people adopt different tones of voice (such as a whisper), or when it is said in a noisy situation. How does the brain recognize sounds when there is so much variation?
- Many pairs of words differ by only one sound – *cap* and *cab*, for instance; but when we examine the waveforms of such words, we find that the differences between them are often simultaneously located in several parts of the speech signal. The contrast between *cap* and *cab* is partly due to acoustic differences found at the ends of these words, but it is also due to differences between the vowels – the [a] of *cab* being much longer than that of *cap*. Yet in listening to speech we ignore the vowel difference and 'hear' only the consonant difference. How does the brain bring this information together?
- In normal speech, people produce sounds very quickly (12 or more segments per sound), run sounds together, and leave sounds out. Nonetheless, the brain is able to process such rapid

sequences, and cope with these modifications. For example, in the word *handbag*, the *nd* is pronounced as [m], because of the influence of the following [b] (p. 164); but the word is still interpreted as *hand* and not *ham*. How does the brain carry out such partial identifications?

Indirect procedures

A further difficulty is that the link between speech and listener perception cannot be studied in a direct manner. The movements within the ear and auditory nerve cannot easily be observed, nor can the associated activity taking place in the brain. Speech perception studies therefore have to rely on a range of indirect methods.

- The acoustic properties of the speech signal are analysed and related to the way in which people judge sounds to be the same or different.
- Experiments are devised in which sounds are obscured or distorted in various ways, to see how far identification continues to be possible.
- Speech sounds are created artificially using special instruments (p. 146), and systematically varied to see what effect this has on our perception – a procedure that also helps to determine whether our assumptions about speech analysis have been correct.

In all cases, problems of experimental design and data interpretation have caused progress to be painstakingly slow. But a substantial core of theoretical and empirical research is now available.

'I heard you'

Auditory perception studies deal with the way in which an organism detects, discriminates, interprets, and reacts to a sound stimulus. Several factors are involved, and thus to say that we have 'heard' a sound can mean several different things.

- The body may react to the presence of a sound stimulus, but we are not consciously aware of it. Such involuntary *reflexes* (of respiration and heartbeat, for example) provide an important source of evidence for the reception of sound by infants.
- A sound is consciously detected, or 'heard'. For this to happen, there has to be a certain minimum of stimulation – the *absolute threshold* of the stimulus.
- Sounds may be recognized as being the same (*recognition*) or different (*discrimination*). An important question is how different two sounds have to be in order for the brain to perceive that they are different. This minimum difference in magnitude (the 'just noticeable difference') is known as the *difference threshold*. Our ability to detect and discriminate sound is known as auditory *acuity*.
- The brain is able to focus on certain aspects of a complex auditory stimulus and to ignore others: the phenomenon of *auditory attention*. When we begin to 'hear attentively', we are said to be *listening*. The concepts of 'hearing' and 'listening' are therefore not the same and should always be carefully distinguished.

ACOUSTIC CUES

One reason why we are able to recognize speech, despite all the acoustic variation in the signal, and even in very difficult listening conditions, is that the speech situation contains a great deal of *redundancy* – more information than is strictly necessary to decode the message. There is, firstly, our general ability to make predictions about the nature of speech, based on our previous linguistic experience – our knowledge of the speaker, subject matter, language, and so on. But in addition, the wide range of frequencies found in every speech signal presents us with far more information than we need in order to recognize what is being said. As a result, we are able to focus our auditory attention on just the relevant distinguishing features of the signal – features that have come to be known as *acoustic cues*.

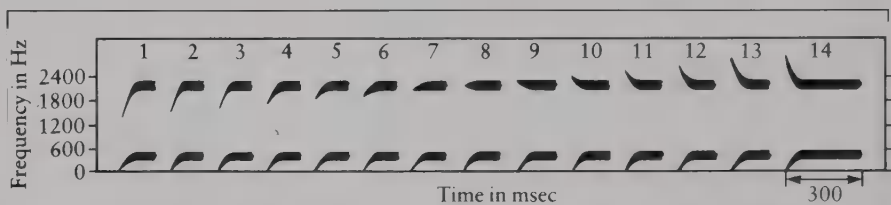
What are these cues, and how can we prove their role in the perception of speech? It is not possible to obtain this information simply by carrying out an acoustic analysis of natural speech (as in §23): this would tell us what acoustic information is present but not which features of the signal are actually used by listeners in order to identify speech sounds. The best an acoustic description can do is give us a rough idea as to what a cue *might* be – for example, a formant (p. 135) at a certain frequency, or the duration of a burst of noise. But to learn about listeners' perception, we need a different approach.

The main technique has been to create artificial sounds using a *speech synthesizer* – an electronic device that generates sound waves with any required combination of frequency, intensity, and time (§§23, 26). In the classic experiments using this device, the synthesizer was fed simplified patterns of the kind produced by a sound spectrograph (p. 136). For example, it could be programmed to produce a sound with two formants at certain frequencies, and one could then see whether the sound that emerged was recognizable as a certain vowel. Or, a sequence of formants, formant transitions, and bursts of noise could be synthesized, to see if listeners would perceive a particular sequence of consonant and vowel.

Using this technique, in the 1960s researchers at Haskins Laboratories in the USA found it was possible to establish the crucial role of the first two formants for the recognition of vowels. Similarly, the technique confirmed the importance of voice onset time (p. 137) for discriminating voiceless and voiced consonants. And, in an important series of experiments, it was shown how the transitions of the second formant are especially important as a cue for place of articulation. The 14 patterns (above right) represented 300 msec syllables differing from each other only in their second formant transition. F_1 was held steady, and F_2 was made to vary, as shown. These sounds were then generated in a speech synthesizer and presented to listeners in random order. It was found that patterns 1 and 2 were heard as [b]; patterns 6 and

7 as [d]; and patterns 13 and 14 as [g] (after A. M. Liberman, et al., 1957).

Such findings have laid the foundation for speech perception studies; but a great deal still remains to be explained. For example, it is not obvious how listeners handle the difference between stressed and unstressed sounds, or other modifications that result from the speed of connected speech. Moreover, the acoustic values cited for the various sounds are averages, and do not take into account the many differences between speakers. Males, females, and children will produce the same vowel with very different formants, and it is not yet clear how listeners make allowances for these differences – for example, enabling them to judge that a male [a] and female [a] are somehow the 'same'. Presumably, they work out some way of relating vowel values to the dimensions of the speaker's vocal tract; but experiments have not yet been able to establish exactly what this might be.



A series of control patterns for a speech synthesizer, in which F_2 transitions are systematically varied.

Early speech synthesis

A member of the Haskins Laboratories research team is shown using one of the early speech synthesizers, the Pattern Playback. A syllable was painted onto an acetate film loop. The pattern was then read photoelectrically, and converted into an acoustic signal.



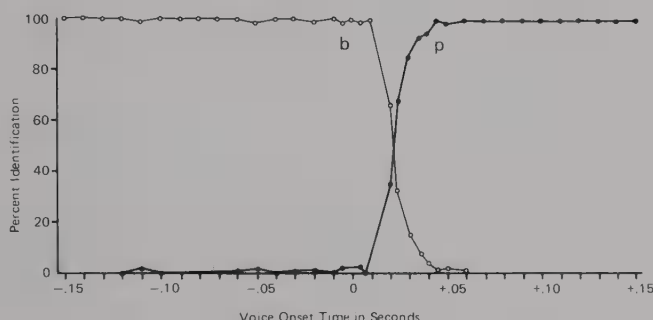
Categorical perception

When [pa] and [ba] are pronounced in isolation, the consonants clearly differ in voice onset time (VOT) – the time between the release of the lips and the onset of vocal cord vibration (p. 137). The average VOT value for [p] is +0.06 sec, and for [b] is 0.0. What would happen to a consonant that was synthesized midway between these values? Would it be identified as [p] or as [b]?

In one study (L. Lisker & A. Abramson, 1970), artificial syllables were synthesized with VOT values ranging from -0.15 sec to +0.15 sec in steps of 0.01 secs. They were played randomly to lis-

teners, who had to say whether they were [pa] or [ba]. The graph below gives the results.

When VOT was less than +0.03, the syllable was usually identified as [ba]; when it was more than +0.03, it was heard as [pa]. For most of the study, listeners were in total agreement; only in a narrow boundary region was there any confusion. What is significant is the very sharp nature of this boundary (a differential of only 0.05 sec). It seems that listeners hear two possible types of sound, regardless of VOT variation. There is very little room for uncertainty.



Several experiments on other sound contrasts have shown the generality of this finding, especially for consonants. It is even present in infants (p. 238). Listeners seem able to discriminate items on an acoustic continuum in a categorical manner.

Sounds near a boundary area are interpreted as belonging to one or other of the categories, and are not felt to be uncertain cases. *Categorical perception* is plainly an important characteristic speech perceptual ability – and seems to be important for other aspects of sound discrimination too.

Selective listening

When listening to someone in a crowded room full of other conversations, we are able to attend to the speaker and ignore the others. However, if we hear our name spoken nearby, we readily tune in to that conversation, at the risk of ignoring the person we are supposed to be listening to. Such 'cocktail-party phenomena' illustrate the human ability to pay attention to some incoming sound stimuli and to ignore others – what is known as *selective listening*.

In early studies of selective listening, listeners were presented with two spoken messages at once. They were instructed to ignore one and to repeat the other while listening to it at the same time ('shadowing'). It turned out that people were able to do this very well. Moreover, afterwards they had hardly any memory for the ignored message – not even noticing when it was changed from a male to a female speaker, or from one language to another.

This kind of study can be used to help demonstrate the fundamental role that meaning plays in the process of speech perception. For example, if one message is semantically similar to the other, or consists of strings of clichés, listeners switch from one message to the other without realizing it; whereas if the two messages are semantically quite distinct, there is no interference.

This point also emerges from studies of people shadowing a single speech message. They can do this very quickly – sometimes being only a quarter of a second behind the speaker (no more than a syllable or two). If errors are then deliberately put into the speech stimulus (e.g. *tomorrance* for *tomorrow*, or *pen-knife* for *petrol*), they are often spontaneously corrected by the shadower. This too suggests that linguistic factors have an important part to play in the perception of continuous speech.

PERCEIVING CONTINUOUS SPEECH

A great deal of research has been carried out on the perception of isolated sounds, syllables, or words. In connected speech, however, very different processes seem to operate. We do not perceive whole sentences as a sequence of isolated sounds. Grammar and meaning (§§16–17) strongly influence our ability to identify linguistic units.

Several experiments have pointed to these differences. In one study, acoustically distorted words were presented to listeners in isolation and in context: the isolated words were identified far less accurately. In another study, single words were cut out of a tape recording of clear, intelligible, continuous speech: when these were played to listeners, there was great difficulty in making a correct identification. Normal speech proves to be so rapidly and informally articulated that in fact over half the words cannot be recognized in isolation – and yet listeners have little trouble following it, and can repeat whole sentences accurately.

Another feature of continuous speech perception is that people 'hear' sounds to be present, even if they are not. In one experiment, sentences were recorded with a sound electronically removed, and replaced with a cough or buzz. Most listeners,

when asked if there were any sounds missing, said no; and even if told that a substitution had been made, most were unable to locate it. In another study, people were presented with one of four sentences, in which a sound (marked =) had been replaced by a cough, and were asked to identify the word = *eel*.

It was found that the = *eel* was on the axle.
It was found that the = *eel* was on the shoe.
It was found that the = *eel* was on the orange.
It was found that the = *eel* was on the table.

People responded with *wheel*, *heel*, *peel*, and *meal* respectively, demonstrating the influence of grammatical and semantic context in perceptual decision-making (after R. M. Warren & R. P. Warren, 1970).

Results of this kind suggest that speech perception is a highly active process, with people making good the inadequacies of what they hear, arising out of external noise, omitted sounds, and so on. A further implication is that models of speech perception based on the study of isolated sounds and words will be of little value in explaining the processes that operate in relation to connected speech.



A cocktail-party distraction.

THEORIES OF SPEECH PERCEPTION

Theories of speech perception are usually classified into two general types, in which listeners adopt very different roles.

Listeners are active

In this view, listeners are thought to play an *active* role in speech perception, in the sense that when they hear a message, the sounds are decoded with reference to how they would be produced in speech. The listener's knowledge of articulation (§22) acts as a bridge between the acoustic signal and the identification of linguistic units.

One major view, proposed in the 1960s, is called the 'motor theory' of speech perception. This theory argues that people internally model the articulatory movements of a speaker. They identify sounds by sensing the articulatory gestures that must have produced them – as if they were 'saying' words to themselves to match the incoming speech.

Another approach is known as 'analysis by synthesis'. Here, listeners use a set of rules to analyse an incoming acoustic signal into an abstract set of features. The same rules are used to synthesize a matching version in production. The listener's perceptual system then compares the acoustic features of the incoming signal with the ones it has generated itself, and makes an identification.

Listeners are passive

In this view, listeners play a *passive* role. They hear a message, recognize the regular distinctive features of the waveform, and decode it. Listening is therefore essentially a sensory process, with the pattern of information in the acoustic stimulus directly triggering the neural response. No reference is made to a mediating process of speech production (except in difficult conditions, such as noisy speech situations).

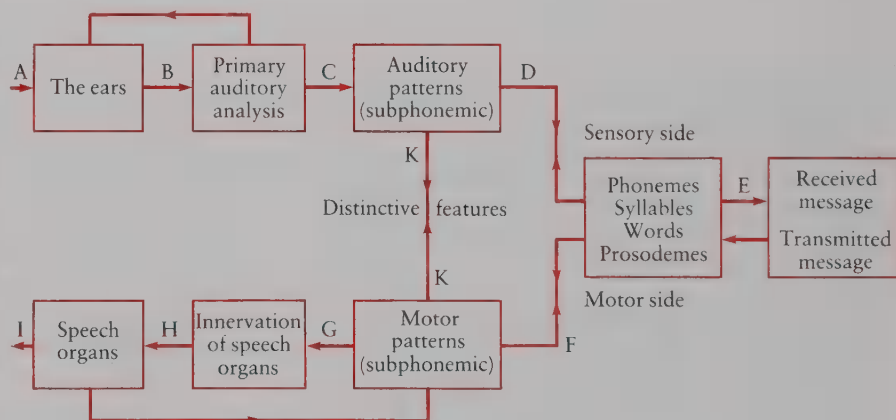
Several mechanisms have been proposed. One approach proposes a system of 'template matching' – listeners match incoming auditory patterns to a set of abstract speech patterns (such as phonemes and syllables, §28) that have already been stored in the brain. Another postulates the use of 'feature detectors' – special neural receptors (analogous to those known to exist in visual processing) that are capable of responding to specific features of the sound stimulus, such as a particular formant, noise burst, or other universal feature.

Compromise

Both approaches have their strengths and weaknesses. Active approaches plausibly explain how listeners are able to adjust for such differences as speaker accent, voice quality, and speed of speech. And several kinds of experiment can be interpreted to support this view. In 'shadowing' studies, for example, people are asked to repeat what someone says as quickly as possible, without waiting for the speaker to finish (p. 147). Listeners are evidently able to carry out this task at great speed, copying sounds even before they have heard all the acoustic cues. To do this, they must be making active use of their knowledge of linguistic structure.

However, there are arguments against a wholly active view of speech perception. There are many cases of people who cannot speak, for pathological reasons (§46), but who can understand well. And it is possible to understand the speech of stutterers, foreigners, young children, and others where it is not possible to make a simple articulatory match. The passive approach does not encounter the problems introduced by postulating an intermediate, articulatory step in speech perception. On the other hand, it has in turn been criticized for underestimating the variability of the link between acoustic signals and linguistic units (p. 145) and for presenting an account in which the processes of speech production and those of speech perception are seen as entirely separate. It therefore seems likely that some combination of active and passive theories will be required, in order to provide a satisfactory explanation of the process of speech perception.

A model of the hypothetical brain mechanisms used in speech perception and production (after G. Fant, 1967). This is a passive model, in which speech perception proceeds along the route ABCDE. In an active model, by contrast, the route would be ABCKFE.



26 Speech interaction with machines

Is it possible to construct machines that will talk and understand speech? As early as the 18th century, attempts were being made to devise ways of mechanically reproducing the human voice. The Austrian inventor, Wolfgang von Kempelen (1734–1804) built one such machine, consisting of a bellows to produce air flow, and other mechanisms to simulate parts of the vocal tract. Alexander Bell (1847–1922) also constructed a ‘talking head’, made out of various synthetic materials, that was able to produce a few distinct sounds.

Modern techniques have led to massive progress in this field. It is no longer necessary to build physical models of the vocal tract; sound waves can be generated electronically by synthesizing the different components of the sound wave. Early results sounded very much like machines; more recently, the quality of synthesized speech has greatly improved – so much so, that with some devices it is impossible to tell whether a machine or a human being is talking. In most cases, however, there are still problems of intelligibility and naturalness to be overcome, especially in producing speech with an acceptable intonation and rhythm.

In general, automatic talkers are programmed with what to say. But current work in artificial intelligence has led to speech that has been synthesized on the basis of concepts derived from a machine’s own internal knowledge structure. This is a major area of contemporary research, which draws greatly on the fields of psychology, computer science, and linguistics. It is also hampered by the limitations of these fields – for example, the primitive accounts of human discourse structure available in linguistics (§20) make it difficult to devise satisfactory question-answering systems for use with machines.

SPEECH RECOGNITION

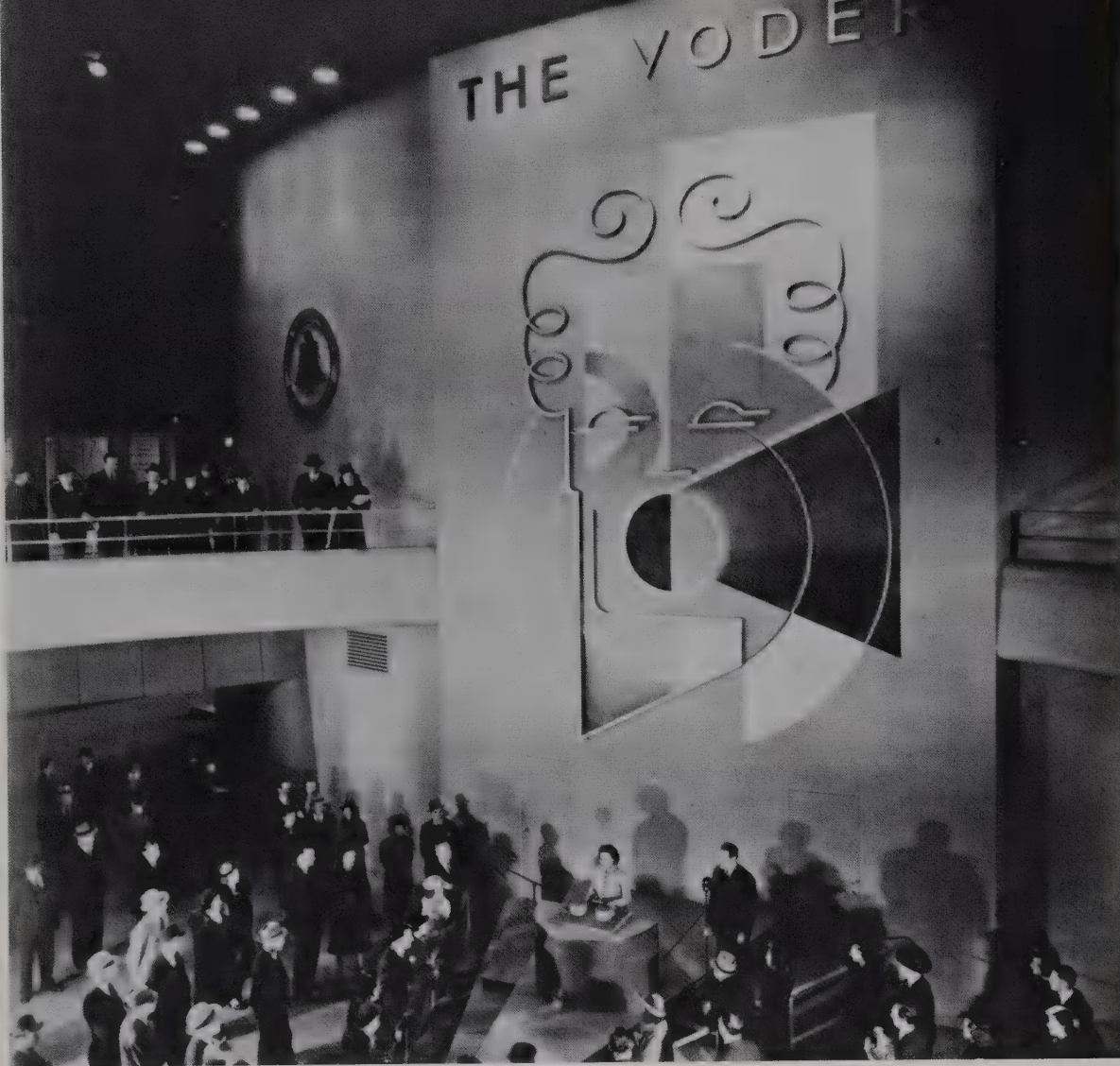
The problem of automatic speech recognition is a more complex one. It requires the automation of the processes of auditory perception and comprehension – neither of which is well understood in its own right (§25). Also, it has to cope with the large amount of variation in speech (such as regional accent and voice quality) and the noise found in everyday speech situations. However, there are now several devices that can recognize a small vocabulary of words spoken clearly and in isolation, or separated by pauses (as in a list of telephone numbers), in a quiet environment. The machines are particularly successful if they have been given some information about the speaker’s voice characteristics in advance (a ‘template’ of the speaker). It is also becoming increasingly possible to recognize chunks of continuous speech by single

speakers, as long as the speech is not too rapid, informal modifications are avoided, and the vocabulary is limited. More advanced techniques of pattern matching are now available as a result of research into artificial intelligence, and projects are under way to use the new generation of computers to tackle these problems – but progress also depends on filling the gaps in our understanding of the acoustics of speech (§23).

Speech interaction with machines is unlikely to become routine (in homes and offices) until the turn of the century, though some devices will be available sooner. For example, currently being developed is a 10,000-word, voice-activated typewriter, for which the manufacturers claim 97% accuracy in word recognition. The core vocabulary in this machine can be used by any speaker; but the machine has to be trained by individual speakers before they can get access to the whole vocabulary store. However, it remains to be seen whether such devices can cope with the biggest problem facing routine office use – the level of background noise.



A surviving fragment of Alexander Graham Bell’s ‘talking head’, made around 1863, and discovered many years later in the attic of Bell’s house in Washington DC.



The Voder Speech Synthesizer being demonstrated at the 1939 World's Fair by Bell Telephones

WAYS OF MAKING THEM TALK

Different techniques are available for providing a machine with a voice. The voices (human or synthesized) can be pre-recorded, so that they can be produced at a predetermined point (when an engine requires servicing, for example), or when a button is pressed (as in many children's toys, such as 'Speak and Spell'). They are also widely used in aids for the handicapped, and in computer assisted terminals. But the approach has several serious limitations. The linguistic needs have to be precisely anticipated, and changes are difficult to introduce. Also, accessing the data takes a lot of time, especially if a large vocabulary has been stored in the machine.

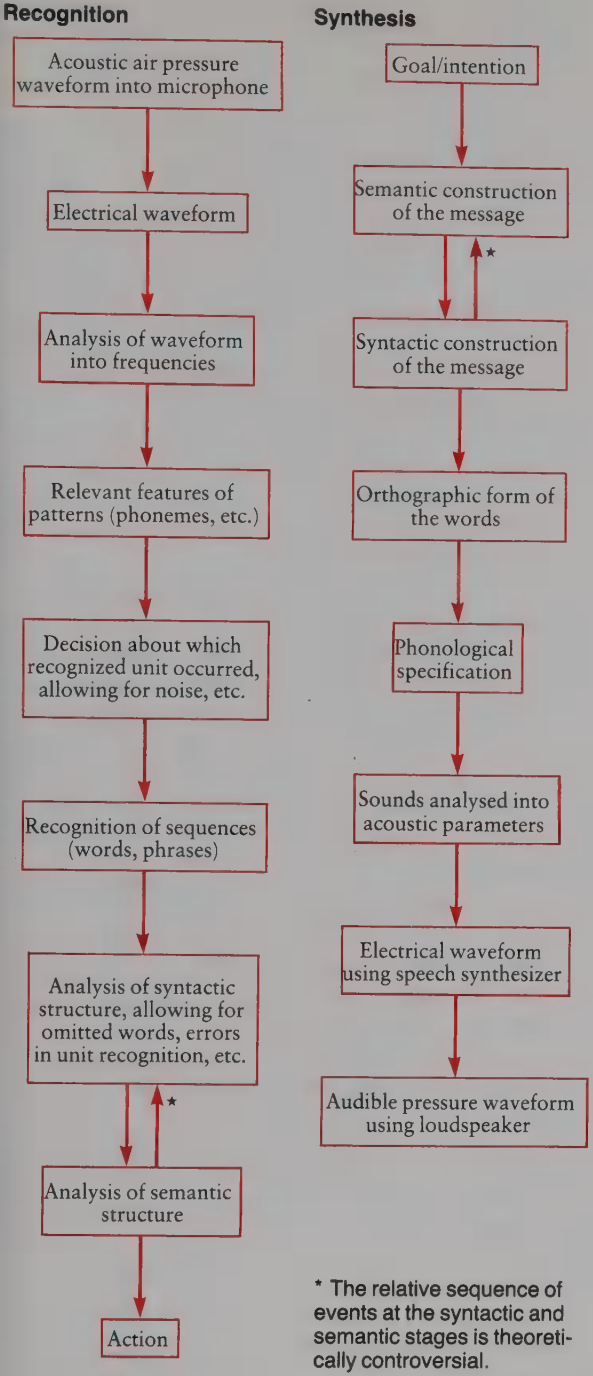
The alternative is a system of speech 'synthesis by rule'. Here, there are three main methods of language analysis.

- The machine can translate whole words, by looking them up in a table in which each word has been given a synthesizer code. The words are then pronounced as wholes, in a kind of 'look and say' approach (§34). This is easily done when the vocabulary is small; but when many words are involved, the approach becomes

cumbersome and restricting. Retrieving the words is very time-consuming, and the system cannot cope with new or unusual words (such as proper names).

- The machine analyses words into their constituent parts (morphemes, p. 90), and links these with appropriate speech sounds. It has been estimated that a dictionary of only 8,000 morphemes is sufficient to handle 95% of texts. However, a large computer system is needed in order to achieve real-time performance.
- The machine analyses words letter-by-letter, and matches the patterns with a stored list of sound correspondences, using a predetermined set of rules (about 400, in one approach). The usual method synthesizes speech on the basis of the acoustic features of sounds (§23), which are then combined into the vowel and consonant segments, words, and sentences, according to the language's phonological rules (§28). Some approaches use a database of already synthesized segments. This is a kind of 'phonic' decoding (§34) – essential if the system is to handle all the words in a language. But it is difficult to devise satisfactory rules to handle stress and intonation.

Stages in human-machine speech interaction



* The relative sequence of events at the syntactic and semantic stages is theoretically controversial.

WHY BOTHER?

We are so used to hearing human voices emerging from robots and computers in science fiction films that the desirability of human-machine speech interaction is often taken for granted. However, this field of research has not been without its critics. The arguments have been based on several theoretical and commercial considerations.

- The research (into speech recognition, in particular) is unnecessary to social needs, and the money would be better spent elsewhere.

- Speech interaction may be more expensive in running costs than using written or coded text. It is unclear whether these costs are outweighed by the advantages.
- The commercial demand for quick results has led to some poor-quality research and development.
- The ability to produce hardware is now far ahead of the relevant theoretical research fields, especially in speech perception and acoustics.
- Speech input to machines will be unreliable for the foreseeable future because of interference from other speech in the environment.
- Routine speech input to machines leaves no permanent record, whereas written or coded input does.
- The concern to make machines sound human is unnecessary. Sometimes mechanical voices are more easily understood, especially in noisy work conditions. And 'friendly' voice systems may persuade non-expert users that the machines are capable of more than they really are.
- Many people do not like talking machines because this suggests they have intelligence (a currently controversial issue, in its own right).

In favour

At the same time, the field of human-machine speech interaction has had many defenders, whose arguments have been of the following kind.

- Speech interaction is the easiest and most natural approach, and is less prone to errors than typing.
- It permits other activities to proceed at the same time.
- It is more convenient in many respects. Interaction can take place even when the user is out of sight or reach of the machine. An interaction can be easily monitored by third parties and is compatible with other everyday methods of communication (e.g. by telephone).
- There are a large number of social and business applications that promote accuracy, efficiency, and cost-effectiveness.

The future

These arguments will doubtless continue. In the meantime, machine speech, of varying quality, is rapidly becoming a routine part of everyday life, as the various technical problems are overcome. We can hear automatic talkers in elevators, announcing systems, assembly lines, calculators, children's toys, cars, speaking clocks, telephone answering services, and business offices (in providing stock quotation reports). The potential of human-machine speech interaction is also being actively researched in such areas as air-traffic control, airline connection information, shop checkout monitoring, medical screening, robotics, and communication aids for the handicapped. There are still many problems to be solved, but a world in which speech interaction with machines is routine may now be only a generation away.

27 The sounds of speech

The description and classification of speech sounds is the main aim of phonetic science, or *phonetics*. Sounds may be identified with reference to their production (or ‘articulation’) in the vocal tract, their acoustic transmission, or their auditory reception. The most widely used descriptions are articulatory, because the vocal tract provides a convenient and well-understood reference point (§22); but auditory judgments play an important part in the identification of some sounds (vowels, in particular). The more precise and comprehensive possibilities of acoustic description are outlined in §23.

An articulatory phonetic description generally makes reference to six main factors.

Air stream The source and direction of air flow identifies the basic class of sound. The vast majority of speech sounds are produced using pulmonic egressive air (p. 125). Non-pulmonic sounds include the clicks, implosives, and ejectives described on pp. 126–7.

Vocal folds The variable action of the vocal folds must be considered – in particular, the presence or absence of vibration (p. 128). *Voiced* sounds are produced when the vocal folds vibrate; *voiceless* sounds are produced when there is no vibration, the folds remaining open. Other vocal fold actions are sometimes referred to (e.g. the closed glottis used to produce the glottal stop).

Soft palate The position of the soft palate (p. 130) must be noted. When it is lowered, air passes through the nose, and the sound is described as *nasal* or *nasalized*; when it is raised, air passes through the mouth, and the sound is *oral*.

Place of articulation This parameter can be used to make several precise phonetic distinctions. It refers to the point in the vocal tract at which the main closure or narrowing is made, such as at the lips, teeth, or hard palate. Accompanying ‘secondary’ constrictions or movements may need to be taken into account as well.

Manner of articulation This is also a major descriptive parameter, referring to the type of constriction or movement that takes place at any place of articulation, such as a marked degree of narrowing, a closure with sudden release, or a closure with slow release.

Lips The position of the lips is an important feature of the description of certain sounds (especially vowels), such as whether they are rounded or spread, closed or open.

In very precise descriptions of speech sounds, other factors may also be noted, such as the relative position of the jaw or the overall shape of the tongue.

Vowels and consonants

These two labels are probably the most familiar of all the terms used in the description of speech, but they nonetheless need to be used with great care, to avoid mixing up two different kinds of definition.

In a *phonetic* definition, vowels are distinguished from consonants in terms of how they are articulated in the vocal tract, and the associated patterns of acoustic energy. In this approach, consonants are defined as sounds made by a closure in the vocal tract, or by a narrowing which is so marked that air cannot escape without producing audible friction. Vowels are sounds that have no such stricture: air escapes in a relatively unimpeded way through the mouth or nose. It is therefore relatively easy to ‘feel’ the articulation of consonants; whereas vowels, involving only slight movements of the tongue and lips, are difficult to locate in this way, and are easier to distinguish on auditory grounds.

In a linguistic – strictly, a *phonological* – definition (§28), vowels are distinguished from consonants in terms of how these units are used in the structure of spoken language. In this approach, consonants (C) are defined as the units that typically occur at the margins of syllables (p. 164); vowels (V) are the units that typically occur at the centre of syllables. For example, in the syllables *pet* /pet/, *cat* /kat/, and *bus* /bʌs/, the syllable structure in each case consists of a central unit and two marginal units, to produce the pattern CVC.

In the case of most sounds, the phonetic and the phonological approaches coincide. For example [p], [f], and [m] are ‘consonants’ from both points of view. Phonetically, they involve closure or audible friction. Phonologically, they function at syllable margins, e.g. *map* /map/, *puff* /pʌf/; there are no such syllables as */mpf/ or */mfp/. Similarly, [a], [i], and [o] are ‘vowels’ from both points of view: phonetically, they are produced without audible friction; and phonologically, they occur at the centres of syllables, in such words as *cap* /kap/, *hit* /hit/, and *hot* /hɒt/.

The problem cases

In such cases as English [ɪ], [ɪ̯], [w], and [j], the two sets of criteria conflict. From a phonological point of view, these units typically occur at the margins of syllables, as in *let* /let/, *rat* /rat/, *wet* /wet/, and *you* /ju:/ and they must therefore be

considered as consonants. But from a phonetic point of view, they are articulated without audible friction, and acoustically they display a similar energy pattern to that displayed by [a], [i], etc. (p. 137). They must therefore be considered as vowels.

There are only two ways out of this problem. One is to say that these four units are neither consonants nor vowels but midway between these categories. The terms *semi-consonant* or *semi-vowel* have often been introduced for this purpose, and this is the usual solution. The other, more radical, solution is to introduce two completely different sets of labels for talking about these units. The American phonetician Kenneth Pike (1912–) suggested the terms *vocoid* and *contoid* for the phonetic distinction, reserving *vowel* and *consonant* for the phonological one. Thus, all vowels are vocoids; but consonants may be either contoids ([p], [f], [h], etc.) or vocoids ([l], [ɹ], [w], [j]). (The further possibility of a contoid acting as a vowel is of marginal linguistic significance, e.g. the [s] of *psst*.)

It is certainly helpful to have two sets of terms to make it clear whether we are talking about sound units from a phonetic or a phonological point of view. However, as only a small number of units raise the problem in a severe form, the distinction has not been universally adopted. Moreover, it needs further interpretation in the light of the way a language's phonological system is organized (§28).

Vowels

Vowels are normally described with reference to four criteria:

- The part of the tongue that is raised – front, centre, or back (p. 131).
- The extent to which the tongue rises in the direction of the palate. Normally, three or four degrees are recognized: *high*, *mid* (often divided into *mid-high* and *mid-low*), and *low*. Alternatively, tongue height can be described as *close*, *mid-close*, *mid-open*, and *open*.
- The position of the soft palate – raised for oral vowels, and lowered for vowels which have been nasalized.
- The kind of opening made at the lips – various degrees of lip rounding or spreading.

It is difficult to be precise about the exact articulatory positions of the tongue and palate because very slight movements are involved, which give us very little internal sensation. Absolute values are not possible (such as saying that the tongue has moved *n* millimetres in a certain direction), because the mouth dimensions are not the same between speakers. Vowel judgments therefore tend to be made on the basis of auditory criteria, in association with a limited amount of visual and tactile information.

Ways of transcribing English vowels

Several phonetic transcriptions for English vowels have been devised. The changes in symbol reflect different interpretations by the authors of the relationships between the sounds. For example, Daniel Jones (p. 154) represents the difference between *seat* and *sit* as essentially a contrast of vowel length, using the symbols [i:] and [i] respectively; whereas A. C. Gimson (1917–85) represents it as a contrast of both length and quality, using a different symbol as well as a length mark, [i:] and [ɪ] respectively. It is important to realize that all the authors are transcribing the *same* set of contrasts (apart from the case of the back open vowels, where American and British English accents differ). Their symbols simply draw our attention to different aspects of the way the vowels are produced.

	Jones (1956)	Gimson (1962)	Trager & Smith (1951)	Kenyon & Knott (1935)
seat	i:	i:	iy	i
sit	i	ɪ	i	ɪ
set	e	e	e	ɛ
sat	æ	æ	æ	æ
cut	ə	ʌ	ə	ʌ
cart	ɑ	ɑ:	a	ɑ
cot	ɔ	ɒ	a	ɑ
caught	ɔ:	ɔ:	ɔh	ɔ
curt	ə:	ɜ:	ər	ɜː
full	u	ʊ	u	ʊ
fool	u:	u:	uw	u

This encyclopedia uses Gimson's system, with the substitution of [a] for [æ].

Things that can happen to vowels

Vowel qualities can be much influenced by articulatory movements elsewhere in the vocal tract, especially at the back of the mouth and in the throat. The possibilities include the following.

Nasalization

The soft palate is lowered, allowing some of the air stream to escape through the nose – an important feature of many vowels in French and Portuguese, for example. The diacritic for nasalization is ~.

Widening

In some languages, variations in the size of the pharynx (§22) affect vowel quality. 'Wide' vowels are produced when the tongue root is pulled forward and the larynx is lowered, thus enlarging the pharynx. Vowels where this does not take place are then termed 'narrow'. The West African language, Twi, illustrates this kind of contrast.

Rhoticization

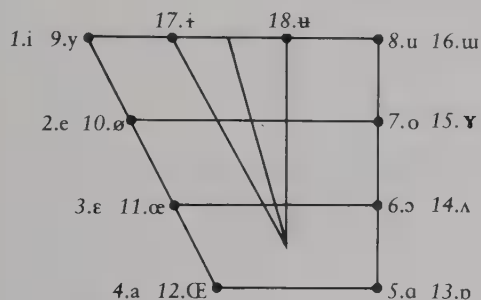
In some languages, vowels are articulated with an additional feature: *r*-colouring, or *rhoticization*. These vowels are usually articulated with the tip or front of the tongue raised, as would be the case for a retroflex [ɹ] (p. 155). They are widely used in American and British English dialects in words where *r* follows the vowel, as in *sir*, *word*. The phonetic symbol for a rhoticized vowel is ˠ, as in [aˠ], though sometimes special symbols are used, such as [æˠ].

The Cardinal Vowel system

The first widely used system for classifying vowels was devised by the British phonetician, Daniel Jones (1881–1967). The *Cardinal Vowel* diagram (or quadrilateral) is a set of standard reference points based on a combination of articulatory and auditory judgments. The front, centre, and back of the tongue are distinguished, as are four levels of tongue height:

- the highest position the tongue can achieve without producing audible friction;
- the lowest position the tongue can achieve; and
- two intermediate levels, dividing the intervening space into auditorily equidistant areas.

The grid provides a basis for vowel classification, along with information about the accompanying



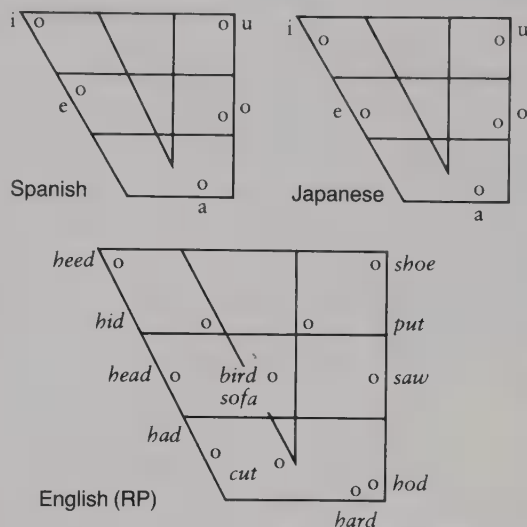
position of the lips. Jones gave the main vowel points numbers, distinguishing a *primary* series (1–8) from a *secondary* series (9–16), and adding two further points (17–18). Each of these vowel-points was also given a phonetic symbol. The distinction between primary and secondary cardinal vowels is based on lip position. The first five primary vowels are all unrounded: front [i], [e], [ɛ], and [a], and back [ɔ], [o], and [u]. In the secondary series, the lip position is reversed: the first five are rounded: front [y], [ø], [œ], and [ɐ], and back [ʌ], [ɤ], and [ʊ]. The remaining three back vowels represent the high points achieved by the centre of the tongue: they are unrounded [ɨ] and rounded [ɯ].

Several other proposals have been made about ways of dividing up the vowel area that reflect articulatory movements (as established from a study of X-ray photographs) more accurately; but Jones's diagram continues to be widely used, especially in Europe. It should be emphasized that the cardinal vowels are not real vowels: they are invariable reference points (available on record) that have to be learned by rote. Once phoneticians have learned them, they can be used to locate the position of the vowels in any speaker. For more precise descriptions of vowels occurring within a broad area of the diagram, it is possible to use diacritic marks along with the vowel symbol, as shown on p. 153, and below.

Using the Cardinal Vowel diagram

Once the cardinal vowel values have been learned (a matter of auditory practice), it is possible to place the vowels of a speaker of any language onto the chart in a fairly precise way – if necessary, confirming the auditory judgments by acoustic measurements. In this way, typical articulations in different languages can be compared – the five-vowel system (p. 167) of Spanish, alongside that of Japanese, for example. The two systems are very similar, but most of the Japanese vowels are articulated in slightly more open positions than the Spanish; the close back vowel also shows a difference in lip rounding. (It is standard practice to use the nearest (rounded or unrounded) cardinal vowel symbols, when locating 'real' vowels on the chart.)

English has a more complex vowel system, as can be seen from the following chart (the accent represented is 'received pronunciation', p. 39).



The main vowel diacritics

Symbol ˘ or ˙

articulation lower than cardinal value, e.g. $\text{e}^{\text{˘}}$, $\text{e}^{\text{˙}}$

Symbol ˆ or ˆ

articulation higher than cardinal value, e.g. $\text{e}^{\text{ˆ}}$, $\text{e}^{\text{ˆ}}$

Symbol ˆ or ˆ

articulation further forward than cardinal value, e.g. $\text{o}^{\text{ˆ}}$, q

Symbol ˘ or ˘

articulation further back than cardinal value, e.g. $\text{i}^{\text{˘}}$, $\text{i}^{\text{˘}}$

Symbol ˜

nasalized vowel, e.g. ã

Symbol ˙

centralized vowel, e.g. ẽ

Symbol ː

long vowel, e.g. $\text{i}ː$

Symbol ˑ

half-long vowel, e.g. $\text{i}^{\text{ˑ}}$

Symbol ː

vowel more rounded than normal, e.g. $\text{ɔ}^{\text{ː}}$

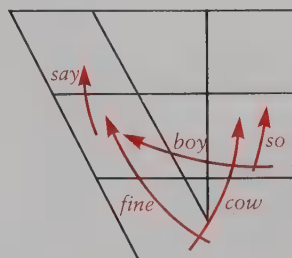
Symbol ː

vowel less rounded than normal, e.g. $\text{ɔ}^{\text{ː}}$

Vowel glides

Languages frequently make use of a distinction between vowels where the quality remains constant throughout the articulation (*pure* or *monophthong* vowels) and those where there is an audible change of quality. The latter are known as *vowel glides*. If a single movement of the tongue is involved, the glides are called *diphthongs*; a double movement produces *triphthongs*. Diphthongal glides in English can be heard in such words as *say*, *fine*, *cow*, *boy*, and *so*. Triphthongal glides are found in certain pronunciations of such words as *fire*, *power*, and *sure*.

The tongue movements of several diphthongs, represented by arrows, are drawn on the Cardinal Vowel diagram. The accent is Midwestern American.



Consonants

Consonants are normally described with reference to six criteria.

- The source of the air stream – whether from the lungs (*pulmonic*) or from some other source (*non-pulmonic*) (pp. 124–7).
- The direction of the air stream – whether moving outwards (*egressive*) or inwards (*ingressive*) (pp. 126–7).
- The state of vibration of the vocal folds – whether vibrating (*voiced*) or not (*voiceless*) (p. 128).

- The position of the soft palate – whether raised (*oral*) or lowered (*nasal*) (p. 130).
- The place of articulation in the vocal tract.
- The manner of the articulation.

Sounds using non-pulmonic and ingressive air streams (clicks, ejectives, and implosives) are described on pp. 126–7. The present section therefore deals largely with pulmonic egressive sounds, which in fact constitute the vast majority of the sounds of speech. Within the remaining criteria, place and manner of articulation provide the main possibilities for consonant variation.

PLACE OF ARTICULATION

Two reference points are involved in defining consonantal places of articulation: the part of the vocal tract that moves (the ‘active’ articulator) and the part with which it makes contact (the ‘passive’ arti-

culator) (p. 130). Eleven possible places are used in speech, as indicated in the figure. (A full list of phonetic symbols is given on p. 159 and in Appendix II.)

- 1. Bilabial.** Both lips are involved in the articulation, e.g. [p], [b], [m].
- 2. Labio-dental.** The lower lip articulates with the upper teeth, e.g. [f], [v].
- 3. Dental.** The tongue tip and rims articulate with the upper teeth, e.g. [θ], [ð], as in *thin* and *this* respectively.
- 4. Alveolar.** The blade (and sometimes the tip) of the tongue articulates with the alveolar ridge (p. 130), e.g. [t], [s]. Sounds articulated at the rear of this ridge (e.g. [ɹ],

as in some pronunciations of *red*) are sometimes classified separately as *post-alveolar*.

- 5. Retroflex.** The tip of the tongue is curled back to articulate with the area between the rear of the alveolar ridge and the front of the hard palate, e.g. [ɻ], [ɻ̌], as heard in many Indian English accents.
- 6. Palato-alveolar.** The blade (and sometimes the tip) of the tongue articulates with the alveolar ridge, with a simultaneous raising of the

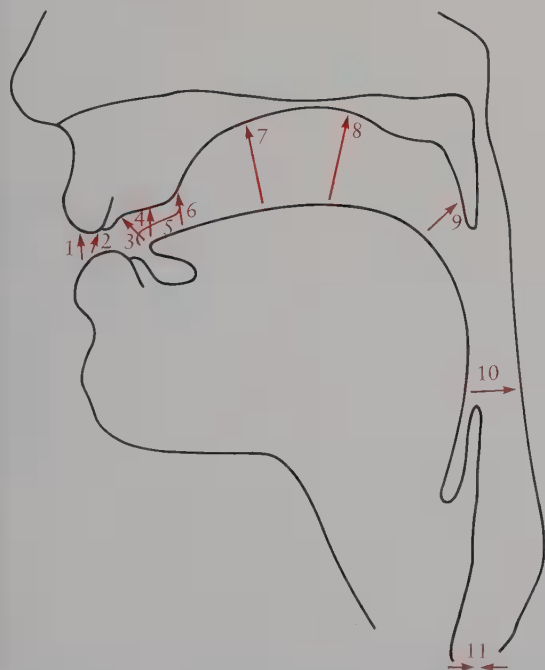
front of the tongue towards the hard palate, e.g. [ʃ], [ʒ], as in *shoe* and French *je*.

- 7. Palatal.** The front of the tongue articulates with the hard palate, e.g. [ç], [j], as in German *ich* and *ja* respectively.
- 8. Velar.** The back of the tongue articulates with the soft palate, e.g. [k], [g].

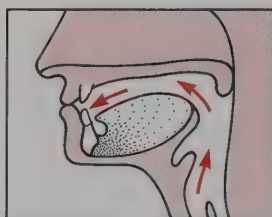
- 9. Uvular.** The back of the tongue articulates with the uvula, e.g. [ʁ], as in French *rue* (certain accents).

- 10. Pharyngeal.** The front wall of the pharynx (in the region of the epiglottis) articulates with the back wall, e.g. [ħ], [ʕ], both common in Arabic.
- 11. Glottal.** The vocal folds come together to cause a closure or friction, e.g. [h], [ʔ] (the glottal stop, p. 128) – a rather different method of articulation from any of the other consonants.

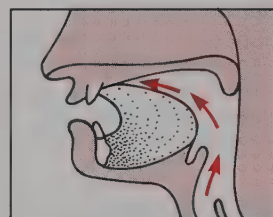
Other ways of describing articulation, in the context of phonology, are discussed in §28.



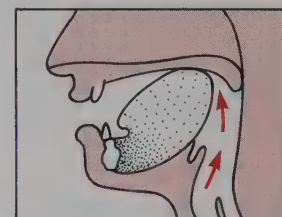
Some consonant places of articulation



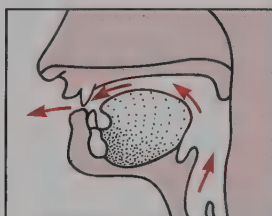
Bilabial [p] and [b]



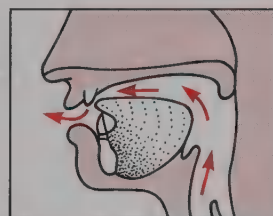
Alveolar [t] and [d]



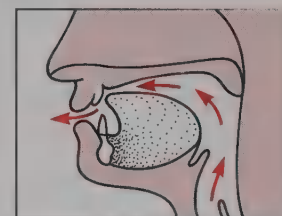
Velar [k] and [g], when followed by an [i] vowel



Labio-dental [f] and [v]



Dental [θ] and [ð]



Alveolar [s] and [z]

Coarticulation

The vocal organs do not move from sound to sound in a series of separate steps. Speech is a continuously varying process (p. 137), and sounds continually show the influence of their neighbours. For example, if a nasal consonant (such as [m]) precedes an oral vowel (such as [a]), some of the nasality will carry forward, so that the onset of the vowel will have a somewhat nasal quality. The reason is simply that it takes time for the soft palate to move from its lowered position (required for [m]) to the raised position (required for [a]). It is still in the process of moving after the articulation of [a] has begun. Similarly, if [a] were followed by [m], the soft palate would begin to lower during the articulation of the vowel, to be ready for the following nasal consonant.

When sounds involve overlapping or simultaneous articulations in this way, the process is known as *coarticulation*. If the sound becomes more like a following sound (its 'target'), we are dealing with *anticipatory* coarticulation; if the sound displays the influence of the preceding sound, we are dealing with *perseverative* coarticulation. Anticipatory effects are far more common: a typical example in English is the way vowel lip position affects a preceding [s], in such words as *see* (where the [s] is pronounced with spread lips) and *sue* (where [s] is pronounced with rounded lips).

Secondary articulations

Often a consonant is produced using two points of articulation, one closure (the 'primary' articulation) being more marked than the other (the 'secondary' articulation). There are four main kinds of secondary articulation.

Labialization The lips are rounded at the same time as the primary articulation is made, as in the initial consonants of *sue* and *shoe*. A labialized consonant is indicated by [w] placed beneath the main symbol, or [ʷ] placed after it, as in [sʷ], [sʷ].

Palatalization The tongue is raised to a high front position at the same time as the primary articulation is made. An [i] vowel resonance is added to the consonant, and is symbolized by a small raised [j]. Palatalized consonants are found, for example, in Slavonic languages – as in the contrast between Russian palatalized [tʲ] (e.g. [bratʲ] 'to take') and non-palatalized [t] (e.g. [brat] 'brother').

Velarization The tongue is raised to a high back position at the same time as the primary articulation is made. An [u] vowel resonance is added to the consonant, and is symbolized by the sign [~] through the consonant symbol. A velarized [ɫ] can be heard in English, as in *pool*. A series of velarized sounds occurs in Arabic.

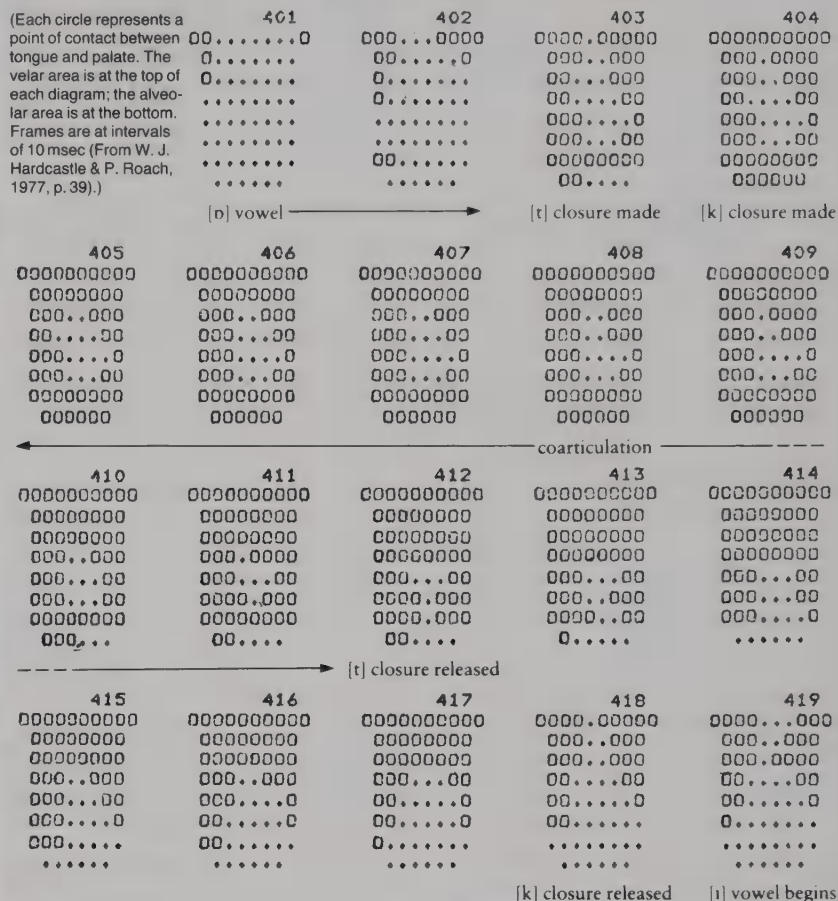
Pharyngealization The pharynx is narrowed at the same time as the primary articulation is made. An [ɑ] vowel resonance is added to the consonant, and is symbolized by the [~] diacritic – the same as for velarization, but as no language is known to contrast these articulations, there is no ambiguity. Pharyngealized consonants are found, for example, in Arabic.

Measuring coarticulation

It is possible to measure the degree of overlap between consonant articulations. In one study, subjects pronounced words containing the adjacent consonants [kt] (as in *cocktail*), and [tk] (as in *Watkins*), and the sequence of

articulations was plotted using an electropalatograph (p. 141). It might be expected that the [k] closure at the end of *cock* would be completely released before the [t] closure for *tail* was begun; but this does not happen in

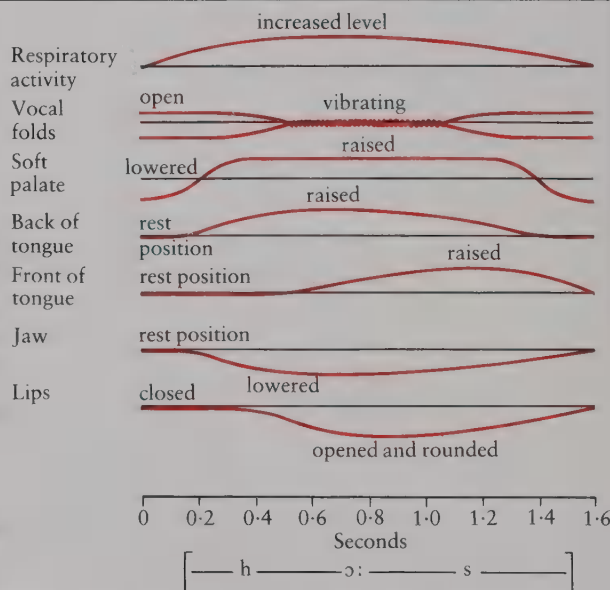
normal speech. In the case of [tk], one subject made an almost simultaneous closure of the two sounds, as can be seen from this palatograph print-out of the middle portion of the word *Watkins*.



Parametric phonetics

The notion of coarticulation applies to every articulatory component involved in the production of a stretch of speech.

This can be seen if the functioning of each component is plotted separately, to show the relative movements of the articulators over time. The diagram shows seven parameters representing the action of the lungs, vocal folds, soft palate, front and back of the tongue, jaw, and lips during the articulation of the word *horse* (after L. F. Brosnahan & B. Malmberg, 1970, p. 70).



MANNER OF ARTICULATION

There are four main kinds of constriction made by the articulators in producing consonants, and these are used to provide a further dimension of classification. (The full range of phonetic symbols is given on p. 159.)

Total closure

Plosive A complete closure is made at some point in the vocal tract; the soft palate is raised. Air pressure thus builds up behind the closure, which is then released explosively, as in [p] and [b]. The broader category of *stop* includes closures produced by other air streams (pp. 126–7), as well as plosives.

Nasal A complete closure is made at some point in the mouth; the soft palate is lowered, so that air escapes through the nose, as in [m] and [n]. Voiceless nasals are shown with the diacritic [◌̥], as in [m̥].

Affricate A complete closure is made at some point in the mouth; the soft palate is raised. Air pressure builds up behind the closure, and is then released relatively slowly (compared to a plosive release). The first element of the sound has a sharp plosive character, but this is followed by an element of audible friction, as in [tʃ] and [dʒ] (heard in English *church* and *judge* respectively).

Intermittent closure

Roll or Trill One articulator taps rapidly against another – typically the tongue tip against the alveo-

lar ridge or the tongue back against the uvula, in the different kinds of trilled *r*, heard for example in many English, French, and German accents.

Flap A single tap is made by one articulator against another, as in some pronunciations of the *r* in *very*, or the *d* in *ladder*, where the tongue tip taps once against the alveolar ridge. In Spanish, a contrast is made between a trilled and a flapped *r*, as in *perro* [pero] ‘dog’ and *pero* [pero] ‘but’.

Partial closure

Lateral A partial closure is made at some point in the mouth, in such a way that the air stream is allowed to escape around the sides of the closure. Various kinds of *l* sound are the result.

Narrowing

Fricative Two vocal organs come so close together that the movement of air between them causes audible friction, as in [f], [z], [h]. Some fricatives have a sharper sound than others, because of the greater intensity of their high frequencies (p. 137): [s], [z], [ʃ] (as in *shoe*), and [ʒ] (as in French *je*). These are known as *sibilants*.

Linguistic range

The above descriptions give only a limited impression of the range of sounds found in the languages of the world. A more accurate impression emerges when we examine some of the possibilities of articulation within a single category of consonant. Several kinds of stop consonant, for example, are illustrated in the following list (which does not show details of vowel quality). (After P. Ladefoged, 1982.)

Vowel-like consonants

Certain consonants have some of the phonetic properties of vowels: two alveolar sounds, [l] and [ɹ], the bilabial [w], and the palatal [j]. They are usually referred to as *approximants* (or *frictionless continuants*), though the latter two are commonly called *semi-vowels*, as they have exactly the same articulation as vowel glides. Although phonetically vowel-like, these sounds are usually classified along with consonants on functional grounds (p. 152).

Description	Symbol	Example	Language
Manner			
voiced	b	bənu	Sindhi ‘forest’
voiceless unaspirated	p	pənu	Sindhi ‘leaf’
aspirated	p ^h	p ^h ənu	Sindhi ‘snake hood’
murmured (breathy)	b ^ɦ	b ^ɦ ənənu	Sindhi ‘lamentation’
implosive	ɓ	ɓəni	Sindhi ‘curse’
laryngealized (creaky)	ḃ	ḃáábè	Hausa ‘quarrel’ (verb)
ejective	k’	k’aākà	Hausa ‘how’
nasal release	dn	dno	Russian ‘bottom’
prenasalized	nd	ndizi	Swahili ‘banana’
lateral release	t̪	t̪àh	Navaho ‘oil’
ejective lateral release	t̪’	t̪’éeʔ	Navaho ‘night’
affricate	ts	tsait	German ‘time’
ejective affricate	ts’	ts’áal	Navaho ‘cradle’
Place			
bilabial	p b	pig	English
dental	t̪ d̪	mut̪tu	Malayalam ‘pearl’
alveolar	t d	muttu	Malayalam ‘density’
retroflex	ɖ ɖ	mut̪tu	Malayalam ‘knee’
palatal	c ɟ	ciri	Quechua ‘cold’
velar	k g	kara	Quechua ‘expensive’
uvular	q ʁ	qara	Quechua ‘skin’
glottal	ʔ	ʔalla	Arabic ‘God’
labio-velar	kp gb	akpá	Yoruba ‘arm’

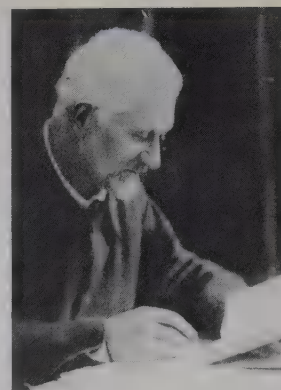
L'ASSOCIATION PHONÉTIQUE INTERNATIONALE (INTERNATIONAL PHONETIC ASSOCIATION)

This Association was inaugurated in 1886 by a small group of language teachers in France who had found the practice of phonetics useful in their work and wished to popularize the methods. It was first known as The Phonetic Teachers' Association, changing to its present title in 1897.

One of the first activities of the Association was to produce a journal in which the contents were printed entirely in phonetic transcription. The idea of establishing a phonetic alphabet was first proposed by Otto Jespersen (1869–1943) in 1886, and the first version of the International Phonetic Alphabet (IPA) was published in August 1888. Its

main principles were that there should be a separate letter for each distinctive sound, and that the same symbol should be used for that sound in any language in which it appears. The alphabet was to consist of as many roman alphabet letters as possible, using new letters and diacritics only when absolutely necessary. These principles continue to be followed today.

The IPA has been modified and extended several times, and is now widely used in dictionaries and textbooks throughout the world. Some of its special letters have even been accepted as part of the new orthographies devised for previously unwritten languages, such as in certain parts of Africa. The Association is now based at University College London.



Paul Passy, founder of the International Phonetic Association

The index page to the last number of *Le Maître Phonétique*, which appeared in 1970. The headings are in French, the official language of the Association. Each article has been written in a transcription that partly reflects the pronunciation of the author. For example, Soravia uses [ou] to represent the diphthong found in such words as *know* ([founetiks] = *phonetics*), whereas Lewis uses [əu] (as in [təʊnɪ] = *tone*) and Fox uses [əʊ] ([təʊn] = *tone*). The asterisk is used before a word that is a proper name.

le maître phonétique

organ de l'association phonétique internationale, 1970

table de matières

artiklæ dæ fɔ̃.

səm rimɑ̃ks ɔ̃ dæ founetiks əv ə dʒipsi daialekt (G. Soravia) .

*rɔdʒə *kɪndənz tounmɑ̃ks ədæptid tə *frɛ̃ʃ intounɛiʃn (G. Dietrich)

kɔrɛksjɔ̃ .

itæljən prənɑ̃sɛiʃn (L. Canepari)

ə nœt ɔ̃ "The North Wind and the Sun" pæsɪdʒ in

*kæntəniz (K. C. Leung)

mɔ̃r əbɑ̃t ə fəɡɔtn təʊn pætn (N. Hodek) .

ði 'An'nœun 'sɪtɪzn (J. W. Lewis)

dæ lɑ̃st m.f. (A. C. G.)

dæ fəɡɔtn təʊn : ə rɪplɑ̃ (A. Fox)

dæ təʊnl sistəm əv rɪmœt spɪtʃ (J. Windsor Lewis)

ə sɛdʒestʃən fɔ̃ ə nju : sɪmbl (E. Stankova)

ə nœt ɔ̃ dæ fənɛtɪk pɛkju:lɪarɪtiz əv ə klɑ̃s daialekt əv

*mlɑ̃ʒɑ̃lɑ̃m (A. Chandrasekhar)

ɪɡhlɪ : kɔkni (J. R. Hurford)

dæ lɑ̃st m.f.

əz mɛmbəz wɪl nəʊ, ðɪs ɪz dæ lɑ̃st nɑ̃mbər əv ðɪ m.f. in ɪts prɛznt fɔ̃m. ɑ : dʒɜːnl wəz pʌblɪʃt fə dæ fɜːst tɑɪm in 1889, dæʊ prɪːvjʊsli, frəm 1886, ɪt əd əpɪəd əz "dæ fənɛtɪk tɪtʃə". in 1889, ɑːr əsəʊsɪeɪʃn hæd 321 mɛmbəz in 18 kɑntrɪz, dæ mædʒɔrɪtɪ kɑmɪŋ frəm *swɪːdn, *dʒɜːmənɪ ən *frɑːns. tædeɪ, wɪː hæv mɔː ðn 800 mɛmbəz in əʊvə 40 kɑntrɪz, dæ grɛɪt mædʒɔrɪtɪ kɑmɪŋ frəm dæ *jʊnɑɪtɪd steɪts ən *grɛɪt brɪtn.

nəʊ dæt wɪː əv dɪsɑɪdɪd tə prɪnt ɑ : nju : *Journal* in ɔːθvɜːrɪ, fə dæ fɜːst tɑɪm in dʒuːn, 1971, ɪt ɪz hœʊpt dæt dæ rɪdʒɪp wɪl bɪ ɪnlɑːdʒd ən dæt kɔntrɪbjʊːʃnz wɪl bɪ rɪsɪːvd frəm ə wɑːdə sɜːkl əv fəʊnɪtɪʃnz ən tɪtʃəz. mœst əv ɑ : mɛmbəz huː əv rɪplɑɪd tə dæ sɜːkʒələr in dæ lɑ̃st m.f. hæv sɪgnɪfɪd dæt ðeɪ wɪʃ tə kəntɪnjuː tə sɛbskraɪb tə dæ nju : *Journal*. dæʊz huː əv nɒt jɛt ɪnfɔːmd əs əv dæər ɪntɛnʃnz ər ɜːdʒd tə duː səʊ wɪdœʊt dɪleɪ, sɪns ɑ : fɑɪnənsɪz wɪl nɒt ələʊ əs tə sɛnd dæ *Journal* tə fɔːmə mɛmbəz huːz sɛbskrɪpʃnz ə nɒt rɪnjuːd.

wɪ ɪkspekt dæ nju : *Journal* tə kəntɛɪn əbɑʊt 50 pɛɪdʒɪz ət ðɪ ɔʊtset. fə ðɪs rɪːzn, in dæ fɜːst nɑ̃mbəz ət lɪst, wɪː wɪl lɪmɪt dæ lɛŋkθ əv kɔntrɪbjʊːʃnz tʊ ə mæksɪməm əv əbɑʊt 3,000 wɜːdʒ. dæ fɔləʊɪŋ nœts fə kəntɪrɪbjʊtəz gɪv ən ɪndɪkɛɪʃn əv dæ rɪkwæɪmɛnts əv prɛzntɛɪʃn fə dæ *Journal*; ðeɪ wɪl in fjuːtʃə bɪ prɪntɪd ɔn dæ *Journalz* klɑ̃v.

The Association Secretary's statement explaining the demise of *Le Maître Phonétique*.

The notice, which appeared in the 1970 issue, was headed 'The last m.f.': 'As members will know, this is the last number of the m.f. in its present form. Our journal was published for the first time in 1889,

though previously, from 1886, it had appeared as 'The Phonetic Teacher'. In 1889, our association had 321 members in 18 countries, the majority coming from Sweden, Germany and France. Today, we have more than 800 members in over 40 countries, the great majority coming from the United

States and Great Britain.

Now that we have decided to print our new *Journal* in orthography, for the first time in June 1971, it is hoped that the readership will be enlarged and that contributions will be received from a wider circle of phoneticians and teachers ...'

(Revised to 1979)

[illegible]

OTHER SYMBOLS

- Voiceless p t
 - Voiced g j
 - h Aspirated tʰ
 - .. Breathy-voiced b ɟ
 - .. Dental ɳ
 - .. Labialized ɱ
 - .. Palatalized ɕ
 - .. Velarized or Pharyngealized ɣ, ʕ
 - .. Syllabic ɱ ɳ
- ~ or ~ Simultaneous sʃ (but see also under the heading Affricates)

- or . Raised e, ɛ, e ʷ
- or . Lowered eɪ, ɛ, e ʷ
- + Advanced u+, u
- or - Retracted i, i-, i
- Centralized ē
- Nasalized ā
- 1, 1, 1⁸ r-coloured α¹
- : Long α:
- Half-long α•
- ~ Non-syllabic ū
- More rounded ɔ
- Less rounded ɔ

- ɤ, ɥ Alveolo-palatal fricatives
 ɤ̥ Palatalized ɤ
 ɹ Alveolar fricative trill
 ɻ Alveolar lateral flap
 ɸ Simultaneous ɸ and x
 ɸ^a Variety of ɸ resembling s,
 etc.
 ɪ = ɪ
 ʊ = ʊ
 ɜ = Variety of ə
 ɛ = r-coloured ə

Front	Back	VOWELS	Front	Back	STRESS, TONE (PITCH)
i	ɯ	Close	y	ɯ	' stress, placed at beginning of stressed syllable: ' secondary stress: " high level pitch, high tone:
ɪ			Y	ə	
e	ɤ	Half-close	ə	o	
ə					
ɛ	ʌ	Half-open	œ	ɔ	
æ					
ʌ	ɑ	Open	œ	ɔ	
ɑ					

Unrounded

Rounded

AFFRICATES can be written as digraphs, as ligatures, or with slur marks: thus ts, tʃ, dʒ:

AFFRICATES can be written as digraphs, as ligatures, or with slur marks; thus *ts*, *tʃ*, *dʒ*:
tʃ dʒ: *ts tʃ dʒ*.
c, *j* may occasionally be used for *tʃ*, *dʒ*.

The International Phonetic Alphabet (1979 revision)

Category	Examples			
<i>Place</i>				
bilabial trills	p̥ p̬ b̐			
lingualbilabs (tongue tip to upper lip)			s s̠ ɸ ʙ	
plosives	P B	Air-stream mechanism		
nasal	M	pulmonic ingressive	s m	
lateral	L	zero air stream with articulation present ('mouthing')	← →	(f) (m)
reverse labio-dentals (lower teeth to upper lip)	p̪ m̪ f̪	<i>Duration and pause</i>		m̃ ī
bidentals (lower teeth to upper teeth)	ħ Ḥ	excessively short prolonged (using existing IPA symbol)	m:	p:
<i>Manner</i>		silence: short, long, extra-long	- - - - -	
nasal fricatives	m ^F n ^F	<i>Data inadequate</i>		Ring doubtful symbol ○
strong/tense articulation	f m " "	'not sure'		C
weak/lax/tentative articulation	f m ƒ ɱ	e.g. unspecified segment		V
reiterated articulation	p~p~p	unspecified consonant		F
plosive with non-audible release	p̚ t̚	unspecified vowel probably [t], but not sure		t
<i>Vocal fold activity</i>				
unaspirated (marked explicitly)	p= t=			
prevoiced (voicing starts earlier than normal); postvoiced (voicing starts later)	v z v			

Left: Some of the symbols used by a British research team for transcribing disordered speech (after P. Grunwell, et al., 1980). Note the final section recommending symbols for use when the phonetician is unsure which sound has been used – a common problem when transcribing the unstable pronunciations of handicapped speakers.

Workshop markers for fricatives

- ◻ markedly spread lips,
- ⌞ protruded, labialized
- ᵹ heavily dentalized, [f]

Workshop markers for glides &

- w Exceptionally round
- ↔ Labially protruded
- [A flapped [l]

Workshop markers for nasals

- ◡ snap release, e.g.
- ◢ retracted

Left: Some of the symbols used by a British research team for transcribing disordered speech (after P. Grunwell, *et al.*, 1980). Note the final section recommending symbols for use when the phonetician is unsure which sound has been used – a common problem when transcribing the unstable pronunciations of handicapped speakers.

Below: Some of the symbols used by an American research team for transcribing the speech of children (after C. Bush, *et al.*, 1973)

Workshop markers for fricatives
markedly spread lips,

Workshop markers for glides and liquids

Workshop markers for nasals and stops

28 The linguistic use of sound

Phonetics is the study of how speech sounds are made, transmitted, and received (§27). It is a subject that requires as its source of data a human being with an intact auditory mechanism and a functioning set of vocal organs. The person's particular language background is not strictly relevant: phoneticians would draw the same conclusions about the production and reception of speech whether they were dealing with speakers of English, Hindi, or Chinese. Although the categories outlined in §27 can be used for the analysis of any language, that section provides no information about the way these categories are actually used, in the languages of the world.

By contrast, the primary aim of *phonology* is to discover the principles that govern the way sounds are organized in languages, and to explain the variations that occur. A common methodology is to begin by analysing an individual language, to determine which sound units are used and how they pattern – the language's 'phonological structure'. The properties of different sound systems are then compared, and hypotheses developed about the rules underlying the use of sounds in particular groups of languages, and ultimately in all languages ('phonological universals', §14).

The distinction between phonetics and phonology can be seen from a second point of view. The human vocal apparatus can produce a very wide range of sounds; but only a small number of these are used in a language to construct all of its words and sentences. Phonetics is the study of all possible speech sounds; phonology studies the way in which a language's speakers systematically use a selection of these sounds in order to express meaning.

There is a further way of drawing the distinction. No two speakers have anatomically identical vocal tracts, and thus no-one pronounces sounds in exactly the same way as anyone else (a motivation for the study of voiceprints, §6). There is even a considerable amount of variation in the sounds of a single speaker. Yet when using our language we are able to discount much of this variation, and focus on only those sounds, or properties of sound, that are important to the communication of meaning. We think of our fellow-speakers as using the 'same' sounds, even though acoustically they are not. Phonology is the study of how we find order within the apparent chaos of speech sounds.

In its search for significant generalizations about sound systems, phonology is continually looking beneath the 'surface' of speech, to determine its underlying regularities, and to establish how these relate to other areas of language, notably syntax and morphology (§16). Much of present-day phonological theory is thus concerned with the various

kinds of abstract representation it is necessary to set up in order to explain the range and distribution of phonetic segments found in languages. And in the context of generative linguistics (p. 409), there is an even more ambitious aim: to arrive at phonological analyses that have a demonstrable mental reality for the language users (p. 163).

PHONEMES

Phonological analysis relies on the principle that certain sounds cause changes in the meaning of a word or phrase, whereas other sounds do not. An early approach to the subject used a simple methodology to demonstrate this. It would take a word, replace one sound by another, and see whether a different meaning resulted. For example, we hear *pig* in English as consisting of three separate sounds, each of which can be given a symbol in a phonetic transcription, [pɪg]. If we replace [p] by, say, [b], a different word results: *big*. [p] and [b] are thus important sounds in English, because they enable us to distinguish between *pig* and *big*, *pan* and *ban*, and many more word pairs.

In a similar way, [ɪ] and [e] can be shown to be important units, because they distinguish between *pig* and *peg*, *pin* and *pen*, and many other pairs. And so we could continue, using this technique – the 'minimal pairs' test – to find out which sound substitutions cause differences of meaning. The technique has its limitations (it is not always possible to find pairs of words illustrating a particular distinction in a language), but it works quite well for English, where it leads to the identification of over 40 important units. In the earliest approach to phonological analysis, these 'important units' are called *phonemes*.

Phonemes are transcribed using the normal set of phonetic symbols (p. 159), but within slant lines, not square brackets – /p/, /b/, /ɪ/, etc. This shows that the units are being seen as part of a language, and not just as physical sounds.

Allophones

In working out the inventory of phonemes in a language, using this approach, we soon come across sounds that do not change the meaning when we make a substitution. For example, the consonants at the beginning of *shoe* and *she* have very different sound qualities. For *shoe*, the lips are rounded, because of the influence of the following [u] vowel; for *she*, the lips are spread. If we now substitute one of these sounds for the other, we do not get a change of meaning – only a rather strange-sounding pronunciation. There is only one phoneme here – the voiceless palato-alveolar phoneme /ʃ/ (p. 155) – but it turns up in two different

Some minimal pairs for English phonemes (southern British)

Vowels

/i:/ – /ɪ/	seat – sit
/ɪ/ – /e/	sit – set
/e/ – /æ/	set – sat
/æ/ – /ʌ/	cat – cut
/ʌ/ – /ɑ:/	cut – cart
/ɑ:/ – /ɒ/	cart – cot
/ɒ/ – /ɔ:/	cot – caught
/ɔ:/ – /ʊ/	cord – could
/ʊ/ – /u:/	pull – pool
/u:/ – /ɜ:/	pool – pearl
/ɜ:/ – /eɪ/	pearl – pale
/eɪ/ – /aɪ/	day – die
/aɪ/ – /ɔɪ/	buy – boy
/ɔɪ/ – /əʊ/	toy – toe
/əʊ/ – /aʊ/	hoe – how
/aʊ/ – /ɪə/	now – near
/ɪə/ – /eə/	tear (noun) – tear (verb)
/eə/ – /ʊə/	tear – tour
/ʊə/ – /i:/	sure – she
/ə/ – /zə/	waiter – wait

Consonants

/p/ – /b/	pig – big
/b/ – /t/	bee – tea
/t/ – /d/	tin – din
/d/ – /k/	din – kin
/k/ – /g/	cap – gap
/g/ – /h/	gag – hag
/h/ – /m/	hen – men
/m/ – /n/	map – nap
/n/ – /ŋ/	sin – sing
/ŋ/ – /l/	sink – silk
/l/ – /r/	lid – rid
/r/ – /w/	red – wed
/w/ – /j/	well – yell
/j/ – /tʃ/	you – chew
/tʃ/ – /dʒ/	chin – gin
/dʒ/ – /f/	large – laugh
/f/ – /v/	fat – vat
/v/ – /θ/	heave – heath
/θ/ – /ð/	wreath – wreathe
/ð/ – /s/	though – so
/s/ – /z/	bus – buzz
/z/ – /ʃ/	zoo – shoe
/ʃ/ – /ʒ/	Confucian – confusion
/ʒ/ – /t/	beige – bait

phonetic 'shapes', or variant forms, in these two words. These phonetic variants of a phoneme are known as *allophones*.

When we study a new language, it is important to pay careful attention to the phonetic variations which occur, to ensure that we make the right decisions about which sounds count as phonemes and which count as allophones. We do not know this information in advance; we have to work it out. And in doing so we have to be ready to cope with differences between the way sounds work in different languages. For example, English does not distinguish the meanings of words using a contrast between [ʃ^w] and [ʃ], but some other languages do (e.g. Lak). Sound differences that separate allophones in English may separate phonemes in another language, and vice versa – a principle that is clearly illustrated by the *l* sounds of such words as *leaf* and *pool*. The first *l* ('clear' *l*) is articulated much further forward in the mouth than the second ('dark' *l*) – as can be felt, if the sounds are said slowly to oneself. In English, these are allophones of a single /l/ phoneme. In Russian, however, they are different phonemes.

Grouping sounds into phonemes

In the phonemic approach to phonology, linguists faced with an array of sounds usually use three criteria in deciding whether these sounds belong to the same phoneme.

Complementary distribution The sounds must complement each other, in terms of where they occur in words. For example, in the case of the two /ʃ/ sounds in *shoe* and *she*, the rounded variety occurs only before rounded vowels, and the spread variety only before non-rounded vowels. Where we find the one, we do *not* find the other: they are mutually exclusive, never occurring in the same phonetic environment. Such sounds are said to be in 'complementary distribution'.

Free variation If the sounds do occur in the same place in a word, then they can belong to the same phoneme only if they do not change the meaning of the word. For example,

voiceless plosive sounds at the end of words are sometimes articulated in a relaxed way, and sometimes are pronounced quite strongly. The /p/ of *cup* might be heard with a tiny amount of audible breath ('aspiration') following its release, or a relatively large amount. But the different amounts of aspiration do not affect the meaning of the word: replacing weakly aspirated [p^h] by strongly aspirated [p^h] does not thereby change *cup* into some other word. Such sounds are said to be in 'free variation' – though whether the variation is in fact genuinely free, and not conditioned by such factors as social class or regional background, is an interesting question (p. 332).

Phonetic similarity To belong to the same phoneme, sounds ought to display a reasonable amount of physical similarity. The two kinds of /ʃ/ or the two kinds of /p/, in the above exam-

ples, satisfy this criterion, as the variants in each case have a great deal in common – the /ʃ/s are both voiceless palato-alveolar fricatives, and the /p/s are both voiceless bilabial plosives. However, it is sometimes possible to find sounds in complementary distribution that are *not* phonetically similar, and in these cases analysts would be reluctant to treat them as members of the same phoneme. A case in point is English [h] and [ŋ]: the former occurs at the beginning or in the middle of words; the latter only in the middle or at the end. They therefore rarely contrast. Could they, then, be taken as allophones of a single phoneme? No, because they have nothing phonetically in common, apart from both being consonants – [h] is a voiceless glottal fricative; [ŋ] is a voiced nasal continuant.

Beyond the segment

Several approaches to phonology have assumed that a language's sound system can best be analysed in terms of a series of individual segments ([b], [a], [s], etc.). But there are a number of phonological characteristics that affect units that are much larger than the individual segment, such as syllables, words, phrases, and sentences.

Several segments in a word or phrase may display the same phonetic feature – for example, they may all be lip-rounded or nasalized (p. 153). In particular, languages often display cases of *harmony* between consonants or vowels. In certain kinds of 'vowel harmony', for example, all the vowels within a word have to be of the same general type. Turkish is such a case, where words contain (with certain exceptions) only front vowels or back vowels. Thus we find [verdim] 'I gave' with front vowels, and [tʃoɖʒuk] 'child' with back vowels. But no words are formed with front + back combinations, such as [e] + [o] – a situation quite unlike English, where the sequence of vowels in a polysyllabic word is not predictable in this way.

The analysis of phonological features in terms of units larger than the segment is a preoccupation of several current theories, such as 'prosodic' phonology and 'autosegmental' phonology. Patterns of pitch, loudness, tempo, rhythm, and tone of voice provide another set of data which cannot be analysed with reference to single segments. These aspects of phonology are usually studied under a heading that well reflects this different emphasis: 'suprasegmental' phonology (§29). A specific approach that emphasizes the relationship between segments and syllabic sequences of rhythm and stress is known as 'metrical' phonology.

How many minimal pairs are there?

A convenient way of displaying a language's phonemic substitutions is to construct a chart of possible words or syllables. Below is part of a chart adapted from Denyse Rockey's *Phonetic Lexicon* (1973, pp. 56–7). It shows some of the 117 monosyllables in English that end with /b/ (though this figure includes several obsolete, dialect, and technical words). The initial sounds of these words are listed

vertically on the left, and the vowel sounds are listed horizontally across the top.

Charts of this kind have all kinds of practical applications. They can help language teachers and speech therapists in pronunciation work. They can be a source of information to budding poets and Scrabble-masters (p. 64). Linguists can compare the use a language makes of individual combinations of phonemes and thus calcu-

late the amount of work a phoneme has to do in a language. For example, English does not use final consonants with equal frequency, as can be seen from the following list, which is derived from Rockey's data. Each figure refers to the number of monosyllabic words ending with the consonant listed. It shows, for instance, that over twice as many monosyllables end in /k/ as end in /g/.

	i	ɪ	ε	æ	ɒ(+r)	ʊ/a	ɔ(+r)		
–	.	.	ebb	abb	.	ob	orb	/-d/	429
p	/-z/	383
b	.	bib	.	.	barb	bob	.	/-t/	376
t	.	Tib	.	tab	.	.	.	/-n/	330
d	dieb	dib	deb	dab	.	Dob	daub	/-l/	313
k	.	.	keb	cab	.	cob	corbe	/-k/	304
g	.	gib	.	gab	garb	gob	gaub	/-m/	240
f	.	fib	.	.	.	fob	.	/-p/	223
v	/-s/	212
θ	/-f/	153
ð	/-g/	138
s	.	sib	.	.	sab	sob	sorb	/-tʃ/	132
z	/-v/	122
ʃ	/-b/	117
ʒ	/-f/	105
h	hob	.	/-θ/	104
tʃ	/-ŋ/	87
ɖʒ	.	jib	.	jab	.	job	.	/-ɔ/	84
								/-ð/	32

DISTINCTIVE FEATURES

In a phonemic analysis, it is necessary to recognize smaller units than the segment, in order to explain how sets of sounds are related. This can be seen by comparing any two contrasting segments, using the articulatory criteria introduced in §27.

- English /p/ and /b/ differ in one respect only: /p/ is voiceless, and /b/ is voiced. In other respects, they are the same: they are both bilabial, plosive, oral, and pulmonic egressive.
- /p/ and /g/ differ in two respects: there is a contrast of voicing, and there is also a contrast in the place of articulation – bilabial vs velar.
- /p/ and /z/ differ in three respects: this time, there is a contrast in the manner of articulation (plosive vs fricative), alongside the contrasts in voicing and place.

All segments in a language can be analysed in this way, either from an articulatory or an acoustic (p. 146) point of view, and the result is a set of contrasting components known as *distinctive features*. The English segment /p/, for example, is a combination of the features of ‘voicelessness’, ‘plosiveness’, and ‘bilabiality’. In distinctive feature

theory, these features are given two values, symbolized by the signs + and –, as in [±voice], [±nasal]. For example, [n] is both [+nasal] and [+voice]; [p] is [–nasal] and [–voice]. A small set of these contrasts is worked out and applied to all the sounds that turn up in a language. Results may be presented in the form of a matrix, in which the presence or absence of each feature is noted (see below).

Distinctive feature theory has been primarily used by *generative* approaches to linguistics (§65), where the aim is to provide an account of phonology that can be integrated within a theory of grammar (§16). It is argued that distinctive features are the important facts to take into account when carrying out a phonological analysis, as they reveal more about the way in which the sounds of a language are organized, and more readily permit generalized statements within and between languages, than do descriptions based on phonemes and allophones. A particular advantage is that the same set of terms can be used for describing both vowels and consonants – something traditional articulatory descriptions were unable to do (as can be seen from the diverse terminology of §27).

Distinctive-feature matrices

The features are listed on the left of each matrix, and the segments are listed along the top. Each segment is analysed in terms of all features. The terminology used in these particular matrices relates to the traditional articulatory terms used in §27 in the following way (V = vowel, C = consonant):

- + compact low V
 - compact high and mid V
 - + consonantal obstruction in vocal tract
 - consonantal no vocal tract obstruction
 - + continuant fricative/ approximant C
 - continuant stop/affricate C
 - + diffuse high V; labial/dental/ alveolar C
 - diffuse low V; palatal/velar/ back C
 - + flat rounded V
 - flat unrounded V
 - + grave back V; labial/velar/ back C
 - grave front V; dental/ alveolar/ palatal C
 - + nasal nasal C
 - nasal oral C
 - + strident fricative/ affricate C with high-frequency noise
 - strident C with low-frequency noise
 - + vocalic glottal vibration with free passage of air through vocal tract
 - vocalic no glottal vibration or free passage of air
 - + voice voiced C
 - voice voiceless C
- (After R. Jakobson & M. Halle, 1956.)

English consonant matrix

	p	b	f	v	m	t	d	θ	ð	s	z	n	tʃ	dʒ	ʃ	ʒ	k	g	l	r	w	j	h	ŋ
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	–	–	–	+
vocalic	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	+	–	–	–	–
diffuse	+	+	+	+	+	+	+	+	+	+	+	+	–	–	–	–	–	–	+	+	–	–	–	–
compact	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
grave	+	+	+	+	+	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–
flat	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	+	–	–	–
voice	–	+	–	+	+	–	+	–	+	–	+	+	–	+	–	+	–	+	+	+	+	+	–	+
continuant	–	–	+	+	–	–	+	+	+	+	+	–	–	+	+	–	–	+	+	+	+	+	–	–
strident	–	–	+	+	–	–	–	–	–	–	–	–	+	+	+	+	–	–	–	–	–	–	–	–
nasal	–	–	–	–	+	–	–	–	–	–	–	+	–	–	–	–	–	–	–	–	–	–	–	+

Matrix for a seven-vowel system

	i	e	a	u	o	ɔ	ɑ
consonantal	–	–	–	–	–	–	–
vocalic	+	+	+	+	+	+	+
diffuse	+	–	–	+	–	–	–
compact	–	–	+	–	–	+	+
grave	–	–	–	+	+	+	+
flat	–	–	–	+	+	+	–
voice	+	+	+	+	+	+	+
continuant	+	+	+	+	+	+	+
strident	–	–	–	–	–	–	–
nasal	–	–	–	–	–	–	–

PHONOLOGICAL RULES

In traditional accounts of phonology, a sound is described as occurring in a particular position within a syllable or word, and that is all. No reference is made to our knowledge of the relationships that exist between the various types of sound in different contexts. Yet this information is essential if we are to understand the way sounds systematically relate to each other and to the grammar and lexicon of a language.

To illustrate this point, we may consider such pairs of words as *telegraph* and *telegraphy*. A phonological analysis of these words is not complete simply by giving each a phonemic transcription: /teləgrɑ:f/ vs /təlegrəfɪ/. We also need to show that, despite the different patterns of strong and weak vowels within them, the pronunciations are systematically related, with other pairs of words in the language displaying the same kind of relationship (such as *microscope/microscopy*). In recent years, relationships of this kind have become a major focus of phonological investigation. And one of the main techniques for demonstrating such regularities in the sound patterns of language has been through the use of *phonological rules*.

Phonological rules are general statements about the relationships between sounds, or classes of sound. They summarize what happens when sounds occur in particular grammatical or phonetic contexts. In English, for example, [b] is used at the beginning and at the end of words, but especially in the latter position it loses some of its voicing: we say [dʒab̥] (*jab*), with a ‘devoiced’ sound. This observation can be summarized in the form of a rule: ‘[b] becomes [b̥] at the end of a word.’ The validity of the rule can then be tested against other examples, to see if there are exceptions.

Phonological rules are expressed in a special notation to make the description as clear and succinct as possible and (according to some analysts) to identify the essential theoretical properties of sound systems. The above rule could be written as follows (the symbol ‘→’ means ‘becomes’; ‘/’ means ‘in the context of’; and ‘#’ means ‘word boundary’):

[b] → [b̥] / — #

In generative phonology, such rules would be written using a distinctive feature notation:

[+ consonantal
- nasal
+ voice] → [+ consonantal
- nasal
- voice] / - #

(or, ‘voiced oral consonants become voiceless oral consonants before a word boundary’). Several such notational conventions have been devised in order to cope with all the types of phonetic relationship that have been observed.

There are many kinds of phonological rule. Some rules, such as the above, change the distinctive features of segments. A further example, from the

domain of connected speech, would be the change of [n] to [m] in the phrase *ten boys*, because of the influence of the following [b]. Here, the rule would summarize the fact that ‘an alveolar nasal becomes bilabial before a following bilabial consonant’.

Other rules add or delete segments. An addition rule accounts for the way in which some English accents add vowels between certain consonant segments, as in the pronunciation of *film* as [filəm]. A deletion rule occurs when vowel segments are regularly omitted from such phrases as *I am* (→ *I’m*) in certain grammatical contexts. There are also rules that combine two segments as one, as when *would + you* become [wʊdʒu:] (p. 164).

Phonological rules are not restricted to making statements about the sound patterns of a particular language. They are also used to demonstrate the similarities and differences between the sound systems of different languages. Is the rule about consonant devoicing at the ends of words found only in English, or does it apply to a larger group of languages, or possibly to all languages? The formulation of phonological rules is thus seen as an important step towards the phonologist’s goal of discovering the universal principles governing the use of sound in language.

Abstract or concrete?

In order to arrive at satisfactory generalizations, phonologists have often introduced abstract underlying forms into their rules from which several pronunciations can be derived. For example, the words *impossible*, *indecisive*, and *inconclusive* all begin with the same prefix, meaning ‘not’, but the pronunciations differ. In the first case, it is [ɪm] (because of the following bilabial); in the second case it is [ɪn] (before the alveolar consonant); and in the third case, for many speakers, it is [ɪŋ] (before the velar consonant). How can this variation be explained?

It is not very convincing to suggest that one form is more important than the others, and set up a rule in which two of these forms are derived from the third. It is more plausible to say that all three are ‘equal’, and to derive them from a single ‘underlying form’. One such representation would be [ɪN], where ‘N’ stands for a nasal feature.

This solution seems reasonable, as ‘N’ is clearly related to the three pronun-

ciations, each of which is nasal. But what happens if we extend the example to include such forms as *irregular* and *illiberal*? Again, the prefix means ‘not’, and the differences seem to result from the following sounds. Should we therefore group [l] and [r] along with [m], [n], and [ŋ], and have a single rule for all five possibilities?

If we do, we must set up an underlying form from which all can plausibly be derived. [ɪN] no longer seems appropriate, as two of the sounds are not nasal. [ɪC] (where ‘C’ stands for ‘consonant’) would be too general, as not all consonants are used as part of the set of negative prefixes. Some intermediate category needs to be devised, which is sufficiently abstract to enable all the sounds to be grouped together, yet sufficiently concrete (that is, phonetically real) to provide a meaningful explanation about what is taking place. It would be possible to invent a category [X] (where ‘X’ = [m, n, ŋ, l, r]), but this seems an arbitrary solu-

tion, which lacks clear phonetic motivation. Moreover, it is not immediately obvious how this category would be useful in describing other areas of the language.

Problems of this kind have attracted a great deal of discussion in phonological theory in recent years. There is much disagreement about the extent to which phonological analyses of this kind do or should express psychological reality – that is, represent the native speaker’s intuitions about the way the sound system works (p. 409). And the degree of abstractness that should be allowed into an analysis is especially controversial. Some approaches permit the use of symbols in the underlying representations that have no phonetic reality at all. Other (so-called ‘natural’) approaches require that all symbols introduced into an analysis bear a clear relationship to the physically real processes of articulation.

Syllables

The syllable is of considerable relevance to the task of phonetic and phonological description. It is a notion that people intuitively recognize ('Shall I put it in words of one syllable?') and there are several writing systems in which each syllable is represented by a symbol (p. 201). But it is by no means easy to define what syllables are or to identify them consistently. Do such words as *fire*, *meal*, and *schism* have one syllable or two? Do *meteor* and *neonate* have two syllables or three?

A syllable is a unit that is larger than a single segment and smaller than a word. However, this characterization can be seen from both a phonetic and a phonological point of view. In phonetics, some have attempted to identify syllables on the basis of the amount of articulatory effort needed to produce them. The psychologist R. H. Stetson (1892–1950) was one who argued that each syllable corresponds to an increase in air pressure, air from the lungs being released as a series of chest pulses – the *pulse* or *motor* theory of syllable production. These pulses can often be readily felt and measured, especially when people speak emphatically. The main objection to the theory is that the pulses are sometimes very difficult to detect – for example, in adjacent syllables when two vowels co-occur (as in the word *doing*, which is two syllables, but usually spoken with a single muscular effort).

The linguist Otto Jespersen (1860–1943) presented an alternative phonetic approach, known as the *prominence* theory. This defines the syllable in auditory terms, arguing that some sounds (vowels) are intrinsically more sonorous than others (p. 134), and that each peak of sonority corresponds to the centre of a syllable. The problem with this view is that other factors than sonority enter into the definition of prominence (such as the pitch level

of a sound), making the notion difficult to define objectively. Also, prominence theory does not always give a clear indication of where the boundary between syllables falls. In such words as *master*, should the syllable division be *ma-ster*, *mas-ter*, or *mast-er*? We are left with this problem, even though in each case the relative sonority of the sounds is the same.

A phonological approach

Phonological views of the syllable focus on the way sounds combine in a language to produce typical sequences. Two classes of sound are established: sounds that can occur on their own, or are at the centre of a sequence of sounds (*vowels* (V)); and those that cannot occur on their own, or are at the edge of a sequence (*consonants* (C)) (p. 152). Typical sequences include CV *see*, CVC *hat*, CCVC *stop*, etc. In this way the range of syllable types used in a language can be identified and different languages compared. For example, some languages use only V or CV syllables (e.g. Hawaiian); others use several consonants before and after the vowel (e.g. English can have as many as three before and four after – CCCVCCCC, as in some pronunciations of *strengths*).

The syllable, in this view, takes its place as an important abstract unit in explaining the way vowels and consonants are organized within a sound system. There is, moreover, empirical evidence for the psychological reality of syllables, from the study of speech errors and related phenomena. In 'slips of the tongue', for example, the kinds of substitutions generally display the influence of syllabic structure: initial consonants tend to replace each other, as do final consonants. Thus one study reports many reversals of the types 'feak and weeble' (for *weak and feeble*) or 'tof shelp' (for *top shelf*), but there are few reversals that mix up places in syllable structure (p. 262).

Possible syllables

The number of possible syllables (i.e. combinations of different consonants and vowels) varies greatly from language to language. Totals from the UPSID survey (p. 165) include:

Hawaiian	162
Rotokas	350
Yoruba	582
Tsou	968
Gã	2,331
Cantonese	3,456
Quechua	4,068
Vietnamese	14,430
Thai	23,638

Juncture

Phonetic boundaries used to demarcate words or other grammatical units are known as *junctures*. There are several phrases in English that are distinguishable in this way:

that stuff vs that's tough
an aim a name
I scream ice cream
nitrate night rate

In the first case, for example, the [s] of *stuff* is stronger; and the [t] of *tough* is aspirated. It is not always easy to hear the differences when the phrases are said side-by-side; but the acoustic changes can be readily observed in a spectrogram (p. 136).

Connected speech

When words combine into connected speech, several things can happen to the pronunciation of their individual segments. The speed and rhythm can cause some segments to adopt a weaker articulation, some to drop out, some to be put in, and some to change character altogether.

Strong and weak

Words sometimes have both strong ('accented') and weak ('unaccented') forms, depending on whether they are pronounced with force. Words that express grammatical relationships in a language are particularly affected. In the following se-

lection from English, the pronunciations on the left are heard when the words are said in isolation, or with emphasis; on the right, when they are said in normal conversation.

a	/eɪ/	/ə/
and	/ænd/	/ənd, ən, n/
could	/kud/	/kəd, kd/
had	/həd/	/əd, d/
him	/hɪm/	/ɪm/
is	/ɪz/	/s, z/
not	/nɒt/	/nt, n/

Elision

In rapid speech, sounds may be left out, or *elided*, especially when they occur as part of a cluster of con-

sonants. In English, alveolar consonants are commonly lost, especially at the ends of words, e.g. the final alveolar plosive would normally be dropped in such phrases as *next day*, *mashed potatoes*, *stopped speaking*, or *got to go* (= 'gotta go'). The initial weak vowel may elide in such phrases as *go away* and *try again*.

Liaison

A sound may be introduced between words. Liaison is a notable feature of French, e.g. the final *t* of *c'est* is pronounced when followed by a vowel. It can also be illustrated from English received

pronunciation (p. 39). In this accent, the final *r* is not sounded in such words as *four* and *father*, when they are pronounced in isolation, or at the end of a sentence; but when followed by words that begin with a vowel, a 'linking /r/' is regularly used, as in *four o'clock* or *father and mother*.

Assimilation

In connected speech, adjacent sounds frequently influence each other so that they become more alike, or *assimilate*. There are three main kinds of assimilation:

regressive (or *anticipatory*), in which a sound is in-

fluenced by a following sound, e.g. *ten bikes* being pronounced as /ten baɪks/.

progressive, in which a sound is influenced by a preceding sound, e.g. *lunch score* becomes /lʌnʃ skɔː/.

coalescent (or *reciprocal*), in which there is mutual influence, or 'fusion', e.g. *don't you* becomes /dəʊntʃu/.

These effects partly illustrate the role of phonetic co-articulation (p. 156), but they are also partly phonological in character, as the rules differ from language to language.

Comparative phonology

Given that the human vocal tract is capable of articulating such a wide range of sounds (§27), several questions naturally arise. Which sounds turn up most frequently in the languages of the world? Are there any sounds that occur in all languages? What patterns of sound can be found in different languages, and are there any similarities between the patterns that occur?

Questions about language universals and tendencies (§14) cannot be answered in an impressionistic way, nor even by comparing the language studies of several authors, whose methodology is likely to differ. Answers require a systematic survey of a representative sample of languages, in which the same analytic methods are used in each case, and which is sufficiently large to enable some statistical conclusions to be drawn. The findings presented in the following pages are based on an American survey known as UPSID (The University of California, Los Angeles Phonological Segment Inventory Database). The inventories of 317 languages were included, with one language being selected from each family grouping recognized (e.g. one from West Germanic, one from East Germanic, and so on (§50)). The segments were analysed as phonemes (p. 160), each unit being represented by its most characteristic variant. (After I. Maddieson, 1984.)

Number of segments

It is not yet known whether there is an upper limit on the number of segments that can be efficiently distinguished in speech, or a lower limit set by the smallest number of segments needed to build up a vocabulary. The smallest inventories in the UPSID sample contained only 11 segments: Rotokas (Indo-Pacific) and Mura (Chibchan). Several Polynesian languages are known to have very small inventories. By contrast, the largest inventory belonged to !Xū (Khoisan), with 141 segments, with several other languages of this family displaying comparably large totals. Between these extremes, 70% of the languages in the sample had between 20 and 37 segments.

When the inventories are analysed into types of sound, consonants emerge as being far more common than vowels. The number of consonants (C) in an inventory varies between 6 and 95 (a mean of 22.8); the number of vowels (V) varies between 3 and 46 (a mean of 8.7). If we divide V by C, the resulting ratio varies between 0.065 and 1.308. It is possible to say that the 'typical' language has over twice as many Cs as Vs. Larger inventories tend to have a higher proportion of Cs. However, several languages do not conform to these trends, such as Haida (Amerindian), with 46C but only 3V, and Pawaian (Indo-Pacific), which actually has more V (12) than C (10).

Dependencies

Several important dependencies can be observed between the sounds that are used in languages. These take the form of 'implicational' statements, of the type: 'If X occurs, then Y will occur.' For example, there are only four exceptions in the UPSID sample to the statement that if a language contains /p/, it will also contain /k/. There is only one exception (Hawaiian) to the statement that if /k/ occurs, then /t/ will occur. Similarly, if there is /g/, there will be /d/; if /d/, then /b/; and if /m/, then /n/.

More generally, nasals do not occur unless stops occur at the same place of articulation (five exceptions); voiceless nasals and approximants (p. 157) do not occur unless the language has their voiced counterparts; and mid-vowels do not occur unless there are high and low vowels (two exceptions).

Areal statements

The UPSID survey selects single languages from the main language families. There is also a need for detailed phonological studies of all the languages spoken within a geographical area, to determine the nature of any preferences for certain types of sound. Such *areal* studies (p. 33) would draw attention to such features as the prevalence of click consonants in South Africa (and also in certain East African languages), pharyngeals and glottals in Afro-Asiatic languages, retroflex consonants in South Asia, or implosives and labio-velar coarticulation (p. 156) in African languages. Historical evidence is sometimes available to explain the development of an areal phonological feature, but all too often the reasons are lost.

Favourite consonants

What would a language look like, if it included only the most common consonant segments? The 20 most frequent consonants were extracted from the UPSID file, to display the following system (alveolar and dental phones are grouped together):

p, b	t, d	t	k, g	ʔ
f	s	ʃ		
m	n	ɲ	ŋ	
w	l, r	j		h

Most languages have between 14 and 16 of these segments. No language has exactly this system, but some are very close to it, e.g. Bambara (Niger-Congo), which lacks [ʔ], and includes [z] and [dʒ].

The UPSID survey shows the typical range of consonant segments to be between five and 11 stops, one and four fricatives, two and four nasals, and four others. No one segment is found in all languages. (After I. Maddieson, 1984.)

Why did click sounds spread from the Khoisan languages into other parts of South and East Africa? One theory is that Zulu and Xhosa women borrowed the clicks so as to disguise words that would be taboo in their own languages.



STOPS

All languages in the UPSID survey have stop consonants (p. 157), with voiceless segments occurring much more commonly than voiced (92% vs 67%). Other types of stop are much less common, such as aspirated (29%), voiceless ejectives (16%), and voiced implosives (11%). Most languages have two types of stop, but the number varies between one and six. Languages with very complex sets of stops include Igbo (Niger-Congo) and !Xū (Khoisan), each with six types. The Igbo inventory, for example, is as follows:

- 5 voiceless unaspirated plosives

5 voiced plosives

2 voiceless implosives
- 5 voiceless aspirated plosives

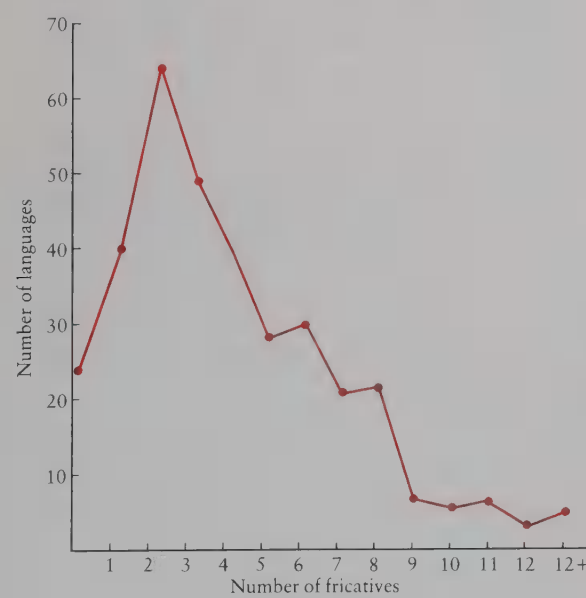
5 breathy voiced plosives

1 voiced implosive

Similarly, most languages have stops at three or four places of articulation (excluding glottal stops). Over 99% have bilabial, dental/alveolar, and velar stops. A few have only two places of articulation (e.g. Hawaiian). Some (mainly Australian languages) have as many as six, with stops in bilabial, dental, alveolar, retroflex, palatal, and velar positions.

FRICATIVES

At least one fricative (excluding /h/) is found in 93% of the UPSID languages; most of the cases where fricatives are absent are Australian. As can be seen from the following graph, the majority of



languages have up to four fricatives, but some have 12 or more.

The most frequent fricative is a dental/alveolar sibilant: 83% of the languages have some form of /s/. Next comes /ʃ/ and /f/, then /z/, /x/, /v/, and /ʒ/, in that order. The asymmetry between /s/ and /z/ is worth noting: the latter is found in only a third as many languages. /h/, when analysed as

a fricative (as opposed to a kind of breathy vowel), is found in 63% of the languages.

The largest set of fricatives is found in Kabardian (Caucasian), where there are 22 in all, grouped into eight types:

- 7 voiceless non-sibilant

2 voiceless sibilant

1 voiceless non-sibilant ejective

1 voiceless lateral
- 7 voiced non-sibilant

2 voiced sibilant

1 voiceless sibilant ejective

1 voiced lateral

NASALS

Almost all UPSID languages (97%) have at least one phoneme whose main allophone is a voiced nasal, and this is usually /n/ (in 96% of cases). If there is a second nasal, it will usually be /m/. Languages with two, three, or four nasals are common; the maximum seems to be six. Only four languages in the whole sample have no nasal segments at all (such as Rotokas (Indo-Pacific)).

The majority of nasal consonants are voiced: 93%. Fewer than 4% are voiceless. The most common nasal segments are dental/alveolar, followed by bilabial, velar, and palatal.

LIQUIDS AND APPROXIMANTS

The UPSID analysis distinguishes between ‘liquid’ sounds (/l/ and /r/) and ‘approximant’ sounds (/j/ and /w/) (p. 156). Most languages (96%) have at least one liquid; 72% have more than one. /l/ segments are somewhat more common than /r/ segments. Irish Gaelic has the largest number of liquids: 10 (2 voiced flaps, 2 voiceless flaps, 4 voiced laterals, and 2 voiceless laterals). At the other extreme, several languages have none, such as Nootka (Amerindian). The majority of liquids are voiced (83%); 87% of them are dental/alveolar. The most common /r/ segments are also voiced (97%), and involve rapid tongue tip movements (trills, taps, and flaps – 86%). Uvular [ʀ], found in French and German, is not a common segment.

The approximants are also widely used. A /j/ segment is found in 86% of the languages; a /w/ segment in 76%.

GLOTTALICS

Ejectives are the most common consonant to use a glottalic air stream (pp. 126–7). They are typically voiceless (99%) and are commonly stops (60%). Two-thirds of all ejectives are found in Amerindian languages, especially from North America. In 100% of cases, if a language has a single ejective, it is /k’/. Some languages have as many as five ejective consonants, e.g. bilabial, dental/alveolar, palatal, velar, and uvular.

The majority of implosives are found in African languages. These are typically voiced (97%). If a language has a single implosive, it is usually /ɓ/. Some languages have as many as four such segments: bilabial, dental/alveolar, palatal, and velar or uvular.

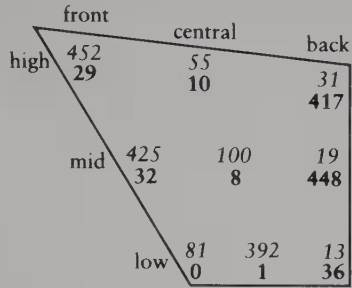
Segment frequency within a language

In southern British English, an analysis of the frequency of vowels and consonants in conversation produced the following totals (after D. B. Fry, 1947).

Consonants		Vowels	
	%		%
n	7.58	ə	10.74
t	6.42	ɪ	8.33
d	5.14	e	2.97
s	4.81	aɪ	1.83
l	3.66	ʌ	1.75
ð	3.56	eɪ	1.71
r	3.51	iː	1.65
m	3.22	əʊ	1.51
k	3.09	a	1.45
w	2.81	ɒ	1.37
z	2.46	ɔː	1.24
v	2.00	uː	1.13
b	1.97	ʊ	0.86
f	1.79	ɑː	0.79
p	1.78	ɑʊ	0.61
h	1.46	ɜː	0.52
ŋ	1.15	ɛə	0.34
g	1.05	ɪə	0.21
ʃ	0.96	ɔɪ	0.14
j	0.88	ʊə	0.06
ʒ	0.60		
ʧ	0.41		
θ	0.37		
ʒ	0.10		

VOWELS

The 2,549 vowel segments in the UPSID data can be classified on the basis of place and manner of articulation as follows:



Italic figures indicate unrounded vowels.
Bold figures indicate rounded vowels.

It can be seen that front vowels are usually unrounded (94%), and back vowels are usually rounded (93.5%). Low vowels are usually central (75%), and central vowels are usually low (69%). High front vowels are much more common than high back vowels.

The smallest vowel systems turn out to have three members (fewer than 6% of UPSID languages). Some languages have been analysed as having fewer than this (such as Kabardian (Caucasian)), but the analysis depends on how much of the phonetic contrasts observed can be attributed to the consonant system. There seem to be no clear cases of 1-vowel languages. By contrast, the largest number of vowel segments is 24 (!Xū (Khoisan)). Most languages have between 5 and 7 vowels – a point that can cause some surprise to speakers of Indo-European languages, which have many more. German and Norwegian both have 15 vowel-quality contrasts (disregarding length) – the largest totals in the survey.

The more vowel qualities there are in a language, the more likely that language is to show length contrasts – though in fact only 20% of the languages have both long and short vowel segments. Similarly, only 22% of the languages contrast oral and nasal vowels.

There are only 83 clear cases of diphthongal phonemes in the whole UPSID sample, found in only 23 languages. Over a quarter of these occur in just one language, !Xū, which has four series of diphthongs: oral, nasalized, pharyngealized oral, and pharyngealized nasal.

VOWEL SYSTEMS

Phonologists usually describe vowel systems with reference to the articulatory space they occupy, as represented by such models as the Cardinal Vowel diagram (p. 154). About 86% of the languages in the UPSID survey have their vowels evenly and widely distributed within this space (the principle of 'vowel dispersion'), and it thus becomes possible to

talk about vowel arrangements using an analogy with basic geometrical shapes. Most vowel systems are 'triangular' in shape, especially based on a 3- or 5-vowel pattern. Fewer than 10% of the languages have 'square' or 'rectangular' systems. (Diphthongs are not taken into account in the systems illustrated right.)

3-vowel systems

i u
a
Aranda (Australian)
Greenlandic
(Eskimo-Aleut)

4-vowel systems

i i u
a
Rukai (Austronesian)

5-vowel systems

i e o u
a
Spanish (Indo-European)

ɪ ʊ
e o
a
Hebrew (Afro-Asiatic)

6-vowel systems

i i u
e o
a
Lappish (Uralic)
i e u
ə o
a
Romanian (Indo-European)

7-vowel systems

i e u
ə o
a
Katcha (Niger-Congo)

8-vowel systems

i y u ʉ
e o
ə æ
a
Osmanli (Ural-Altaic)

9-vowel system

i i u
ɪ ʊ
e o
ɛ ɔ
a
Masai (Nilo-Saharan)

14-vowel systems

i i u ũ
e ē o ō
ɛ ē ɔ ō
a ā
Bambara (Niger-Congo)

20-vowel system

i i u
ɪ ʊ
e ə o
æ a ɒ
Panjabi (Indo-European)

e o
a
Amuesha (Andean-
Equatorial)

i e o
a
Klamath (Penutian)

i u
ɛ ɔ
a
Japanese (Isolate)

i u
ə ɔ
æ a
Taishan (Sino-Tibetan)

i u
e ə o
a
Kanakuru (Afro-Asiatic)

i u
e o
æ a
Chamorro (Austronesian)

i u
ɪ ʊ
e o
a
Kunama (Nilo-Saharan)

i u
e o
ə
ɛ ɔ
a
Javanese (Austronesian)

12-vowel system

i: u:
ɪ ʊ
ɜ:
e ə ɔ:
æ ʌ ɒ
English (Indo-European)

i: u: i u
e: o: e ø
ɛ: ɔ: ɛ ɔ
a: a
Wolof (Niger-Congo)

i ũ
ĩ ũ
ē ã õ
æ ã ã

The remarkable differences between the phonological systems of the world's languages is nowhere better illustrated than by a comparison of the smallest and largest consonant inventories in the UPSID survey.

Clicks	Dental	Dental nasalized	Dental nasalized and velarized	Dental velarized	Alveolar	Alveolar nasalized	Alveolar nasalized and velarized	Alveolar velarized	Palatal	Palatal nasalized	Palatal nasalized and velarized	Palatal velarized
Voiceless					ʈ			ʈ̚	ʈ̟			ʈ̟̚
Voiceless aspirated					ʈʰ	ɳ̥ʈʰ			ʈ̟ʰ	ɳ̥ʈ̟ʰ		
Glottalized voiceless						ɳ̥ʈʰ²	ɳ̥ʈ̟ʰ²			ɳ̥ʈ̟ʰ²	ɳ̥ʈ̟ʰ²	
Voiced					ɖ	ɳ̥ʈ		ɖ̚	ɖ̟	ɳ̥ʈ̟		ɖ̟̚
Breathy voiced					ɖ̤	ɳ̥ʈ̤		ɖ̤̚	ɖ̤̟	ɳ̥ʈ̤̟		ɖ̤̟̚
Glottalized voiced						ɳ̥ʈ̤²		ɖ̤̚²	ɖ̤̟̚	ɳ̥ʈ̤̟̚		ɖ̤̟̚²
Voiceless affricated	ʈ̚ˢ				ʈ̚ˢ							
Voiceless aspirated affricated	ʈ̚ʰˢ	ɳ̥ʈ̚ʰˢ										
Glottalized voiceless affricated		ɳ̥ʈ̚ʰˢ²	ɳ̥ʈ̚ʰˢ									
Voiced affricated	ɖ̚ˢ	ɳ̥ʈ̚ˢ		ɖ̚ˢ								
Breathy voiced affricated	ɖ̤̚ˢ	ɳ̥ʈ̤̚ˢ										
Glottalized voiced affricated				ɖ̤̚ˢ²								
Voiceless lateral affricated									ʈ̚ˢˠ			ʈ̚ˢˠ
Voiceless aspirated lateral affricated									ʈ̚ʰˢˠ	ɳ̥ʈ̚ʰˢˠ		
Glottalized voiceless lateral affricated										ɳ̥ʈ̚ʰˢˠ²	ɳ̥ʈ̚ʰˢˠ²	
Voiced lateral affricated									ɖ̚ˢˠ	ɳ̥ʈ̚ˢˠ		ɖ̚ˢˠ
Glottalized voiced lateral affricated												ɖ̤̚ˢˠ²
Breathy voiced lateral affricated									ɖ̤̚ˢˠ	ɳ̥ʈ̤̚ˢˠ		ɖ̤̚ˢˠ

29 Suprasegmentals

'It ain't what you say, but the way that you say it.' This familiar comment, immortalized in song, is the time-honoured way of briefly indicating what 'suprasegmental' analysis is all about. The 'segments' of spoken language are the vowels and consonants, which combine to produce syllables, words, and sentences – the 'verbal' aspect of speech (§§27–8). But at the same time as we articulate these segments, our pronunciation varies in other respects. We make use of a wide range of tones of voice, which change the meaning of what we say in a variety of different ways. It is these effects that provide the data of suprasegmental analysis.

PROSODIC FEATURES

The basic psycho-acoustic properties of sound are the source of the main linguistic effects: pitch and loudness (§§23, 25). These effects, along with those arising out of the distinctive use of speed and rhythm, are collectively known as the *prosodic features* of language – a broader sense of *prosody* than that found in the study of literature, where it refers to the metrical patterns found in lines of poetry (§12).

The most important suprasegmental effects in a language are provided by the linguistic use of pitch, or melody – the *intonation* system. Different levels of pitch (*tones*) are used in particular sequences (*contours*, or *tunes*) to express a wide range of meanings. For example, all languages seem to make use of the difference between a falling and a rising pitch pattern, and this is widely interpreted as expressing a contrast between 'stating' and 'questioning'. In English orthography, the contrast is signalled by the use of punctuation (p. 205), as in *They're waiting.* vs *They're waiting?* In speech, a much wider range of tones is available to express various nuances and degrees of emphasis (cf. the extra emotion suggested by *They're waiting??!*).

Another important prosodic feature is loudness, which is used to convey gross differences of meaning, such as the increased volume usually associated with anger, as well as the fine contrasts heard on the different syllables in a word (p. 164). Syllabic loudness is usually referred to as *stress*, the syllables being referred to as 'stressed' or 'unstressed'; but the term *accent* is also often used ('accented' vs 'unaccented'), referring to the way the prominence of a syllable is frequently due to the use of pitch as well as loudness (p. 171).

Variations in tempo provide a third suprasegmental parameter. It is possible to speed up or slow down the rate at which syllables, words, and sentences are produced, to convey several kinds of meaning. In many languages, a sentence spoken with extra speed conveys urgency; slower speed,

deliberation or emphasis. A rapid, clipped single syllable may convey irritation; a slowly drawled syllable, greater personal involvement. Compare:

'Shall I leave now?' asked Janet. 'Yes,' snapped John rudely.

'Shall I leave now?' asked Janet. 'Ye-e-s,' replied John, thoughtfully stroking his beard.

Pitch, loudness, and tempo together enter into a language's expression of *rhythm*. Languages vary greatly in the way in which rhythmical contrasts are made. English makes use of stressed syllables produced at roughly regular intervals of time (in fluent speech) and separated by unstressed syllables – a 'stress-timed' (or *isochronous*) rhythm. In French, the syllables are produced in a steady flow, resulting in a 'machine-gun' effect – a 'syllable-timed' rhythm. Loudness is the basis of rhythmical effects in English (as shown by the way it is possible to tap out a sentence in a 'te-tum, te-tum' way). By contrast, the length of a syllable (whether long or short) was the crucial feature of rhythm in Latin; and pitch height (high vs low) is a central feature of the rhythm of many oriental languages.

PARALINGUISTIC FEATURES

Apart from the contrasts signalled by pitch, loudness, tempo, and rhythm, languages make use of several other distinctive vocal effects, using the range of articulatory possibilities available in the vocal tract (§22). The laryngeal, pharyngeal, oral, and nasal cavities can all be used to produce 'tones of voice' which alter the meaning of what is said. These effects are sometimes referred to as effects of 'timbre' or 'voice quality', and studied under the heading of vocal *paralanguage* – a term intended to convey the less central role played by these features in the communication of meaning, compared with that of prosodic features.

One of the clearest examples of a paralinguistic feature is whispered speech, used in many languages to add 'conspiratorial' meaning to what is said. Another is the marked lip-rounding which is widely used as a tone of voice when adults talk to babies or animals. But few of these effects are truly universal. For example, a 'breathy' or 'husky' tone of voice conveys deep emotion or sexual desire in many languages; but in Japanese, it is routinely used as a way of conveying respect or submission. A 'creaky' or 'gravelly' tone of voice is often used in English to convey unimportance or disparagement; but in Finnish, it is a normal feature of many voice qualities, and would not have this connotation. And there is no equivalent in English to the use of strongly nasalized speech to convey a range of emotional nuances in Portuguese.

Road hogs and hot potatoes

Why do people sometimes introduce bursts of speed into their speech? This question was addressed as part of a linguistic analysis of a psychiatric interview. (The results were published in a book called *The First Five Minutes* – so called, because the microscopic nature of the analysis made it impracticable to publish more than five minutes' worth of material!)

The authors concluded that there were six main conditions that led people to speak more quickly than usual.

- *Road hogs* Speakers think they are about to be interrupted, so they speed up in order to forestall it.

- *Hot potatoes* Speakers realize that what they are saying is unpleasant, so they speed up to get it over with as quickly as possible.

- *Getaways* Speakers realize that they have said something unpleasant or threatening, so they speed up to put as much 'ground' as possible between themselves and the distasteful topic.

- *Smokescreens* Speakers realize that what they have said might be taken in the wrong way, so they speed up, presenting new material that will capture the attention of their listeners.

- *Greener pastures* Speakers, while speaking, think of something more interesting to say, so they speed up to get to the new topic as quickly as possible.

- *Rebounds* Speakers perceive that their speed of speaking is inappropriately slow, and in correcting this they end up speaking more quickly than they had intended.

(After R. E. Pittenger, C. F. Hockett & J. J. Danehy, 1960.)

Phonological systems

'Come ,on. || 'Let's get ,going.

One of the widely used 'tonetic' systems of transcription. The accents represent pitch directions, placed before the word to which they apply. The double line indicates the boundary between the two intonation units; the raised vertical line marks a stressed syllable. (After J. D. O'Connor & G. F. Arnold, 1973.)

the |man is 'eating a ↑ bowl of pÖrridge |

In this system, a range of phonological symbols is used within the line of print. The most prominent syllable is printed in small capitals, with an accent representing the direction of pitch movement above the vowel. The remaining symbols represent other features of pitch and stress, placed before the syllable to which they apply. Note that sentence-initial capitals and punctuation marks are not used. (After D. Crystal, 1969.)

tu:pumākīh̃ | /heh

Pitch The movement of pitch is shown here by the direction of the solid and broken lines. Three main pitch levels (high, mid, low) are represented. The language is Kunimaipa (New Guinea). (From A. Pence, 1964.)

// 4 well they / may do at / A level //

Five main tones are recognized in this system, tone 4 (which is falling-rising in pitch) being shown here. The main melodic contours are identified by //, and smaller rhythm units by /. The main emphasis within a unit is underlined. (After M. A. K. Halliday, 1967.)

The 'man in the 'street is
3- °2-3 3- °2-3 3-
'selling 'apples 'quickly.
°2-3 °2-3 °2- 4

There are four pitch levels, numbered from 1 (high) to 4 (low). The small circle marks the beginning of each pitch movement. (After K. L. Pike, 1945.)

THE FUNCTIONS OF INTONATION

Intonation, and the other suprasegmental features of language, perform a variety of different functions.

Emotional The most obvious function is to express a wide range of attitudinal meanings – excitement, boredom, surprise, friendliness, reserve, and many hundreds more. Here, intonation works along with other prosodic and paralinguistic features to provide the basis of all kinds of vocal emotional expression.

Grammatical Intonation plays an important role in the marking of grammatical contrasts. The identification of such major units as clause and sentence (§16) often depends on the way pitch contours break up an utterance; and several specific contrasts, such as question and statement, or positive and negative, may rely on intonation. Many languages make the important conversational distinction between 'asking' and 'telling' in this way, e.g. *She's here, isn't she?* (where a rising pitch is the spoken equivalent of the question mark) vs *She's here, isn't she!* (where a falling pitch expresses the exclamation mark).

Information structure Intonation conveys a great deal about what is new and what is already known in the meaning of an utterance – what is referred to as the 'information structure' of the utterance. If someone says *I saw a BLUE car*, with maximum intonational prominence on *blue*, this pronunciation presupposes that someone has previously queried the colour; whereas if the emphasis is on *I*, it presupposes a previous question about which person is involved. It would be very odd for someone to ask *Who saw a blue car?*, and for the reply to be *I saw a BLUE car!*

Textual Intonation is not only used to mark the structure of sentences; it is also an important element in the construction of larger stretches of discourse (§20). Prosodic coherence is well illustrated in the way paragraphs of information are given a distinctive melodic shape in radio news-reading. As the news-reader moves from one item of news to the next, the pitch level jumps up, then gradually descends, until by the end of the item the voice reaches a relatively low level.

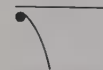
Psychological Intonation can help to organize language into units that are more easily perceived and memorized. Learning a long sequence of numbers, for example, proves easier if the sequence is divided into rhythmical 'chunks'. The ability to organize speech into intonational units is also an important feature of normal language acquisition – a feature that is often absent in cases of language disorder (§§40, 46).

Indexical Suprasegmental features also have a significant function as markers of personal identity – an 'indexical' function. In particular, they help to identify people as belonging to different social groups and occupations (such as preachers, street vendors, army sergeants) (§§6–12).

Some ways of saying *no* in southern British English



The most neutral tone; a simple statement of fact; detached.



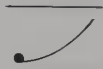
Emotionally involved; the higher the falling tone, the more involved the speaker. The choice of emotion (e.g. surprise, excitement, irritation) depends largely on context and facial expression.



A routine, uncommitted comment; often used as a conversational 'noise' while someone else is talking.



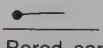
Context and facial expression are important factors here. With a 'pleasant' face, the tone is sympathetic and friendly, asking the speaker to carry on; with an 'unpleasant' face, it is guarded or grim.



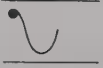
Disbelief or shock – the extent of the emotion depending on the width of the tone.



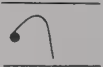
Mild query or puzzlement; a tone often used in echoing what has just been said.



Bored, sarcastic, routine.



Accompanied by a 'negative' face, a tone of uncertainty, doubt, or tentativeness; if a 'positive' face, a tone of encouragement or urgency.



A tone of emotional involvement, expressing great emphasis. Depending on the face and the context, so the attitude might be impressed, challenging, or complacent.

Tone languages

In well over half the languages of the world, it is possible to change the meaning of a word simply by changing the pitch level at which it is spoken. Languages that allow this are known as *tone languages*, and the distinctive pitch levels are known as *tones* or *tonemes*.

The number of distinctive tones in a language varies. The simplest systems have only two tones, high vs low (e.g. Zulu); Yoruba has three (high, mid, low); Lushai has four (extra-high, high, mid, low); Thai has five (low, mid, and high-falling, high-rising, low-falling-rising); Cantonese Chinese has six (mid- and low-level, high- and low-falling, and high- and low-rising).

Tonal differences may affect either the vocabulary or the grammar of a language. Probably the most widely known case of lexical contrast is Mandarin Chinese, which has four tones, each of which has been given a 'tone letter', and also a number, in systems of transcription.

Tone	Letter	Example	Meaning
high level	˥	ma ¹	mother
high-rising	˨˨˨˥	ma ²	hemp
low-falling-rising	˨˨˨˥˨	ma ³	horse
high-falling	˥˥˥˨	ma ⁴	scold

Many tongue-twisters have been devised based on this feature of the language, such as:

Mama¹ qi ma³. Ma³ man. Mama¹ ma⁴ ma³.
'Mother rides horse. Horse slow. Mother scolds horse.'

Grammatical uses of tone are also common. In several languages of West Africa (e.g. Twi, Bini), a change of tone signals the difference between certain tense forms. In Bini, for instance, a low tone is used for present tense, and a high or high-low tone for past tense.

The tones themselves are of two kinds: some stay at a single pitch level; others involve a change of pitch level ('gliding' tones). Tone languages are usually classified into those that use gliding tones (*contour* tone languages) and those that do not (*register* tone languages). Thai and Mandarin Chinese illustrate the first type; Zulu and Hausa illustrate the second.

When a sequence of tones is uttered, adjacent tones tend to influence each other in much the same way as segments do (p. 164). Such assimilations are known as *tone sandhi*. For example, a low tone preceded by a high tone will usually begin with a downward pitch movement. In particular, the intonation system of the language can cause changes in the pitch level of tones. In a sentence where there is a gradually falling intonation contour, the tones towards the beginning of the sentence will be spoken at a higher level than the tones towards the end. This gradual lowering of tones

in an utterance is known as *downdrift*. It may even result in a high tone at the end of a sentence having the same absolute pitch level as a low tone at the beginning!

Accent

Tone languages have to be distinguished from *pitch-accent* languages (e.g. Swedish, Japanese, Serbo-Croat), in which a particular syllable in a word is pronounced with a certain tone, or 'accent'. For example, Japanese /sōra/ 'sky' has a falling accent on the first syllable, whereas /kawà/ 'river' has a rising accent on the second. A language may also contain minimal pairs that contrast only in word accent. In Swedish, the sentence *Den här tomten är bra* means either 'This site is fine' or 'This goblin is fine', depending on the accentual pattern of *tomten*.

These languages must be distinguished from those where each word has a fixed place for the point of maximum prominence, though there is no restriction over which tone is used. 'Accent', in such cases, is synonymous with 'stress'. In Czech or Finnish, for example, the main accent generally falls on the first syllable of a word; in Persian or Turkish, on the last; in Polish or Welsh, on the penultimate syllable. English and Russian are different again: in these languages, the accentual pattern of any given word is fixed, but there is no single pattern used throughout the language.

Silence

An important feature of speech transcriptions is the marking of pauses. Pauses are used to demarcate linguistic units, to signal the cognitive activity of the speaker, and to help structure speech interactions. They may be silent, or filled with a vocalization (such as English *er(m)*).

Silence can also communicate a meaning in its own right, as shown by the many descriptive phrases for kinds of silence – 'threatening', 'thoughtful', and so on. Here, silence is far more than the absence of speech. Sometimes, pauses can be quite specific in intention – such as the didactic function used in teaching ('It's called a — ?') or the social function of avoiding a taboo (such as a host's 'Do you need to — ?'). Equally, expectations of silence may be imposed by a social group (as in meetings), or have an institutionalized value, as in churches, libraries, and theatres.

Cross-cultural differences are common over when to talk and when to remain silent, or what a particular instance of silence means (p. 38). In response to the question 'Will you marry me?', silence in English would be interpreted as uncertainty; in Japanese it would be acceptance. In Igbo, it would be considered a denial if the woman were to continue to stand there, and an acceptance if she ran away.

English stress

In English words, each syllable is pronounced with a certain level of loudness, or *stress*. Usually, three levels of stress are recognized: *primary*, or *main* stress; *secondary* stress; and *unstressed*.

The main stress patterns can be seen in the following list ('primary'; secondary; unstressed syllables unmarked):

two syllables

'finish 'female 'under
be'hind Chi'nese ma'chine

three syllables

'under'stand 'after'noon
'yesterday 'consequence
'photo,graph im'portant

four syllables

re'markable ,unim'portant
'caterpillar 'heli,copter

five syllables

con,sider'ation
'satis'factory
ad'mini,strate

six syllables

de,sira'bility
'meteo'logical

seven syllables

,uni'lateralism ,unre,lia'bility

eight syllables

,inter,nationaliz'ation

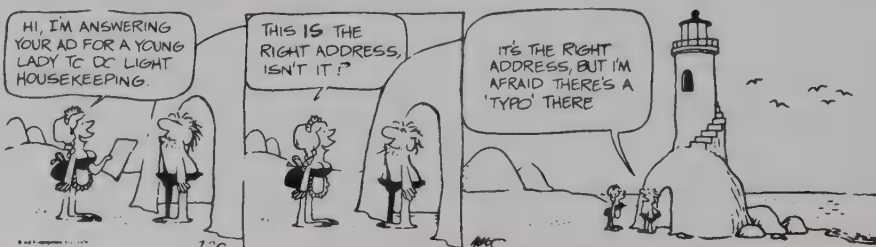
Compound words also need to be identified in terms of stress, for example:

'wind,screen 'green,fly
,broken-'hearted

Some interesting contrasts occur when the stress pattern of compounds differs from that of phrases (units consisting of separate words). Compare:

'white 'house (any building)
'White ,House (the President's house)
'light 'housework (at home)
'lighthouse ,work (at sea)

Advertising slogan writers (and linguists) enjoy playing with these forms. One sign outside a New York kiosk read: 'Even hot dogs enjoy our hot dogs' – a sentence any linguist would be proud of.



Speech and music

Intonation has often been called the 'melody' or 'music' of speech, and musical notation has sometimes been used in the transcription of intonation (p. 170). But the analogy is not really a good one. There are two main differences. Music is composed to be repeated; speech is not. And, if we examine modern western music, we find tones that have been given absolute values, whereas those of speech are relative.

The consequences of this second point are far reaching. Notes have fixed frequencies (e.g. middle C now has a frequency of 264 Hz), and instruments can be tuned to ensure that their notes are compatible. But speech is not like this. Men, women, and children use tones with the same linguistic function (for stating, asking, etc.), yet produce them at widely differing frequencies. Moreover, two people of the same sex may both use the 'same' rising tone to ask a question, but one may produce it with a higher frequency range than the other. And even within a single speaker, the pitch at which a tone is produced may vary from one moment to the next, without this affecting the meaning of what is said. Language is not affected by these biological or random variations. The tones of intona-

tion are relative, not absolute. People are not instruments. They do not speak out of tune.

On the other hand, the evident similarities between speech and music have led to several fruitful developments in both subjects. Some linguists have borrowed terminology from music in their search for clear ways of describing suprasegmental effects; and certain composers and music analysts have, in turn, looked to suprasegmental studies for ideas about the attributes and range of the voice.

Music → speech

There is no traditional terminology in phonetics for describing the many variations of pitch, loudness, and tempo which can be found in connected speech. One sequence of studies therefore looked to music for its descriptive terminology, and proposed analogous categories for the analysis of the suprasegmental effects that can be heard on stretches of utterance. These included such notions as:

piano/pianissimo

decreased levels of loudness

forte/tortissimo increased levels of loudness

diminuendo gradually decreasing loudness

crescendo gradually increasing loudness

allegro/allegroissimo increased tempo of speech

lento/lentissimo decreased tempo of speech

accelerando gradually increasing tempo

rallentando gradually decreasing tempo

The following extract from the beginning of a sermon illustrates the way some of these effects combine to produce the overall tone of voice associated with this variety. The parts of the text in inverted commas correspond to the prosodic effects noted in the margin. (Certain other

prosodic effects of pitch range are also noted, but several details of the transcription have been omitted.)

high

the 'book of the 'prophet is'iah] - 'thirtieth CHAPTER] -

diminuendo

the 'fifteenth 'verse of the CHAPTER] -

crescendo

is'iah] chapter 'thirty 'verse FIFTEEN] - - -

resonant

in re'turning and RĒST] -ye

'shall be SAVED] - -

piano

in 'quietness - and in cōnfidence] - 'shall 'be your

STRĒNGTH] -

allegro diminuendo

in re'turning and 'rest ye

shall be SAVED] in 'quietness

and in cōnfidence] - 'shall

be 'your STRĒNGTH] (After D. Crystal & D. Davy, 1969.)

(after I. Anhalt, 1972):

■ The virtuoso performance of a live monody, part

speech, part song, with emphasis on the prosody and

paralanguage.

■ The use of a tape recording of a person's voice, carefully

chosen in terms of language, dialect, age, voice

quality, and so on.

■ Autopolyphony - several layers of the same person's

utterances superimposed through multiple recordings.

● Polyphonies of small groups of voices, with structures

saturated by certain phonemic, prosodic, or para-

linguistic features. Special attention is paid to the use of

consonants - a feature without precedent in western

music, where the emphasis has traditionally been on

vowels - and to non-periodic rhythms.

■ Polyphonies of large groups, representing such

situations as the cocktail party, mass responses, the

sound of a mob, and so on.

■ The complementation of vocal sound by percussive,

electronic, and other effects.

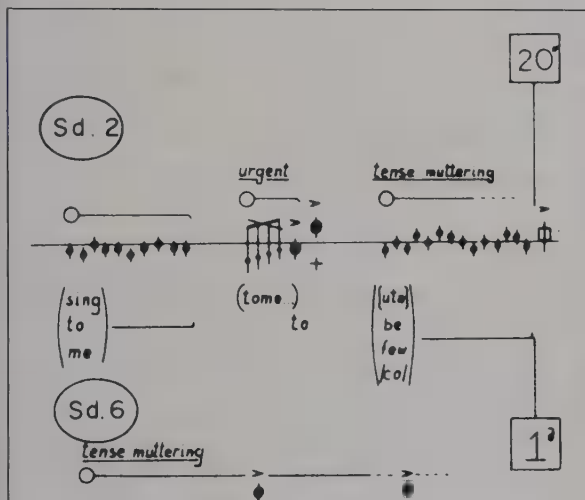
For example, in *Cento*, by Istvan Anhalt (1919-), a live

choir of 12 voices is accompanied by vocal and instrumental

sounds pre-recorded on tape. The text is a collage of

fragments of a poem, some words being split and

other elements recombined.



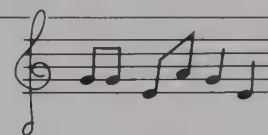
Berio's *Sequenza III* (1958) In this piece, lasting 8'40", a woman presents a sequence of disturbing vocal behaviours, reflecting a range of bizarre moods. The extract illustrates just a few of the composer's use of vocal labels, and clearly displays the combination of linguistic and musical notation that is the hallmark of the work.

Throughout the piece, alongside periods of sustained singing, we find such effects as: muttering, breathy whispering, whimpering, humming, laughter, and the use of narrow and wide pitch range; variations in pause; a range of 'vocal tics' such as clicks, coughs, and gasps; various trills and tremolos (e.g. striking the hand against the mouth, or using the hand over the mouth as a mute); and there are several semantic labels, such as tense, witty, joyful, excited, and frantic.

Some of the notational conventions used in the work include: Sd. subdivision; □ tongue click; ▴ brief sung note; △ cough; ∞ sigh; ♯ whine; ♯ gasp; ♯ finger snap.

Stylized tunes

Some kinds of intonation pattern have a very close relationship to music - in particular the stylized tunes, or chants, used by street vendors, auctioneers (p. 53), blues performers, train conductors, and so on. These are often produced with values which



are near absolute.

Stereotyped tunes can also be heard in everyday speech, such as the sing-song 'calling' intonation of 'Come and ↑ get ↓ it!' or '↑ Mi ↓ chael!', where the

levels are about a minor third apart. This tune is also common with warnings or reminders of a routine or cajoling kind, as in 'It's on the ↑ ta ↓ ble' (i.e. 'I've told you a million times!'). Children, too, have their stylized tunes - notably, in cat-calling (above).

30 Sound symbolism

It is an accepted principle of phonetic study that individual sounds do not have meanings: it does not make sense to ask what [p] or [a] 'mean'. The smallest units of language that are meaningful are the elements of grammar known as morphemes (p. 90), such as *un-* and *-ness*. However, this ignores the existence of an interesting (though limited) tendency in language to develop forms that speakers feel *do* have a close relationship to objects or states in the outside world. In such cases, individual sounds are thought to reflect, or symbolize, properties of the world, and thus to 'have meaning'. This phenomenon is known as *sound symbolism*, though in literary contexts it is more commonly referred to as *onomatopoeia* (p. 74).

Sound-symbolic forms are usually considered to be features only of literary expression (of poetry, in particular) or of such restricted areas as child language (*bow-wow*) or the language of comic strips (*Zap!*, *Pow!*). In fact, several everyday lexical items are onomatopoeic, even though the sound symbolism may not be immediately obvious. In English, for example, there are a number of items that can be given a phonetic classification in this way. They can be grouped on the basis of their initial consonants, vowels, or final consonants, as when words beginning with /sl-/ are said to convey unpleasant associations (*slime*, *slither*, *slug*, *sloppy*, etc.), or words containing high front vowels associations of smallness (*teeny weeny*, *wee*, etc.). Final consonants also present an interesting basis of classification. Examples include:

/-p/	lap, clip, rip
/-k/	crack, creak, click, cluck, flick, whack
/-b/	blob, glob, jab, rub
/-l/	bubble, trickle, rustle
/-z/	ooze, wheeze
/-ʃ/	smash, crash, crush, splash, slash, lash
/-f/	puff, gruff, biff, cough, woof

But English, and Indo-European languages generally, are not good exemplars of the use of sound symbolism. To see the importance of this feature, we must look elsewhere. Korean, for instance, has over a thousand words that are sound-symbolic in character; and a correspondingly large onomatopoeic vocabulary also occurs in Japanese.

JAPANESE ONOMATOPOEIA

Japanese has over three times as many onomatopoeic expressions as English, and uses them to express a more wide-ranging set of linguistic distinctions. Sound imitation (*gion-go*) is used to reflect physical, audible noises relating to the actions or movements of people, animals, and things. Man-

ner imitation (*gitai-go*) refers to feelings and figurative expressions about objects and natural surroundings, in which sounds play no part.

The most popular forms are reduplications – patterns of consonants and vowels that occur twice in immediate succession. These are used far more than in English, which prefers simple forms to reduplications: compare such uncommon forms as *pitter-patter* and *ding-dong* alongside the common *bang*, *splash*, and *plop*. In Japanese, reduplicated forms occur normally in everyday conversation. Their range can be illustrated from the following examples (after H. Kakehi, *et al.*, 1981).

<i>gion-go:</i>	<i>gacha-gacha</i>	rattle
	<i>chirin-chirin</i>	tinkle
	<i>kasa-kasa</i>	rustle
 <i>gitai-go:</i>	 <i>tobo-tobo</i>	 plod
	<i>fura-fura</i>	roam
	<i>kira-kira</i>	twinkle
	<i>beta-beta</i>	stick to
	<i>dabu-dabu</i>	baggy, loose

Not all onomatopoeias are reduplicative:

<i>gisshiri</i>	packed full, crowded
<i>shikkari</i>	firmly, strongly

Very often, more than one level of meaning is expressed. For example, *bara-bara* refers to very strong rain ('pelting down'); but it may also refer to things that have been broken up, scattered, or disorganized. It could be used in such contexts as: 'The family is *split up*', 'The queue is *not straight*', or 'We left as a group, but came home *separately*.' *Goro-goro* is used for sounds, such as the purring of a cat, or for rumbling noises (such as thunder, or heavy objects); but it is also used to express manner, such as a state of discomfort caused by a lump, the way in which things are strewn around in abundance, or the state of being idle.

There are also several grammatical factors that must be taken into account. For instance, the particle *to* is used to indicate that the preceding expression is a quotation: *Ine ga wan-wan to naku* 'The dog goes bow-wow' – something which in English would be more naturally expressed by a single lexical item, 'The dog is *barking*.' Also, certain forms are typically used in the expression of grammatical meanings, such as the use of *gun-gun* (steadily, rapidly) and *don-don* (at a great rate) in progressive contexts (as in *gun-gun ookiku-natte* 'went on growing and growing').

TYPES OF SYMBOLIC MEANING

Several attempts have been made to find specific correspondences between sounds and meanings. For example, in several languages an association has been suggested between close vowels (especially [i]) and smallness, and open vowels (especially [a]) and largeness, as in English *teeny*, *little*, *bit*, *slim*, *-ling* vs *large*, *vast*, *grand*, French *petit* vs *grand*. On the other hand, there are several counter-examples to this tendency – most obviously, English *big* vs *small*.

To be convincing, evidence of fundamental links between sound and meaning needs to be provided from a large number of languages. The same pattern must be found in languages of very different types and be confirmed by experiments into speakers' intuitions. A certain amount of descriptive work has been carried out; but corresponding psycholinguistic studies (p. 412) have not. The American linguist, Morris Swadesh (1909–67), brought together several such descriptive observations. For instance, he drew attention to the use of [i]-type vowels to express nearness (this) and [a]- or [u]-type vowels to express distance ('that/you') in many languages:

	'this' ([i])	'that/you' ([a/u])
Chinook	-i-	-u-
Klamath	ke-	ho-, ha
Tsimshian	gwii-	gwa
Guaraní	tyé	tuvicha
Maya	li'	la', lo'
Binga	ti	ta
Fur	in	illa
Didinga	ici	ica
Tamil	idi	adi
Thai	nii	nan
Burmese	dii	thoo

Sometimes some quite specific correspondences have been noted, such as the tendency for languages to express 'mother' with a nasal, and 'father' with an oral front consonant.

	'mother'	'father'
Dakota	ena	ate
Nahuatl	naan	ta'
Tiv	ng	ter
Luo	mama	baba
Hebrew	ima, em	aba, av
French	mère, mama	père, papa
Tamil	ammaa	appa
Yucatec	nan	tat
Greenlandic	anaana(q)	ataataq

Again, the pattern is not universal. In Georgian, *máma* means 'father'; and in a number of South Asian languages (e.g. Tamil, Telugu), *mama* means 'mother's brother'.

UNIVERSAL MEANINGS?

There is certainly limited evidence of a few broad sound/meaning correspondences in language. But there are many exceptions to the correlations that have been proposed, and when individual features are studied across a wide range of languages, a variety of divergent meanings emerge. The use of phonological reduplication within a word is widespread, but meanings vary greatly, as some of these examples show (M. Swadesh, 1972).

CONCLUSIONS

The examples of sound-symbolism are fascinating, but in the absence of frequency information about the phonological and lexical patterns in the various languages, it is not possible to arrive at a definitive interpretation. The cross-linguistic similarities may indeed have evolved separately, indicating a basic human propensity to use certain sounds in certain ways, or they may simply be the result of language contact over a long period of time. In the absence of historical data, drawing conclusions from sound symbolism about the origins of language would be premature (§49). Far more descriptive data are needed, accompanied by experimental investigation of the speakers' intuitions about the relationship between sounds and meanings.

Nonsense verse

The semantic value of sounds is nowhere better illustrated than in successful nonsense verse, the most famous example of which is the first verse of Lewis Carroll's *Jabberwocky*.

'Twas brillig, and the slithy
toves
Did gyre and gimble in the
wabe:
All mimsy were the
borogroves,
And the mome raths
outgrabe.

Carroll also provided interpretations of some of the nonsense words, such as *slithy* = 'lithe and slimy', *mimsy* = 'flimsy and miserable', *mome* = 'from home', and *outgrabe* = 'something between bellowing and whistling, with a kind of sneeze in the middle'.

The poem has also been translated. The extent to which the effects carry over into foreign languages can be judged from these extracts:

Le Jaseroque
Il brilque: les tôves
lubricilleux
Se gyrent en vrillant dans le
guave,
Enmimés sont les
gougebosqueux,
Et le momerade horsgrave.
(F. L. Warin, 1931)

Der Jammerwoch
Es brillig war. Die schlichte
Toven
Wirten und wimmelten in
Waben;
Und aller-mümsige
Burggoven
Die mohnen Râth'
ausgraben.
(R. Scott, 1872)

Meaning of reduplication	Language	Examples
Plural	Bella Coola	<i>s-tn</i> 'tree', <i>s-tntn</i> 'trees'
	Hausa	<i>suná</i> 'name', <i>sunana-ki</i> 'names'
	Tsimshian	<i>am</i> 'good', <i>am'am</i> 'several are good'
Repetition	Karok	<i>páchup</i> 'kiss', <i>pachúpchup</i> 'kiss a lot'
Intensity	Karok	<i>go</i> 'see', <i>go-go</i> 'look at carefully'
Scattered distribution	Nootka	<i>mah'tii</i> 'house', <i>maamah'ti</i> 'dispersed houses'
Space	Somali	<i>fen</i> 'gnaw at', <i>fen-fen</i> 'gnaw at on all sides'
Continuation	Nahuatl	<i>kweyooni</i> 'flashes once', <i>kwe'kweyooka</i> 'is flashing'
Smallness	Nez Percé	<i>q'eyex</i> 'club', <i>q'eyexq'eyex</i> 'small club'
Diminutiveness	Sahaptin	<i>pshwa</i> 'rock', <i>pswa'pswa</i> 'pebble'
Past tense	Greek	<i>leipo</i> 'I leave', <i>léloipa</i> 'I have left'
Adjective marker	Nez Percé	<i>sik'em</i> 'horse', <i>sik'éemsik'em</i> 'mean'

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PART V

The medium of language: writing and reading

There is a curious ambiguity about the study of written language: certain aspects, such as the history of the alphabet, have been meticulously investigated by generations of scholars; others, such as the psychological processes underlying the tasks of reading, writing, and spelling, have attracted serious study only in the last decade or so. From a scientific viewpoint, we know far less about the written language than we do about the spoken, largely because of the 20th-century bias in linguistic studies towards the analysis of speech – a bias which is only nowadays beginning to be corrected. Part v therefore has to be shorter than Part iv – at least, for the present.

There are two underlying themes to this Part. First it is emphasized that writing and speech are different and equal manifestations of language. Writing should not be seen as merely ‘transcribed speech’, because its formal characteristics, and its strategies of production and comprehension, are quite unlike those encountered in speech. Secondly, the notion of ‘written language’ is shown to be extremely broad and multifaceted, subsuming any kind of visual realization of language (such as manuscript, typescript, and print).

We begin by examining the similarities and dif-

ferences between written and spoken language. A contrast is drawn between the study of the physical properties of the graphic medium (graphetics) and of the linguistic system which makes use of that medium (graphology). We explore the many facets of graphic expression, as found in handwriting, printing, and the electronic media. Several traditions of study are described, such as palaeography, epigraphy, and calligraphy. The writing systems of the world are introduced through a historical perspective: we look at the precursors of writing, and then at pictographic, ideographic, logographic, syllabic, and alphabetic systems. Separate accounts are given of several individual systems, from ancient hieroglyphic to modern shorthand.

The variety of writing systems, and the historical emergence of the alphabet, raises many theoretical questions – not least the question of how the process of reading and writing actually takes place in the brain. We review the main psychological models of reading that have been proposed, and look briefly at the more poorly researched fields of writing and spelling. Part v then concludes with a review of the issues involved in the many proposals for spelling reform.

A tiny sample of the world's alphabets over the centuries. In the background is an engraving of a printing shop in the late 15th century by Philippe Galle, after a drawing by Jan van der Straet.

31 Written and spoken language

WRITING SUPREME

The history of language study illustrates widely divergent attitudes concerning the relationship between writing and speech. For several centuries, the written language held a preeminent place. It was the medium of literature, and, thus, a source of standards of linguistic excellence. It was felt to provide language with permanence and authority. The rules of grammar were, accordingly, illustrated exclusively from written texts.

The everyday spoken language, by contrast, was ignored or condemned as an object unworthy of study, demonstrating only lack of care and organization. It was said to have no rules, and speakers were left under no illusion that, in order to 'speak properly', it was necessary to follow the 'correct' norms, as laid down in the recognized grammar books and manuals of written style. Even pronunciation could be made to follow the standard written form, as in recommendations to 'say your *h*'s' and not to 'drop your *g*'s' (p. 32). The written language, in short, was the main plank on which the prescriptive tradition rested (§1).

SPEECH SUPREME

There was sporadic criticism of this viewpoint throughout the 19th century, but it was not until the present century that an alternative approach became widespread. This approach pointed out that speech is many thousands of years older than writing (§49); that it develops naturally in children (whereas writing has to be artificially taught); and that writing systems are derivative – mostly based on the sounds of speech. 'Writing is not language', insisted the American linguist, Leonard Bloomfield (1887–1949), 'but merely a way of recording language by means of visible marks.'

It was also argued that, as speech is the primary medium of communication among all peoples, it should therefore be the primary object of linguistic study. In the majority of the world's cultures, in fact, there would be no choice in the matter, as the languages have never been written down. Early linguistics and anthropology therefore stressed the urgency of providing techniques for the analysis of spoken language – especially in cases where the cultures were fast disappearing and languages were dying out. 'When we think of writing as more important than speech,' wrote Robert Hall (1911–) in a popular paperback, *Leave Your Language Alone* (1950), 'we are putting the cart before the horse in every respect.'

Because of this emphasis on the spoken language, it was now the turn of writing to fall into disrepute. Many linguists came to think of written language as a tool of secondary importance – an optional,

special skill, used only for sophisticated purposes (as in scientific and literary expression) by a minority of communities. It was needed in order to have access to the early history of a language (philology, §50), but this was felt to be a woefully inadequate substitute for the study of the 'real' thing, speech. Writing, seen as a mere 'reflection' of spoken language, thus came to be excluded from the primary subject matter of linguistic science. The pendulum swung to the opposite extreme in the new generation of grammars, many of which presented an account of speech alone.

COMPROMISE

It is understandable but regrettable that writing and speech should have been allowed to confront each other in this way. There is no sense in the view that one medium of communication is intrinsically 'better' than the other. Whatever their historical relationship, the fact remains that modern society makes available to its members two very different systems of communication, each of which has developed to fulfil a particular set of communicative needs, and now offers capabilities of expression denied to the other. Writing cannot substitute for speech, nor speech for writing, without serious disservice being done. The scientific study of speech in its own right is now a well-developed subject (Part IV). The analogous study of the written language is less advanced, but has just as promising a future.

The wheel turns full circle. Nowadays greetings cards are available that speak when you open them.



Write – or speak?

The functions of speech and writing are usually said to complement each other. We do not write to each other when we have the opportunity to speak – apart from such exceptional cases as secretive children in class and spouses who are 'not talking'. Nor can we speak to each other at a distance – except in special cases involving technical equipment.

On the other hand, there are many functional parallels which ought not to be ignored, especially as these are on the increase in modern society.

- The relative permanence of written language makes it ideally suited for such functions as recording facts and communicating ideas (§4). But these days, talking books for the blind, libraries of recorded sound, and other ideas are providing alternatives.

- Letters and messages for distant contacts used only to be written. Nowadays, they can also be spoken – thanks to tape cassettes, telephone answering machines, radio phone-ins, and other such developments.

- The immediacy of speech makes it ideal for social or 'phatic' functions (p. 10). But writing also has its phatic functions, and these seem to be increasing, as suggested by the expanding business of producing cards to mark special occasions – birthdays, Christmas, anniversaries, examination results, passing (or failing) a driving test, and many more.

However, when it comes to tasks of memory and learning, speech is no substitute for writing. Written records are easier to keep and scan. Written tables and figures readily demonstrate relationships between things. Written notes and lists provide an immediate mnemonic. Written explanations can be read often, at individual speeds, until they are understood.

THE DIFFERENCES BETWEEN WRITING AND SPEECH

Writing and speech are now seen as alternative, 'equal' systems of linguistic expression, and research has begun to investigate the nature and extent of the differences between them. Most obviously, they contrast in physical form: speech uses 'phonic substance', typically in the form of air-pressure movements (§23); writing uses 'graphic substance', typically in the form of marks on a surface. But of far greater interest are the differences in structure and function that follow from this basic observation.

These differences are much greater than people usually think. The contrast is greatest when written texts are compared with informal conversation; but even in fairly formal and prepared speech settings, such as a teacher addressing a class, the structure of the language that is spoken bears very little similarity to that found in writing. It is something that is immediately apparent if a stretch of speech is tape recorded and transcribed. Even a fluent speaker produces utterances that do not read well when written down (p. 94).

The differences of structure and use between spoken and written language are inevitable, because they are the product of radically different kinds of communicative situation. Speech is time-bound, dynamic, transient – part of an interaction in which, typically, both participants are present, and the speaker has a specific addressee (or group of addressees) in mind. Writing is space-bound, static, permanent – the result of a situation in which, typically, the producer is distant from the recipient – and, often, may not even know who the recipient is (as with most literature). Writing can only occasionally be thought of as an 'interaction', in the same way as speech (exceptions include personal correspondence and, more important, the growing field of computer-based interaction). It is therefore not surprising to find differences emerging very quickly when languages first come to be written down, as has been observed in such cases as Basque and Tok Pisin.

Points of contrast

- The permanence of writing allows repeated reading and close analysis. It promotes the development of careful organization and more compact, intricately structured expression. Units of discourse, such as sentences and paragraphs, are clearly identified through layout and punctuation. By contrast, the spontaneity and rapidity of speech minimizes the chance of complex preplanning, and promotes features that assist speakers to 'think standing up' – looser construction, repetition, rephrasing, filler phrases (such as *you know*, *you see*), and the use of intonation and pause to divide utterances into manageable chunks (p. 52, §29).

- The participants in written interaction cannot usually see each other, and they thus cannot rely on the context to help make clear what they mean,

as they would when speaking. As a consequence, writing avoids words where the meaning relies on the situation (*deictic* expressions, such as *this one*, *over there*, p. 106). Writers also have to anticipate the effects of the time-lag between production and reception, and the problems posed by having their language read and interpreted by many recipients in a diversity of settings. In the absence of immediate feedback, available in most speech interaction, care needs to be taken to minimize the effects of vagueness and ambiguity.

- Written language displays several unique features, such as punctuation, capitalization, spatial organization, colour, and other graphic effects (§32). There is little in speech that corresponds, apart from the occasional prosodic feature (§29): for example, question marks may be expressed by rising intonation; exclamation marks or underlining may increase loudness; and parentheses may lower tempo, loudness, and pitch. But the majority of graphic features present a system of contrasts that has no spoken-language equivalent. As a result, there are many genres of written language whose structure cannot in any way be conveyed by reading aloud, such as timetables, graphs, and complex formulae.

- Grammatical and lexical differences are also important. Some constructions may be found only in writing, as in the case of the French simple past tense (the *passé simple*). Certain items of vocabulary are rarely or never spoken, such as many polysyllabic chemical terms, or the more arcane legal terms. Conversely, certain items of spoken vocabulary are not normally written, such as *whatchamacallit* (with no standard spelling), and certain slang or obscene expressions.

- Written language tends to be more formal than spoken language and is more likely to provide the standard that society values. It also has a special status, mainly deriving from its permanence. Written formulations, such as contracts, are usually required to make agreements legally binding (p. 386). Sacred writings are used as part of the identity and authority of a religious tradition (p. 384).

Mutual influence

Despite these differences, there are many respects in which the written language can influence the spoken. Soon after learning to read, children use the written medium as a means of extending their spoken vocabulary – as indeed do many adults. Some words may be known only in written form. Loan words may come into a language through the written medium. Sometimes the whole of a language may be known only from writing (as with Latin, or certain cases of foreign language learning, §62). And an old written language can be the source of a modern spoken one (as in Hebrew). Writing systems may derive from speech, in a historical sense, but in modern society the dependence is mutual.

Newspeak

The written language is amusingly used to point up the idiosyncrasies of a speech style, in this 1963 *Guardian* editorial:

The BBC has introduced a. New method of disseminating the spoken word at any rate we think it is new because we don't. Remember hearing it until a week or two ago it consists of. Putting the fullstops in the middle of sentences instead of at the end as we were. Taught at school as a corollary to this new sentences are run on without ■ break readers will say we are in. No position to talk but this appears to be a deliberate policy on the part of the BBC whereas our. Misprints are accidental.

The practice seems to have started as a. Means of enlivening the reports of otherwise tedious football matches on a. Saturday afternoon now it has spread to the. News columns as it were and the effect is to make the subject matter. Confusing the interest of the listener is directed to the. Manner of delivery rather than the. Events recounted we tried to discover whether the ellipses or hiatuses followed a. Definite pattern or whether the breaks were made. Arbitrarily a pattern did emerge it seems that most of the breaks come after the. Definite or indefinite article or after a. Preposition sometimes they follow. Verbs but they always come when you. Least expect them and they constitute an outrage on what. We in the trade call the. Genius of the language.

Portraying the sound of speech

The differences between speech and writing are most clearly displayed when people attempt to portray the sound of the former using the graphic properties of the latter. The most complex and ingenious ways of doing this are to be found in written literature, where authors are continually battling to put sounds into words.

The graphic conventions authors use have received little study, especially from a cross-linguistic viewpoint. Different languages do not display the same range of written language conventions for the portrayal of speech. In English, for example, emphatic speech is not usually printed in a heavy typeface, but this is common in Chinese fiction. And the use of repeated letters (as in *ye-e-es*) can have a range of interpretations, such as emphasis and hesitation, in different languages. This can lead to ambiguity, especially when texts are translated. For example, a character in the English translation of Alexander Solzhenitsyn's *Cancer Ward* is recorded as saying 'No-o'. The use of this convention in the original Russian would convey an emphatic negative; but the English version is far more likely to signal a hesitant one. Italics, likewise, can be ambiguous, both within and between languages, being used variously as a marker of foreign words, technical terms, book titles, emphasis, and several other effects.

The way the written language conveys the effects of sound is now beginning to be studied more systematically. Some of the graphic effects in widespread use are illustrated below (after R. Chapman, 1984).

VERBAL DESCRIPTION

Probably the most common technique is to make use of descriptive words and phrases. Some authors take great pains to make their descriptions vivid, precise, and meaningful.

... a note of menace pierced through his voice.

(James Joyce, *Dubliners*)

'Undoubtedly, undoubtedly,' broke in Mr Verloc in a deep deferential bass of an oratorical quality ...

(Joseph Conrad, *The Secret Agent*)

His voice lifted into the whine of virtuous recrimination.

(William Golding, *Lord of the Flies*)

'But my darling,' he protested in the cajoling tone of one who implores a child to behave reasonably.

(Aldous Huxley, *Point Counter Point*)

... a soft, greasy voice, made up of pretence, politeness and saliva.

(Anthony Trollope, *Ralph the Heir*)

PUNCTUATION

The punctuation system can be altered or expanded, or certain features used with unexpected frequency.

These two – they're twins, Sam 'n Eric. Which is Eric – ? You? No – you're Sam –

(William Golding, *Lord of the Flies*)

Tiens, Zazie ... regarde!! le Métro!!! (Here, Zazie ... look!! the Metro!!!)

(Raymond Queneau, *Zazie dans le Métro*)

Sometimes the author may go so far as to explain:

– Oh!! (!! c'est le point d'indignation) (Oh!! (!! is the indignation mark))

(Raymond Queneau, *Le Chiendent*)

SPELLING

The spelling can be altered, to convey the impression of regional accent, personality, or other effects (p. 77).

The family name depends wery much upon you, Samivel, and I hope you'll do wot's right by it.

(Charles Dickens, *Pickwick Papers*)

Aw knaow you. Youre the one that took away maw girl. Youre the one that set er agen me. Well, I'm gowin to ev er aht.

(G. B. Shaw, *Major Barbara*)

Oh, there you are steward. Ole man dlunk, bline dlunk. Purrimabed.

(G. B. Shaw, *Major Barbara*)

An' they're always speshully savidge when they haven't any tusks.

(Richmal Crompton, *William the Bad*)

A Germanic pronunciation of French is portrayed in this extract:

Eh! pien, si ces tames feulent fus dennit gombagnie, dit Nucingen, che fus laisserai sèle, gar chai drop manché. (= Eh! bien, si ces dames veulent vous tenir compagnie ... je vous laisserai seul, car j'ai trop mangé. 'Well, if these ladies want to keep you company, I will leave you alone, because I have eaten too much.') (Honoré de

Balzac, *Splendeurs et misères des courtisanes*)

CAPITALIZATION

Varying the use of capital letters can convey loudness, special significance, and several other effects.

'At such times as when your sister is on the Ram-page, Pip,' Joe sank his voice to a whisper and glanced at the door, 'candour compels fur to admit that she is a Buster.'

Joe pronounced this word, as if it began with at least twelve capital B's.

(Charles Dickens, *Great Expectations*)

Extended capitalization usually expresses loudness.

'MISS JEMIMA!' exclaimed Miss Pinkerton, in the largest capitals.

(William Makepeace Thackeray, *Vanity Fair*)

Heedless of grammar, they all cried, 'THAT'S HIM!'

(R. H. Bahram, *The Jackdaw of Rheims*)

Portraying the sound of silence

Graphic devices are often used to express reactions when no words are spoken at all.

'We might go in your umbrella,' said Pooh.

'?'

'We might go in your umbrella,' said Pooh.

'? ?'

'We might go in your umbrella,' said Pooh.

'!!!!!!'

For suddenly Christopher Robin saw that they might. (A. A. Milne, *Winnie the Pooh*)

e. cummings

(1894–1962), whose ingenious typographic configurations frequently reflect the distinctive rhythms and tones of voice that can be heard in speech (p. 72).



TYPE SPACING AND SIZE

Variations in type size and spacing provide a wide range of possible effects (§32).

Alice couldn't see who was sitting beyond the Beetle, but a hoarse voice spoke next. 'Change engines –' it said, and there it choked and was obliged to leave off.

'It sounds like a horse,' Alice thought to herself. And an extremely small voice, close to her ear, said,

'You might make a joke on that – something about "horse" and "hoarse", you know.'

(Lewis Carroll, *Through the Looking Glass*)

Once on the bridge, every other feeling would have gone down before the necessity – the necessity – for making my way to your side and getting what you wanted.

(G. B. Shaw, *The Man of Destiny*)

LETTER REPETITION

The repetition of letters and hyphens generally shows extra spoken emphasis, but other effects are also sometimes conveyed by this technique.

And I've lost you, lost myself,
Lost all-l-l-l-

(Robert Browning, *Men and Women*)

What a beautiful, *byoo-ootiful* song that was you sang last night.

(William Makepeace Thackeray, *Vanity Fair*)

'Shhhhhhhhhhh! Shhhhhhhhhhh!' they said.

(William Faulkner, *Dry September*)

Fuego ... fueeego! (Fire ... Fire!) (V. B. Ibañez, *Sangre y arena*)

Tout à coup, très bas, mais la bouche grand ouverte, il psalmodie 'vaaaaaaache' et sa tête retombe. (Suddenly, very quietly, but with his mouth wide open, he chants 'coooooow' and his head falls back.)

(Raymond Queneau, *Le Chiendent*)

ITALICS

The use of italics is found in a variety of contexts, conveying loudness and other tones of special significance.

'Hel-lo!' said my aunt as I appeared.

(H. G. Wells, *Tono Bungay*)

'What *can* you mean by talking in this way to *me*?' thundered Heathcliffe with savage vehemence.

(Emily Brontë, *Wuthering Heights*)

Chicago will be ours! *Chicago will be ours!*

(Upton Sinclair, *The Jungle*)

'I'm desperately fond of Shirley.'

'*Desperately* fond – you small simpleton! You don't know what you say.'

'*I am desperately* fond of her: she is the light of my eyes.'

(Charlotte Brontë, *Shirley*)

The non-verbal vocalizations in this extract from a Welsh edition of *Asterix* are the only items that do not need translation.

Science fiction

The genre of science fiction often experiments with the written language, in its attempts to characterize the communicative habits of future times and alien beings.

In Alfred Bester's *The Demolished Man* (1953), a group of gifted telepathic people meet at a cocktail party, and all begin to communicate at once. The result is a pattern of inter-linked thoughts, so complex that it evokes a comment from one of the participants. The comment itself illustrates two other graphic features, neither of which has a spoken language counterpart: the experimental use of a logo-gram in the proper name, and the use of an ironic question-mark.

Frankly
Ellery,
I
don't
think
you'll
brought
Galen
along
to
help him celebrate.
Canapés?
Thanks
Mary, they're
delicious.
yes,
Tate,
I'm
treating
D'Courtney.
I
expect
him
in
town
very
shortly.
Why
Tate,
I'm
treating
D'Courtney.
I
expect
him
in
town
very
shortly.
If
you're
interested
Powell, we're ready
to
run rule
you
for
Guild
President.
Monarch
much
longer.
He's
just
The
taken his Guild Exam.
is
just
about
and
been
classed
2nd.
Monarch's
espionage
Canapés? unethical.
Canapés?
Why yes.
Thank
Canapés? You,
Mary ...

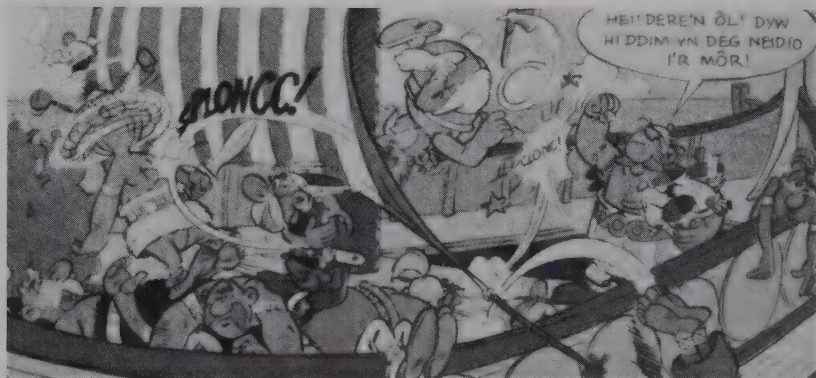
'@kins! Chervil Tate! Have a heart! Will you people take a look at the pattern (?) we've been weaving ...'

Ugh! Aargh! Ha ha!

Non-verbal vocalizations are among the most difficult of sounds to represent in written form. Even a 'straightforward' event, such as a laugh, can be shown in several ways. A selection from various authors brings to light:
Ha! ha! ha!
Ha, ha!
Ha, ha, ha!
Ha-ha-ha!
Ha-ha, ha-ha!
Ha ha!
He! he! he!
He, he!
He, hee, hee, hee!
Ho, ho, ho!
Haw-haw!
HA! HA! HA! HO! HO! HO!
The vowel variations indi-

cate different types of laugh – normal (a), giggle (e), and hearty (o). They may also express different characters:

'Ho-ho-ho!' laughed dark Cat.
'Hee-hee-hee!' laughed the tipsy bride ...
'Heu-heu-heu!' laughed dark Cat's mother ...
(T. Hardy, *Tess of the D'Urbervilles*)
In languages that lack initial aspiration, the convention may look quite different.
– Mi fate proprio ridere, scusate, ah, ah, ah. (You really make me laugh, excuse me, ha, ha, ha.) (I. Silone, *Il seme sotto la neve*)



32 Graphic expression

It is traditional in language study to distinguish 'spoken' from 'written' language; but the latter term does not capture the range of expression that the visual medium makes available. 'Written' implies, first and foremost, 'handwritten' – but plainly there are many other ways of presenting written language, using such technologies as the printing press, the typewriter, and the video display unit. The term 'graphic' subsumes all these modes, and we shall therefore use it throughout this section, to emphasize the importance of adopting a broad framework for the study of the way language is visually presented. We shall not, however, use the phrase 'graphic language', as found in such fields as typography, because it applies to a much wider class of phenomena than that dealt with in this encyclopedia – including the use of pictures, graphs, musical notation, and so on.

The different varieties of graphic expression seem to have no parallel in spoken language. Speech belongs to individuals, and is not split between two people (apart from such special cases as foreign language interpreting). There is nothing in speech that corresponds to what happens when someone dictates a letter, and then allows a typist to present the message in graphic form. There are no spoken language equivalents to the specialist scribe, editor, draughtsman, cartographer, or graphic designer – though certain parallels can be found in the work of the barrister and actor.

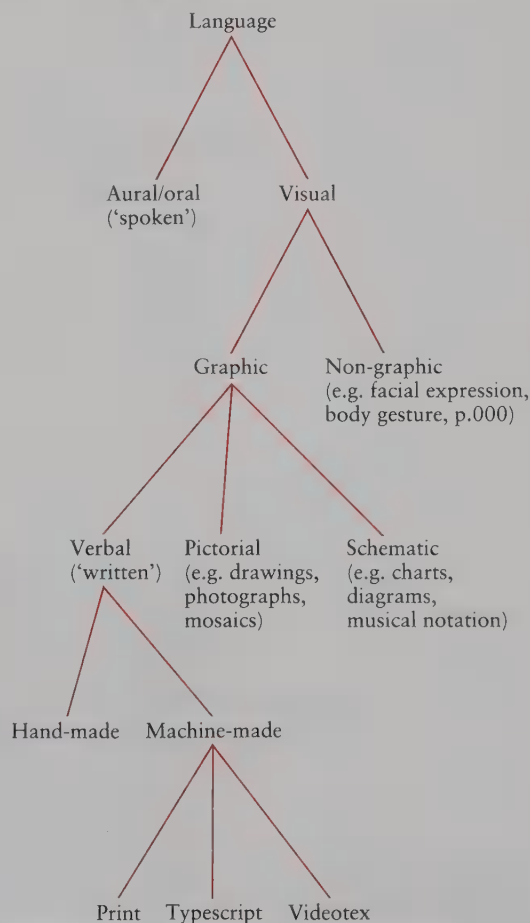
The properties of graphic expression are not widely appreciated. A few graphic conventions are introduced in schools as prescriptions (such as how to lay out a letter, address an envelope, and set out a science experiment or a mathematics problem); but attention is not directed to the learning of general principles of visual language organization that would apply in different times, situations, and technologies. Most conventions are ignored, and as a result people have only fragmentary skills in producing and interpreting the range of forms which are available for linguistic expression – something they discover to their cost, when they are faced with such tasks as preparing posters or handouts for general use, and find that they are unable to convey the effect they require.

By contrast, there are several professions that have studied aspects of graphic expression in great detail. In particular, there has been minute analysis of the letters of the alphabet, and the thousands of forms these letters take (in the different styles of handwriting, print, etc.). The specialists involved include typographers, type designers and manufacturers, historians of printing, historians of inscriptions (epigraphers) and handwriting (palaeographers (p. 187)), art historians, forensic scien-

tists, and many others interested in both the aesthetic properties of graphic expression and its utilitarian functions (in publishing, advertising, cartography, etc.). However, these diverse approaches have not resulted in an agreed descriptive apparatus or terminology, and several important aspects of the subject continue to be neglected – not least, the analysis of the *effects* conveyed by graphic communication.

Modes of graphic expression

The several modes of graphic expression are identified in this diagram, in relation to the study of other kinds of human visual communication and to the linguists' use of the terms 'spoken' and 'written' language. The classification is based on an analysis by the British typographer, Michael Twyman (1934–), who subsumes all graphic effects under the heading of 'graphic language'.



Writing the date

The graphic expression of dates is one of the conventions universally taught in schools. But it is difficult for schools to keep up with contemporary typographic practice, and to distinguish between the many social usages. These are some of the graphic conventions which have been used to express the date in English.

31 January 1987
 31st January 1987
 31st January, 1987
 31st January. 1987
 January 31 1987
 January 31, 1987
 January 31st 1987
 January 31st. 1987
 January 31st. 1987
 31.1.87 1.31.87
 31/1/87 1/31/87
 31-1-87 1-31-87
 31.i.87
 31 Jan 1987
 31 Jan 87
 31 Jan. '87
 1987-01-31
 1987 January 31

The main distinction is whether the day precedes the month, as in British and Continental practice, or follows it, as in American practice. Thus, 6/7/41 would refer to 6 July in the former case, and to 7 June in the latter. The mixing of Arabic and Roman numerals is also a British convention.

The use of these conventions varies over time. The current fashion is not to use suffixes or punctuation (e.g. *31 January 1987*), although older styles are still often taught in school (e.g. *January 31st, 1987*). The styles also vary in terms of social situation. Abbreviations are more likely to be used in informal letters than in formal correspondence; and the use of the suffix commonly appears in literature for special occasions, such as wedding invitations. In works on astronomy or geophysics, the order year–month–day is usual (*1987 January 31*), and this is also the order recommended by the International Organization for Standardization when numbers only are used (*1987-1-31*).

Types of graphic expression

Verbal graphic expression is so enormously varied that it defies any simple system of classification. One approach, which analyses texts in terms of the reading strategies they imply, is presented below (after M. Twyman, 1982, which deals, in addition, with pictorial and schematic features of graphic communication).

Pure linear

Nothing in graphic expression really corresponds to the uninterrupted linearity which is so typical of speech. Word spaces, line endings, and pages are normal graphic conventions, which it is usually impractical to disregard.

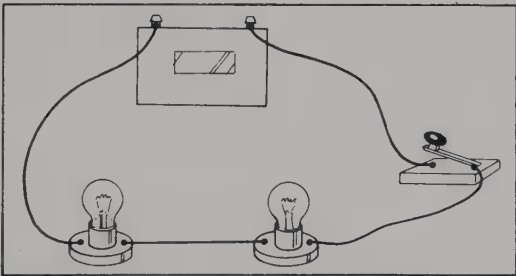
The spiral of characters on the two sides of the Phaistos disc illustrates a continuously linear form. This terracotta tablet, about 16 cm in diameter, was found in Crete in 1908. Several characters are recognizable (such as parts of the body, animals, and tools), and interpretations of some sequences have been proposed, but the disc as a whole has not been deciphered.



Interrupted linear

This is the normal convention used in continuous text. The spaces occur between linguistic units (words), and line breaks usually occur between words or syllables (using the hyphen).

The present page illustrates two line-break principles in operation. The larger size of text has a justified right-hand margin, with irregular spaces between words, and occasional hyphens at graphic syllable boundaries. The present paragraph has an unjustified ('ragged-edge') right-hand margin, with regular spaces between words, and many fewer word divisions. In both cases, line endings do not correspond to units of meaning. In contrast, the following extract is taken from a series of books designed for slow readers, in which most of the line endings have been made to coincide with the boundary of a grammatical unit, such as a sentence, clause, or clause element (§16). (From D. Crystal & J. Foster, 1983, p. 7.)



Electric circuits

The complete path along which an electric current flows, from its start to its finish, is called an *electric circuit*. The diagram shows a simple electric circuit. The electric current comes out of a battery, goes through a switch and two light bulbs, and then back to the battery again. When the switch is on, the circuit is complete and the light bulbs work. When the switch is off, the circuit is said to be *broken*, and the light bulbs do not work.

Different types of electric current

The current produced by a battery flows in the same direction all the time. Electricity that goes only in one direction is known as *direct current*, or D.C. The current made in power stations flows very rapidly in one direction round a circuit and then in the other direction. An electric current that changes direction in this way is known as an *alternating current*, or A.C. An alternating current, passing through the filament of a light bulb, flows backwards and forwards 50 times a second.

Lists

A list is an ordered series of lines, each acting as a semantic unit. They range from short sequences of single words (as in shopping lists) to lengthy arrays of technical description, as can be found in collectors' catalogues and restaurant menus.

Dinner

Hors d'Oeuvres

- Pâté d'Homard et Ris de Veau £6.25
(Sweetbread and lobster pâté with a pink champagne jelly)
- Jambon San Danièle et Grisson aux Figues £6.75
(Cured ham and Swiss dried beef served with figs)
- L'Assiette de Flétan et Boeuf Mariné au Tartare du Marché £6.75
(Slices of halibut and beef marinated, dressed around minced vegetables)
- Bavaroise des Légumes, Sauce Homardine £5.50
(Vegetable flavoured with basil, dressed on a lobster vinaigrette and warm seafood)
- Symphonie des Poissons en Gelée des Légumes £5.50
(Terrine of seafoods in a sliced vegetable jelly)

Hors d'Oeuvres Chauds

- Tasse d'Homard Parfumé au Fenouil £3.75
(Lobster bisque flavoured with fennel)
- Ravioli de Fruits de Mer au Safran £5.75
(Ravioli filled with wild mushrooms and seafoods coated with a saffron butter sauce)
- L'Elixir de Poireaux en Croûte £3.75
(Chicken consommé with madeira and leeks cooked under a pastry lid)
- Tarte de Poireaux Andalouse (15 minutes) £5.50
(Minced leeks seasoned with spices in puff pastry with a sweet pepper sauce)

Poissons

- Emincé de Sole Belle Fleuriste £14.25
(Fillets of sole with baby vegetables)
- Cassoulet d'Homard Forestière £22.75
(Steamed lobster with wild mushrooms and baby vegetables in a white wine sauce)
- Blanquette de Turbot au Stilton, Confit des Oignons £14.75
(Fillet of turbot braised in red wine and stilton with glazed onions)
- Coquilles des Fruits de Mer en Feuilleté £14.50
(Seafoods encased in puff pastry and white butter sauce)

Entrées

- Emincé de Boeuf Poché aux Capres £14.75
(Poached fillet of beef dressed on a caper sauce with broccoli and carrots)

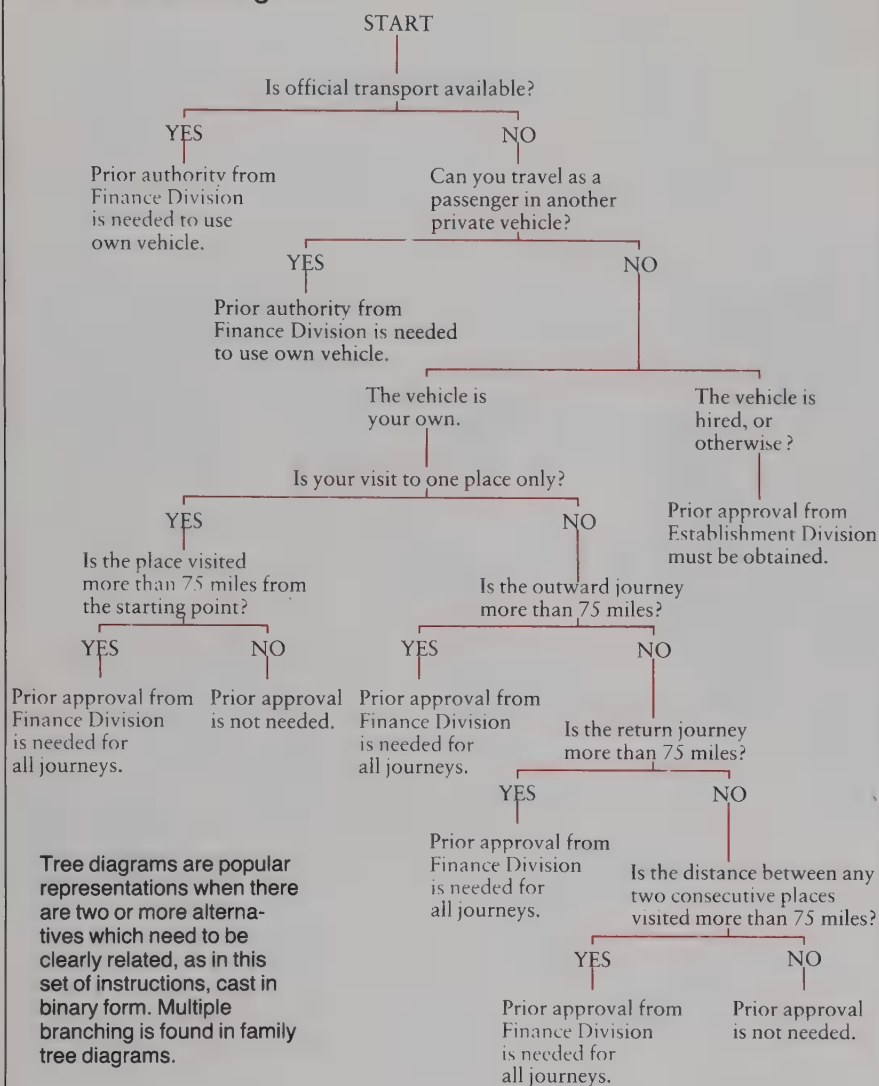
Matrices

A matrix is a table of rows and columns containing linguistic, numerical, or other information, which can be scanned vertically or horizontally. Matrices are widely used in technical publications, but several everyday topics are also conventionally treated in matrix form, such as this football league table.

FIRST DIVISION

	Home						Away						
	P	W	D	L	F	A	P	W	D	L	F	A	Pts
Leeds	13	5	1	0	12	4	3	3	1	8	5	20	
Arsenal	13	6	1	0	21	2	1	3	2	6	11	18	
Man. C	12	3	3	0	12	4	3	2	1	5	4	17	
Spurs	13	4	1	1	9	4	2	4	1	10	6	17	
Cryst P	13	5	0	2	10	5	2	3	1	5	4	17	
Chelsea	13	3	3	0	11	8	2	3	2	5	5	16	
Wolves	13	3	1	2	12	13	4	1	2	14	14	16	
L'pool	12	4	2	0	12	2	1	3	2	3	4	15	
Stoke	13	4	3	0	13	1	0	2	4	5	15	13	
Cov C	13	3	1	2	6	3	2	2	3	6	8	13	
Newc U	13	1	4	1	6	6	3	1	3	9	10	13	
S'hmpn	13	3	2	1	8	3	1	2	4	7	10	12	
Everton	13	2	3	1	9	6	2	1	4	9	15	12	
Derby	13	3	1	3	11	9	1	2	3	7	11	11	
WBA	13	3	3	1	13	9	0	2	4	9	21	11	
Man. U	13	2	3	2	6	4	1	2	3	7	14	11	
Notts F	13	3	2	1	12	6	0	3	4	1	12	11	
H'field	13	3	3	1	9	5	0	2	4	3	12	11	
Ipswich	13	3	2	2	13	7	0	1	5	1	8	9	
W Ham	13	1	4	2	9	10	0	3	3	6	11	9	
B'pool	13	1	3	2	6	9	1	1	5	4	14	8	
Burnley	13	0	2	5	4	12	0	2	4	2	10	4	

Linear branching

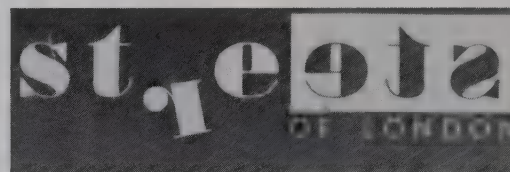


Graphic symbolism

Like sound symbolism (§30), graphic properties can be used to represent the extralinguistic world in a direct manner. The illustrations show this principle at work in the worlds of business, education, and humour.

The distinctive typographic design used by the fashion firm Streets of London How are the effects to be interpreted? The account of the firm's policy, printed on the inside cover of one of their catalogues, provides the clue.

Out on its own. A style all its own. *Streets* veers off the beaten track. Exploring new trends. Going beyond the norm. Bringing the remote within reach with a look of solitary refinement. Distant. Different. And desirable. Break away and break the monotony.

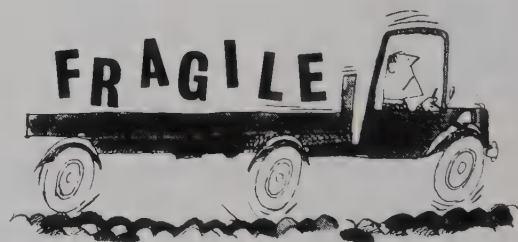
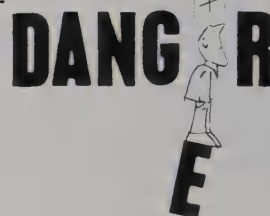


Learning to read This is one of a series of animated letters devised to help teach sound-letter relationships to children (From L. Wendon, 1985, p. 28).



SAMMY SNAKE
This snake slithers and slides along making a soft hissing sound in words, like this 'sssss'.

Graphic humour Cartoonist Edward McLachlan has ingeniously exploited the graphic nature of these words.



Non-linear viewing

In this form of presentation, the lines are not read in sequence. The typography directs the reader's attention to different parts of the text, which may or may not be read in detail. Initial reading may proceed in any direction (even vertically upwards). These conventions are standard in advertising (p. 390), popular journalism (p. 388), and some forms of poetry (p. 75).

TYPEWRITER, Underwood, manual, modern. Price £12 10s. — Phone Cambridge 4960. C—29.9

CYCLE TYRES. 26 by 1 $\frac{3}{8}$, 26 by 1 $\frac{1}{4}$, 27 by 1 $\frac{1}{4}$, from 11s. Tubes 5s. 6d. — K. Lovegrove, 181, Oxford Road, Cambridge. Tel. 51436. P—19.12

WEE BELLING Electric Cooker, £5; Tricycle, chain driven, age 4 to 6, £2 10s.; Cot and Mattress, £5; Boy's Sports Cycle. 3-speed, for age 12 onwards. £9 10s.; Pram Seat £1. — Cambridge 64297. P—26.9

MARPARTS open all day Sundays and late night Fridays. 5B—26.9

SOLID FUEL BOILER, Ideal Marquis, 45,000 b.t.u., with flue. £15. — Cambridge 21330. P—26.9

MARPARTS open all day Sundays and late night Fridays. 5B—26.9

Graphetics and graphology

The writing system of a language can be studied from two points of view, which relate to each other in the same way that phonetics and phonology do for the study of speech (§§27–28). *Graphetics*, a term coined on analogy with *phonetics*, is the study of the physical properties of the symbols that constitute writing systems. *Graphology*, coined on analogy with *phonology*, is the study of the linguistic contrasts that writing systems convey. Very little research into these domains has been carried out within the field of linguistics (§65); in particular, the notion of graphetics is not widely employed. In such fields as typography, chirography (handwriting), and psychology, however, aspects of these topics have now received considerable study, especially in relation to the teaching of reading and writing, and the task of visual perception (§§34, 44).

GRAPHETIC ISSUES

A properly developed theory of graphetic science would deal with the range of implements and associated human skills required for the production and reception (reading) of linguistic marks on surfaces, screens, and other backgrounds, in any language. This would primarily involve the study of motor control and coordination of hands and eyes (cf. the use of the vocal organs for speech, §22), and of the psychological processes involved when these marks are perceived and remembered by the reader (cf. the field of speech reception, §25).

There is great scope for the development of graphetic studies, when we consider the range of variation in graphic practice displayed by modern languages, and throughout the history of writing. Most noticeably, languages vary in the direction in which they are written – left-to-right, right-to-left (e.g. Arabic), top-to-bottom (e.g. traditional Japanese), and the uncommon bottom-to-top (e.g. some forms of Ancient Greek). More than one direction may be involved, as in the *boustrophedon* method of writing lines in alternate directions, used in several early systems (see right). A language may use several different conventions simultaneously – such as the common use of vertical arrangement in neon signs and on book spines in English.

The nature of the writing implement and surface will have some influence on the kind of system that develops. The history of graphic expression shows a variety of implements, including the use of reeds, quills, brushes, steel points, fountain pens, pencils, ball-point pens, fibre-tipped pens, chalks, crayons, typewriters, laser printers, photocomposing systems, and word processors. The implements rely on a range of natural and synthetic products, from the early use of blood and plant juices to the modern range of coloured inks, photochemicals, lights, and electrical charges. Many surfaces have been involved, such as animal bone, rock, clay, wax, pottery, cloth, papyrus, parchment, paper,

film, and electronic display screens. Often, techniques have to be devised for special functions, such as architectural drawing, record keeping, laundry marking, security coding, writing on glass, wood, or film, and writing that can be read electronically, as in department store check-outs and libraries.

The three main eras of graphic expression – handwriting, printing, and electronic – share many graphetic properties; but they have developed separate traditions and disciplines of study, and they will therefore be reviewed separately in the following pages. Graphology, in the linguistic sense, will be discussed separately in §33.

Three kinds of ox-writing

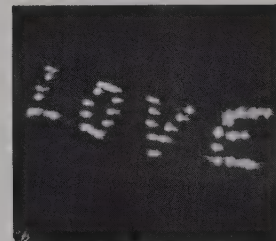
There are several examples of *boustrophedon* in the history of writing. In particular, it was used in a transitional period of early Greek writing. The Greek name means 'ox turning', referring to the way the ox would pull a plough, moving first in one direction, then the other.

In theory, there are three possible ways of writing *boustrophedon*. In (a), the lines reverse but the words do not. In (b), the words reverse as well as the lines. In (c) the letters reverse as well as words and lines.

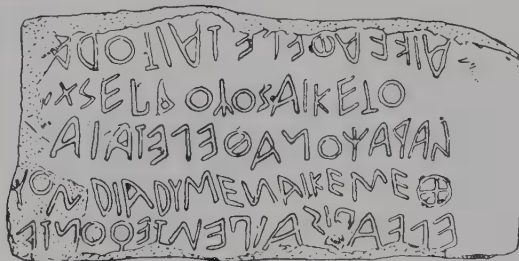
(a) This is an illustration of writing of way possible one in a *boustrophedon* style. The but, direction reverse lines the words do not.

(b) This is another illustration nI .gnitirw nodehportsuob fo this case, both the lines and .desrever era sdrow eht

(c) The third illustration shows zrettel nerlw zneqqsr! tsrlw are reversed as well as words .zenil bns



An unlikely – but effective – mode of graphic expression: smoke in air, lasting for only a matter of minutes.



This drawing of an early Greek treaty (6th–5th century BC) is of the third kind, as can be seen most clearly from the reversed E's.

Boustrophedon writing has also been found in many other parts of the world. Several inscriptions have been found in the countries in and around the Mediterranean Sea – in Crete, Cyprus, Italy (both in Etruscan and in the Italic languages), Asia Minor (Hittite), and ancient South Arabia. But there are also inscriptions much further afield, in India, Central America, Easter Island, and northern Europe (in the early runic alphabet).

Handwriting

The many forms and styles of handwriting (or *chirography*) have attracted a wide range of aesthetic, psychological, and scientific studies, each with its own aims and procedures. Moreover, each of the main families of writing systems (European, Semitic, East Asian) has its own complex history of

handwriting styles. No universally agreed system of classification exists, and there is considerable controversy over approach and nomenclature. All that can be done in this section, therefore, is to present a few of the categories and descriptions that are widely recognized, using the European writing tradition as the domain of illustration. (For other traditions, see p. 188.)

Book hand This is a professional form of writing, found in many different styles, used mainly for copying literature. It was formalized, clear, and regular, displaying little scribal idiosyncrasy.

Documentary hand This form consists of a range of hands used by officials and private individuals as part of daily routine. It is generally found as a rapidly produced cursive, often very irregular and difficult to read.

Majuscule Several forms of writing consist of letters broadly contained within a single pair of horizontal lines; they are usually referred to as *capital* letters. The Greek and Latin alphabets were originally written in this way. The chiselled inscriptions of ancient Greek served as the model of writing on papyrus rolls (which survive from around 300 BC). The Latin form used throughout the Roman Empire from the 1st century AD is known as *rustic* capitals (in contrast with the great square capitals chiselled on stone in Roman inscriptions).

M I L M N O P Q R S T U X Y
F E L I C E S O P E R U M Q U I N

Early Roman rustic capitals

Minuscule Several forms of writing consist of letters whose parts extend above and below a pair of horizontal lines. They are usually known as *small* letters. Minuscule writing was a gradual development, in regular use for Greek by the 7th–8th century AD. The original form ('pure minuscule') was later modified, as uncials and other features (such as Greek accents) were added.

χρ τ α θ η ω ε ι τ ο τ ε λ
λ α φ ο υ β γ δ λ α υ γ μ τ ο
τ ε λ ε ρ ω υ λ ε γ μ α λ φ τ ο ι ι

The Gospels of Stoudion – the earliest dated true minuscule (AD 835)

Uncial This form of writing was especially used in Greek and Latin manuscripts from the 4th to the 8th century AD. It consists of large (the etymological meaning of the term is 'inch-high') rounded letters. A later development, *half-uncial*, prepared the way for modern small letters.

8 Rgent enim seudo xpi a
screudo profatue a adabunt
stignatigna a prooigia ita inerro
rein inouantur si fieri pouit tum

Insular half-uncial writing, as found in the Irish Book of Kells, c. AD 800.

Cursive In this form of writing, the characters are joined in a series of rounded, flowing strokes, which promotes ease and speed. It is found in general use from around the 4th century BC and in time replaced uncial and half-uncial writing as a handwriting norm.

Insular This form of writing was developed in Ireland from around the 5th century AD. It was brought to England by Irish monks, where it was used alongside uncial writing, which it ultimately supplanted.

Carolingian minuscule This form of writing was named after Emperor Charlemagne (742–814), who promoted it throughout Europe. It was widely acclaimed for its clarity and attractiveness, and exercised great influence on subsequent handwriting styles. It is from this period that we find the development of the 'dual alphabet' – the combination of capital letters and small letters in a single system.

exuberib; caprarum autou
torum manupraessif. Long
copiosilacas effluere. Pi
rexiz incolomis. Nosobtu
tantaereim miraculo. Idquo
cozebat ueritas fatebamur
ee subcaelo. quimar tinum p
imitari.

An example of late 8th-century Caroline minuscule.

Black letter This was a development of Carolingian minuscule, widely used in many variations between the 11th and 15th centuries. The rounded strokes became straighter, bolder, and more pointed. Often referred to as *Gothic* script, it became the earliest model for printer's type in Germany.

Ex t p p f t a i lacms p n i a z
e p t a t i m i o m f i i f l a m i t a t e
r e p i t a t i b o i s o p i b z m i t a f i
m i n t d e e t h y m i o l o g i a n o
B E n e d i c t d i c t e p m i n t
q u i l a b a d i n t v l q u i l e
u i t a m l a s b n d i c t o e s h u n t v l

A Gothic book hand of the 14th century.

Humanistic (Roman) This form of writing, also based on the Carolingian, was devised in Italy by Poggio (1380–1459) as an alternative to black letter writing. It was originally known as *Antiqua*, reflecting the concern of the humanist movement of the period to return to ancient Latin sources. It subsequently became the basis for roman letters in printing.

ud uerū tam in occulto latere.
putata sunt minus probabuntur.

The prototype roman script of Poggio.

Italic This form of sloped cursive lettering was developed by the Italian scribe Niccolò Niccoli (1364–1437). In due course, it led to the development of italic letters in printing.

id uerum cum in occulto lateret
cata sunt minus probabuntur.

The prototype italic script of Niccoli.

Palaeographers study ancient and medieval handwriting in order to establish the provenance, date, and correct form of a text. The subject principally involves the study of writing on papyrus, parchment (vellum), or paper, though it does not exclude other forms (such as graffiti). Most palaeographic research has been into manuscripts within the Greek/Latin tradition.

The problem of textual error is particularly serious. It is not surprising, given the 'routine' nature of the task, that copyists would introduce errors as they worked – errors which would be compounded as further copies of a manuscript were made. Indeed, in many cases, the scribes did not know the language or dialect of the manuscript they were copying. There are even cases on record of scribes copying right across a two-column text, producing a totally unintelligible version.

Palaeographic detective work is assisted by a detailed knowledge of the language, the historical events of the period, the contemporary use of writing materials, the mannerisms of the scribes, and especially the history of handwriting styles. In modern times, such techniques as the use of ultra-violet light (to bring out faded handwriting) have proved invaluable.

Epigraphy is the study of ancient inscriptions – texts that have been written on hard, durable material, such as stone, marble, metal, clay, pottery, wood, and wax, using such techniques as engraving, carving, embossing, and painting. Its aim is to ascertain the nature of the original records of ancient civilizations, thereby providing the primary data for historical and philological enquiry. In this process, it provides considerable insight into the early development of writing systems.

Several kinds of ancient inscriptions exist. Many are found on or within large monuments, such as the Egyptian pyramids, or the Persian rock carving at Bisitūn (p. 301). Memorial inscriptions are also

Diplomatics, from the Greek *diploma* (folded), is the study of legal and administrative documents of all kinds. Most attention has been paid to the public documents of monarchs, emperors, and popes, which are usually classified separately from the many varieties of private document that exist.

One of the main aims of the subject is the identification of genuine documents as distinct from drafts, copies, or forgeries. Particular attention is paid to the materials and inks used, as well as to the handwriting style, the forms of seal or signature, and the linguistic features of the text (such as the choice of language, the way information is structured, and the kind of dating system employed).

In an early Anglo-Saxon technique, it was possible to make more than one 'equally original' version of a document. The text would be written out two or more times on a single sheet of parchment. The space between the texts would then be filled in by various words or symbols – often the word *chyrographum* ('handwriting') – and the sheet would be cut irregularly through this writing. To prove that the texts were genuine was then a simple matter: only the original texts would exactly match when reassembled.

reop þunh godh sste mid se þa f unse 7 læpe
 7 oðan 7 þæt hieredh on pios þine ceafste lænð
 þe fæm eubum mannum teot tinge tun 7 æl
 7 ule namæ for godh lufan 7 for unere sibb
 æd his dægh for gearf 7 æt tū his dæge tæm fæf
 7 sste þe bið æt tū þa næ bearnæ dæge 7 eard leofu
 7 bpo þrum tæm spile hine leofh t 7 æt tū hie
 7 fæol butan færo fæne 7 pæl se þe 7 b pæse
 7 eard hæt þe dæht nū se b y n d tæc fæ. on þ y m
 Sæa mænra 7 sstær michael. Cum fæo pæro 7
 f hæt buton se f y phtum hit æf færo æn pille s
 æne pæd hine on þæm 7 tæ mætan dægh 7 y f f
 d h i r fæo hond fæst on p o l o s h b r e o p f. 7 u
 p p e o f e. † æ l f n e o c l e p e † c y n r i s e
 e p p e o f e. † p u l f h u n c l e p e † æ l f f æ n
 p p e o f e. † b u l f f æ n c l e p e † e a r p i n e
 p p e o f e. † p u l f s æ n c l e p e † æ l f s æ n

In some medieval styles of handwriting, several letters were formed by a series of joined vertical strokes ('minims'), without further distinction. Sequences of *m*, *n*, *v* (written as *u*) and *i* (which lacked a distinguishing dot) would thus appear identical. A six-stroke sequence could be interpreted as *ium*, *miu*, *iniu*, *niui*, and many other possibilities, giving rise to major problems of interpretation.



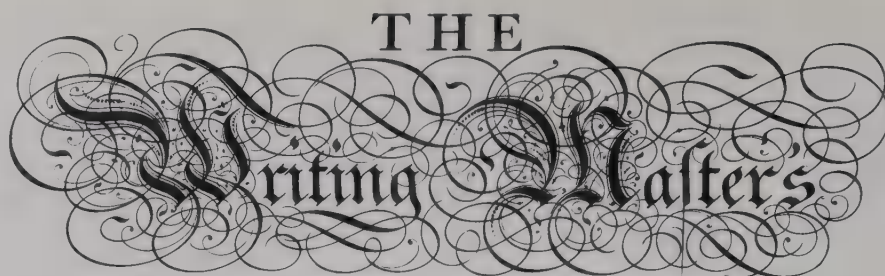
This important document was validated by a seal (below), not a signature. King John, like many medieval monarchs, could not write.



CALLIGRAPHY

The art of penmanship, or handwriting at its most formal, is known today as *calligraphy*. It is a major art form in eastern Asia, China, Korea, Japan, and in Arabic-speaking countries. In Europe and America, it has been less widely practised, though there has been a strong revival of interest since the end of the 19th century. The artistic effect depends on a combination of factors – good-quality materials, the selection of an appropriate and effective writing instrument, the correct formation of the symbols according to an accepted style of writing, the placing of these symbols in an elegant sequence, and the harmonious layout of the text on the page. There have been several famous schools of calligraphy, and the subject has attracted a great deal of historical study in which specialists identify the different kinds of style and how they have evolved.

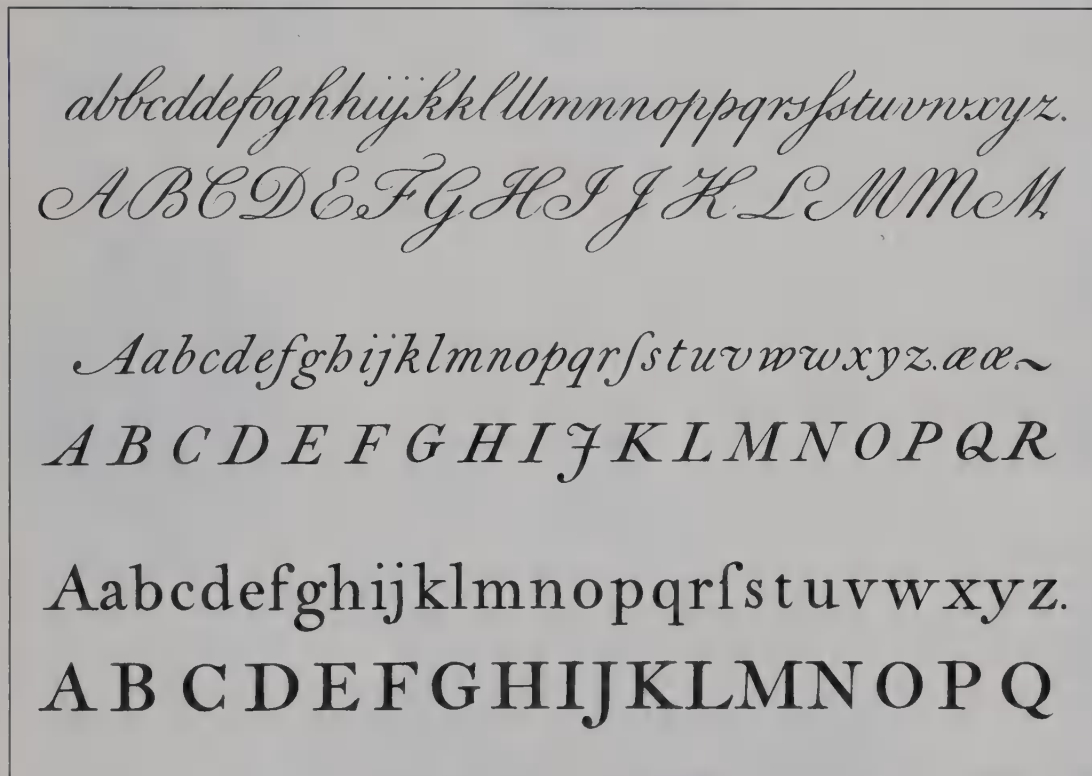
Right: A fine example of 18th-century calligraphy.



INVITATION, AND INSTRUCTION.

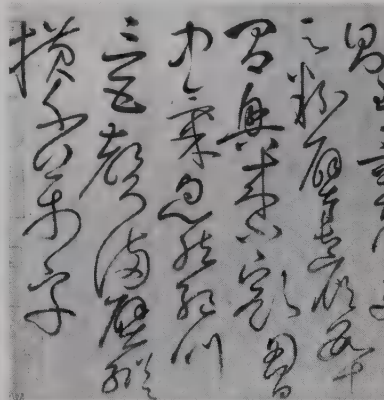
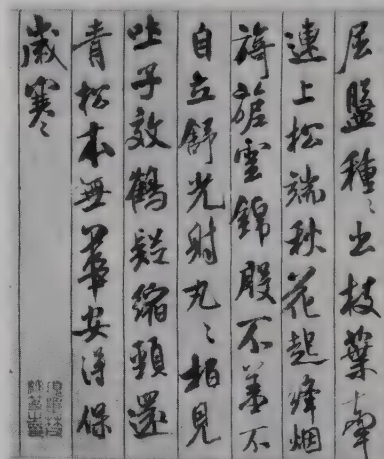
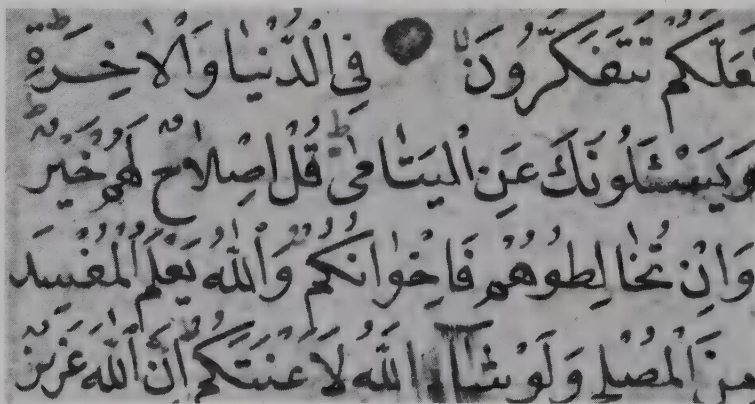
*Come Youths this Charming Sight behold!
With Laurel Plumed, a Pen of Gold!
If You would win this Glorious Prize,
Do as Your Master shall Advise,
Till You, from Learners, Masters grow,
Make both the Boys & Gold your Own.*

*Come Listen Youths, and I'll Display
To this Rare Art a Certain Way.
He that in Writing would Improve,
Must first with Writing fall in Love;
For True Love for True Pains will call,
And that's the Charm that Conquers All.*



Above: A handwritten English alphabet (top: round hand) compared with Italic print (middle) and Roman print (bottom).

Right: An elegant Arabic script, taken from a late 18th-century grammar.



Above: Examples of Chinese *hing shu* (running style) and *ts'ao shu* (grass style) from the influential work of Wang Hsien-chi (AD 344–388). The latter forms are so simplified that they are capable of being read only by calligraphers. The primary interest lies in the way shapes and spaces can be created to produce a harmonious and meaningful whole.

GRAPHOLOGY (PSYCHOLOGICAL)

A person's handwritten mark or signature holds a special place in society. It is required for legal agreements, and its forgery can be illegal. Likewise, a person's general handwriting conveys identity: no two people's writing is the same in every respect (cf. voiceprints, §6).

It is a short step from here to the view that handwriting conveys information about a person's character and personality – the subject of *graphology*. Although speculation about this relationship has existed since Roman times, popular interest is quite recent, with the term itself being introduced towards the end of the 19th century by the French abbot, Jean Hippolyte Michon (1806–81). This sense of graphology, it should be emphasized, must be clearly distinguished from the linguistic use of the term found on p. 185.

Graphologists study handwriting variation using several parameters, notably:

Size whether large or small, wide or broad, constant or varying, and including the relative size of individual letters or letter elements (e.g. the length of the cross stroke of a *t*).

Layout the arrangement of writing on the page, including the size of margins and the distance between lines (narrow or wide, constant or varying).

Line direction whether straight, sloping upwards or downwards, or curved.

Connection whether a sequence of letters is joined or separate, and how the upstrokes and downstrokes interconnect (curved, angular, with various flourishes).

Temporal features whether the speed of writing is rapid or slow – in rapid writing, for example, *t* cross strokes and *i* dots may be misplaced, and strokes may appear between adjacent words.

Regularity whether the size, angle of writing, and distance between strokes is constant or varying, and whether there is an even or disjointed appearance to stretches of writing.

Letterforms whether simplified or elaborated, involving different degrees of legibility.

Angle whether letters are upright, or slanting to the right or left to different degrees, and whether this is constant or varying.

Shading the thickness or thinness of different strokes.

Handwriting characteristics have been studied with reference to all kinds of normal and pathological psychological and physiological states. Most of the early publications dealt with the writing of monarchs, criminals, authors, politicians, and other professionals, but more recent works have examined the writing of the general population – sometimes, from quite specific points of view (such

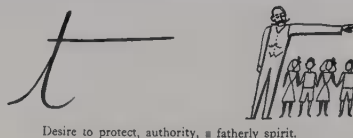
as to determine someone's suitability for employment).

Some examples of graphological interpretation are given below. The analyses sometimes convey an initial intuitive plausibility, but there are many individual differences, and there still need to be controlled empirical investigations into the personality generalizations that have been proposed. There are also many differences of opinion among practitioners about the analyses (such as whether meaning is best located within the different elements of a letter, or within the letters and words as wholes). At present, we lack the scientific evidence required to demonstrate the accuracy or reliability of graphological procedures and conclusions.

Letter interpretations

Extracts from Eric Singer's *A Manual of Graphology* (1953), showing the kinds of relationship postulated between forms and personality traits. The drawings are by Gertrude Elias.

Different kinds of *t* cross



Desire to protect, authority, a fatherly spirit.

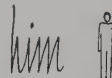


Quick thinking, enterprise, thoughts running ahead of action. haste.

Angles of writing

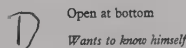


Angle to the left
Dislike for social relationships; retreat into a private world



Upright angle
Independence, reasonableness

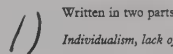
The meanings of *D/d*



Open at bottom
Wants to know himself



Left parts tastelessly exaggerated
Vulgarity



Written in two parts
Individualism, lack of adjustment



Second arc broad, with extended stroke
Underlining of own importance

A quiz question

'There are two writings [below], the upper one by a gentleman, the lower one by a lady. If you were asked whether you think this couple would make a good match in marriage, what would you say?'

My letter. Strange as it may seem.

In reply to
your note =

Signature interpretations

Rosa Baughan's *Character Indicated by Handwriting: a practical treatise in support of the assertion that the handwriting of a person is an infallible guide to his character* is one of many books on graphology that appeared at the end of the 19th century. It includes copies of many famous signatures, with personality interpretations.

Napoleon

Napoleon Bonaparte

'There is the dominant will in the strongly marked "t", and in the hard, thick line which terminates the flourish; his egotism and self-assertion are evidenced in this flourish, his originality in the peculiar form of the capital letter "B"; but ambition is here "still the lord of all".'

A. Pope

Alexander Pope

'An elegant signature, perfectly free from pretentiousness. The simple form of the two capital letters shows culture and refinement of a high order, and the liaison of the capital letter "A" to the name shows deductiveness and logical power, of which no poet ever had more.'

Mozart

Mozart

'Sensuous tenderness in the sloping movement and the downstrokes of the letters ...'

(Answer: 'A marriage between these two people would be a failure from the start. They are too different. Look at size and spacing, at the angle of writing and at the form of connection. Their personal experiences of space, their social inclinations, their personal ways of adjustment to life and society are completely incompatible, and will never agree together.')

A selection of modern typefaces

Eurostyle

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 .,:;"'«&!?

Kismet

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 .,:;"'«&!?

Newtext Book Italic ITC

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 .,:;"'«&!?

OCR-B

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 .,:;"'«&!?

Pierrot

abcdefghijklmnopqrstuvwxyz
ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890 .,:;"'«&!?

The importance of typographical design

Lack of thought in this area can often lead to unsatisfactory results. The width of the table on the right-hand page of this early typing manual (A. E. Morton, *Modern Typewriting and Manual of Office Procedure*, 1929) has led to its being printed sideways ('landscape'). The result is that, when the book is held in the normal way, some of the headings appear upside down.

Modern Typewriting and Manual of Office Procedure. 173

EXERCISE 81.
Copy and neatly rule this Tabular Synopsis.

TACTICAL SYNOPSIS OF THE RECORDS OF THE OPERATIONS AND EXAMINATIONS.		RESULTS OF FINAL EXAMINATION.		RESULTS OF FINAL EXAMINATION.	
No. of Experiments.	OPERATION.	Size of left pupil relatively to right within two days of operation.	Time between operation and final examination.	Size of left pupil relatively to right.	Are dilations or vaso-constrictives obtained?
I.	100 of 1001 cut.	larger	4 days	smaller	No
II.	100 of 1001 cut.	equal	5 days	smaller	No
III.	100 of 1001 cut.	equal	6 days	smaller	No
IV.	100 of 1001 cut.	equal	7 days	smaller	No
V.	100 of 1001 cut.	equal	8 days	smaller	No
VI.	100 of 1001 cut.	equal	9 days	smaller	No
VII.	100 of 1001 cut.	equal	10 days	smaller	No
VIII.	100 of 1001 cut.	equal	11 days	smaller	No
IX.	100 of 1001 cut.	equal	12 days	smaller	No
X.	100 of 1001 cut.	equal	13 days	smaller	No
XI.	100 of 1001 cut.	equal	14 days	smaller	No
XII.	100 of 1001 cut.	equal	15 days	smaller	No
XIII.	100 of 1001 cut.	equal	16 days	smaller	No
XIV.	100 of 1001 cut.	equal	17 days	smaller	No
XV.	100 of 1001 cut.	equal	18 days	smaller	No
XVI.	100 of 1001 cut.	equal	19 days	smaller	No
XVII.	100 of 1001 cut.	equal	20 days	smaller	No
XVIII.	100 of 1001 cut.	equal	21 days	smaller	No
XIX.	100 of 1001 cut.	equal	22 days	smaller	No
XX.	100 of 1001 cut.	equal	23 days	smaller	No
XXI.	100 of 1001 cut.	equal	24 days	smaller	No
XXII.	100 of 1001 cut.	equal	25 days	smaller	No
XXIII.	100 of 1001 cut.	equal	26 days	smaller	No
XXIV.	100 of 1001 cut.	equal	27 days	smaller	No
XXV.	100 of 1001 cut.	equal	28 days	smaller	No
XXVI.	100 of 1001 cut.	equal	29 days	smaller	No
XXVII.	100 of 1001 cut.	equal	30 days	smaller	No
XXVIII.	100 of 1001 cut.	equal	31 days	smaller	No
XXIX.	100 of 1001 cut.	equal	32 days	smaller	No
XXX.	100 of 1001 cut.	equal	33 days	smaller	No
XXXI.	100 of 1001 cut.	equal	34 days	smaller	No
XXXII.	100 of 1001 cut.	equal	35 days	smaller	No
XXXIII.	100 of 1001 cut.	equal	36 days	smaller	No
XXXIV.	100 of 1001 cut.	equal	37 days	smaller	No
XXXV.	100 of 1001 cut.	equal	38 days	smaller	No
XXXVI.	100 of 1001 cut.	equal	39 days	smaller	No
XXXVII.	100 of 1001 cut.	equal	40 days	smaller	No
XXXVIII.	100 of 1001 cut.	equal	41 days	smaller	No
XXXIX.	100 of 1001 cut.	equal	42 days	smaller	No
XL.	100 of 1001 cut.	equal	43 days	smaller	No
XLI.	100 of 1001 cut.	equal	44 days	smaller	No
XLII.	100 of 1001 cut.	equal	45 days	smaller	No
XLIII.	100 of 1001 cut.	equal	46 days	smaller	No
XLIV.	100 of 1001 cut.	equal	47 days	smaller	No
XLV.	100 of 1001 cut.	equal	48 days	smaller	No
XLVI.	100 of 1001 cut.	equal	49 days	smaller	No
XLVII.	100 of 1001 cut.	equal	50 days	smaller	No
XLVIII.	100 of 1001 cut.	equal	51 days	smaller	No
XLIX.	100 of 1001 cut.	equal	52 days	smaller	No
L.	100 of 1001 cut.	equal	53 days	smaller	No
LI.	100 of 1001 cut.	equal	54 days	smaller	No
LII.	100 of 1001 cut.	equal	55 days	smaller	No
LIII.	100 of 1001 cut.	equal	56 days	smaller	No
LIV.	100 of 1001 cut.	equal	57 days	smaller	No
LVI.	100 of 1001 cut.	equal	58 days	smaller	No
LVI.	100 of 1001 cut.	equal	59 days	smaller	No
LVI.	100 of 1001 cut.	equal	60 days	smaller	No
LVI.	100 of 1001 cut.	equal	61 days	smaller	No
LVI.	100 of 1001 cut.	equal	62 days	smaller	No
LVI.	100 of 1001 cut.	equal	63 days	smaller	No
LVI.	100 of 1001 cut.	equal	64 days	smaller	No
LVI.	100 of 1001 cut.	equal	65 days	smaller	No
LVI.	100 of 1001 cut.	equal	66 days	smaller	No
LVI.	100 of 1001 cut.	equal	67 days	smaller	No
LVI.	100 of 1001 cut.	equal	68 days	smaller	No
LVI.	100 of 1001 cut.	equal	69 days	smaller	No
LVI.	100 of 1001 cut.	equal	70 days	smaller	No
LVI.	100 of 1001 cut.	equal	71 days	smaller	No
LVI.	100 of 1001 cut.	equal	72 days	smaller	No
LVI.	100 of 1001 cut.	equal	73 days	smaller	No
LVI.	100 of 1001 cut.	equal	74 days	smaller	No
LVI.	100 of 1001 cut.	equal	75 days	smaller	No
LVI.	100 of 1001 cut.	equal	76 days	smaller	No
LVI.	100 of 1001 cut.	equal	77 days	smaller	No
LVI.	100 of 1001 cut.	equal	78 days	smaller	No
LVI.	100 of 1001 cut.	equal	79 days	smaller	No
LVI.	100 of 1001 cut.	equal	80 days	smaller	No
LVI.	100 of 1001 cut.	equal	81 days	smaller	No
LVI.	100 of 1001 cut.	equal	82 days	smaller	No
LVI.	100 of 1001 cut.	equal	83 days	smaller	No
LVI.	100 of 1001 cut.	equal	84 days	smaller	No
LVI.	100 of 1001 cut.	equal	85 days	smaller	No
LVI.	100 of 1001 cut.	equal	86 days	smaller	No
LVI.	100 of 1001 cut.	equal	87 days	smaller	No
LVI.	100 of 1001 cut.	equal	88 days	smaller	No
LVI.	100 of 1001 cut.	equal	89 days	smaller	No
LVI.	100 of 1001 cut.	equal	90 days	smaller	No
LVI.	100 of 1001 cut.	equal	91 days	smaller	No
LVI.	100 of 1001 cut.	equal	92 days	smaller	No
LVI.	100 of 1001 cut.	equal	93 days	smaller	No
LVI.	100 of 1001 cut.	equal	94 days	smaller	No
LVI.	100 of 1001 cut.	equal	95 days	smaller	No
LVI.	100 of 1001 cut.	equal	96 days	smaller	No
LVI.	100 of 1001 cut.	equal	97 days	smaller	No
LVI.	100 of 1001 cut.	equal	98 days	smaller	No
LVI.	100 of 1001 cut.	equal	99 days	smaller	No
LVI.	100 of 1001 cut.	equal	100 days	smaller	No

Complex explanations

It is not difficult to find attempts at written explanation that fail to communicate because of unnecessarily complex language (§63). An important application of typographical research involves presenting readers with alternative typographic versions of the same message, to see whether their performance is helped or hindered. Some versions, it seems, are much easier to read and understand.

However, there is no

such thing as a 'best' way of displaying information typographically. The background and experience of the reader, as well as the subject matter and the circumstances of use, have also to be taken into account. This was shown by a study that looked at various ways of presenting the complex information that might be put out by a space-age travel agency (a). Someone who has to sort out this situation for the first time will find it helpful

to have the information set out as a logical tree (b), because the format helps the reader to distinguish between relevant and irrelevant factors. On the other hand, an experienced person, familiar with the various alternatives, could find this format too unwieldy, and might prefer the more compact, tabular presentation (c). A further alternative is given (d). (After P. Wright, 1977.)

(a)

When time is limited, travel by Rocket, unless cost is also limited, in which case go by Space Ship. When only cost is limited an Astrobus should be used for journeys of less than 10 orbs, and a Satellite for longer journeys. Cosmocars are recommended, when there are no constraints on time or cost, unless the distance to be travelled exceeds 10 orbs. For journeys longer than 10 orbs, when time and cost are not important, journeys should be made by Super Star.

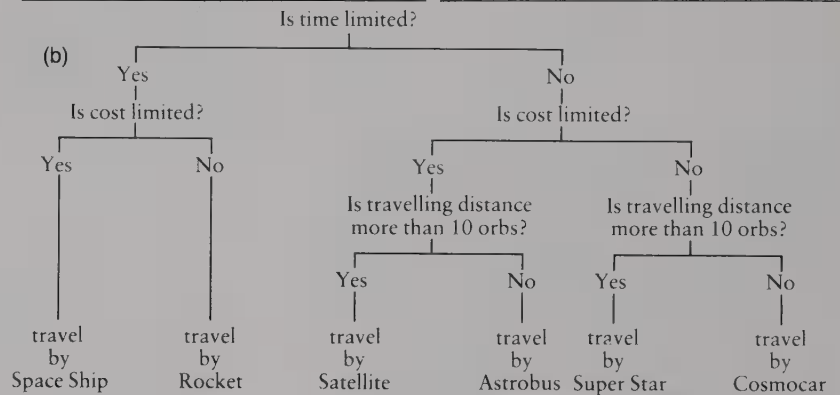
(d)

Where only time is limited
travel by rocket.

Where only cost is limited
travel by satellite if journey more than 10 orbs.
travel by astrobus if journey less than 10 orbs.

Where both time and cost are limited
travel by space ship.

Where time and cost are not limited
travel by super star if journey more than 10 orbs.
travel by cosmo-car if journey less than 10 orbs



(c)

	If journey less than 10 orbs	If journey more than 10 orbs
	travel by Rocket	travel by Rocket
Where only time is limited		
Where only cost is limited	travel by Astrobus	travel by Satellite
Where time and cost are not limited	travel by Cosmo-car	travel by Super Star
Where both time and cost are limited	travel by Space Ship	travel by Space Ship

Printing

There are two main dimensions to printing: the use of a device to make copies of an image, and the availability of movable type. The first of these is known to have been used in China from at least around the 7th century AD: the earliest known book, *The Diamond Sutra*, was printed using inked wooden blocks, in 868. The second dimension emerged during the 11th century, when movable blocks, carved with individual characters, came to be used. By the beginning of the 15th century, in Korea, the process had developed to the extent that printers were manufacturing bronze sets of type containing 100,000 pieces. But none of these discoveries became known in the West, and they had no influence on the subsequent history of printing.

In Europe, the main step forward came in the mid-15th century, with the invention in Germany of movable metal type in association with the hand-operated printing press – developments that are generally credited to Johannes Gutenberg (1390s–1438). Metal type was set by hand until the introduction of various systems of mechanized typesetting in the 19th century. The linotype machine was introduced towards the end of the century, and became standard in newspaper offices. Techniques of photocomposition became a commercial reality in the 1950s. The latest development, computerized typesetting, has been in use since the late 1960s.



William Caxton (c. 1422–1491) Caxton, the first printer in England, is seen presenting the Duchess of Burgundy with a copy of his first book, the *Recuyell of the Historyes of Troye* (1475). By the time of his death, he had published around 100 items, including Chaucer's *Canterbury Tales* and Malory's *Morte Darthur*.



...et volentibus est: et de his omnibus: et de
omnibus quibusque quod movetur in terra. Et cre-
avit deus hominem ad imaginem et simi-
litudinem suam: ad imaginem dei cre-
avit illum masculum et feminam creavit eos.
Benedixit illis deus: et ait. Crescite
et multiplicamini et replete terram: et
habite eam: et dominamini pisces
maris: et volentibus est: et universis
animalibus que moventur super terram.
Dixitque deus. Ecce dedi vobis omni-
herbam afferentem sementem super terram:
et universa ligna que habet fructum
ferunt generis sui: ut sint vobis in esca-
: et edistis animabus vestris: omnibus volenti-
bus est: et universis que moventur in terra: et
quibus est anima vivens: ut habeat ad
vivendum. Et factum est ita. Viditque deus
omnia que fecerat: et erat valde bona.

Gutenberg's printing press

In fact, we do not know what Gutenberg's original printing press looked like. This imaginative reconstruction is located in the Gutenberg Museum, Mainz.

Gutenberg's 42-line Bible, set in Gothic type, was completed in 1456. The text is St Jerome's Latin version. It is as close as possible to manuscript style, with illuminations added by hand. There are no page numbers, title page, or other identifying marks of its printing provenance. Title pages were not common until the end of the 15th century.

Typing

The idea for a typewriter has been known since the 18th century, but the prototype of modern machines was not constructed until 1867 (by the American inventor, Christopher Latham Sholes (1819–90)).

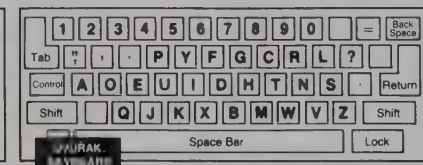
Typewriters have the advantage over everyday handwriting, in terms of clarity and speed, but they lack the range of typographic contrasts available in printing (e.g. variations of type size and shape, justified setting (p. 183), or the provision of many special symbols). However, modern word processors and electronic typewriters have overcome some of these disadvantages, offering a range of typographical options.

The standard QWERTYUIOP keyboard arrangement dates from the first machines. Its design has attracted generations of criticism, on ergonomic grounds. Although most typists are right-handed, this keyboard makes the left hand do 56% of the work. Of all movements for successive letters, 48% use only one hand instead of two – most noticeable when typing such words as *addressed*. Finger dex-

terity is not linked to letter frequency – for example, the two strongest fingers of the right hand are used for two of the least frequent letters, *j* and *k*.

Why this arrangement was chosen is not clear. Some letter separations are motivated by the need to avoid key jamming (e.g. *q* and *u*). But there is no simple principle. The second line has a largely alphabetical arrangement. The top line, according to one story, contains the letters of the word *typewriter*, so that salesmen could find them easily when demonstrating early machines!

As a result, many alternative keyboards have been designed, to try to improve speed and efficiency. Most are based on statistical counts of letter frequency. But all attempts to reform the keyboard have failed because of the vast cost of machine replacement and typist retraining. The old layout is now standard in computer and word processor keyboards, and seems likely to remain so.



Electronic media

The advent of advanced technology in the 1970s has led to dramatic developments in the field of information services and design. It is now possible to transmit graphic data from a central source to a TV screen – a system known as *teletext* (or *teletex*). This approach is known primarily through its use by the broadcasting services, where it deals with such topics as news, weather, and sports results. In Britain, the BBC service (begun in 1974) is known as *Ceefax*, and that of the Independent Broadcasting Authority as *Oracle*.

Teletext systems are currently limited to a few hundred pages, and the viewer cannot as yet ‘talk back’. By contrast, the service known as *viewdata* is interactive. In this approach, computer-stored information is sent through the telephone system, but viewers are allowed to return data to the computer, thus permitting a wide range of services, such as shopping and travel booking from home. In Britain, the trade name of this service, started by British Telecom in 1979, is *Prestel*.

GRAPHIC TRANSLATABILITY

The typographic implications of these developments are far reaching. Modern printing systems are extremely flexible in their ability to handle and display text. To what extent can this flexibility be maintained in the graphic displays produced by the electronic media, given the current limitations of the technology? This problem has been identified as one of ‘graphic translatability’ – the conversion of graphic expression from a medium with one

range of resources into another in which the range is different.

Many of the graphic displays and character sets, especially on the cheaper word processors and computer printers, provide a very limited range of characters. However, technological developments have been so rapid that little study has been devoted to the way these constraints affect our ability to communicate effectively. There are several features of written language data that it is difficult or impossible to display on a screen at present. The size of the screen, for example, limits the amount that can be displayed in a single line, usually to 40 or 80 characters. There are therefore immediate design problems for anyone wishing to transmit tables of data where the rows are of greater width.

There are many other problems of ‘translation’. How can one compensate for the absence of bold-face or italic characters (§31), which are such a routine feature of modern printed language (in distinguishing the different kinds of information in a printed bibliography, for example)? How should such notions as emphasis be conveyed – through underlining, capitalization, spacing, flashing lights, colour? And if colour is available, how might it be best used in graphic communication (for example, in highlighting the rows or columns of tabular matter)? Above all, what is the communicative potential of moving graphic symbols on the screen – a dimension not available to other kinds of written language? There are many such questions, each of which requires careful research if satisfactory answers are to be found.

Graphic translatability

A simple example of the problem of graphic translatability, using a standard format for identifying the various levels of biological classification. How can the typeface contrasts that identify these levels be presented on a video display unit, given the graphic restrictions of that medium?

Subkingdom VERTEBRATA, or Vertebrates.
Class Mammalia, or Mammals.
Order RODENTIA, or Rodents.
Family MURIDÆ, or Rats and Voles.
Genus Mus, Rats and Mice.
Genus Microtus, Voles.

Prestel

The ordinary set of 96 characters available to Prestel users. It can be compared with the basic set of 275 characters used in printing (p. 190).

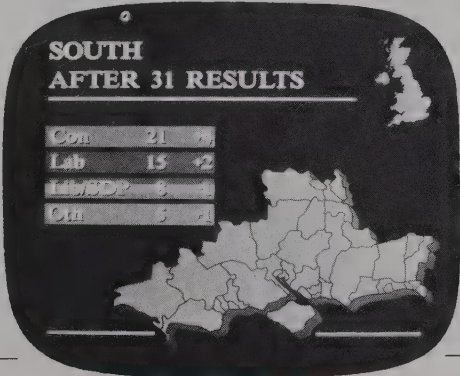
PRESTEL 'GO' CHARACTER SET	
Roman small letters a-z	26
Roman capitals A-Z	27
Numerals 1234567890	10
Fractions 1/2 3/4	3
Punctuation , . : ' " () - - / ? !	13
Commercial signs £ \$ % @	5
Others = + * < > + + +	11
Space	1
TOTAL 96	

Dot-matrix characters

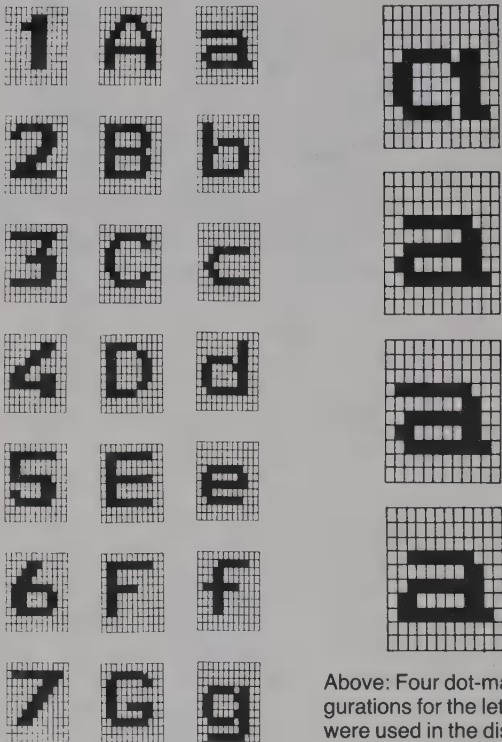
TV receivers generally display graphic characters using an electronically produced array of dots within a matrix of tiny squares. These ‘dot-matrix’ characters can be seen in videotex, electronic games, and personal computing. However, the limitations of the equipment have meant that the graphic characters are often represented in a fairly coarse manner – a matrix of 6 (horizontal) × 10 (vertical) elements can produce only a schematic approximation of printed type. Legibility difficulties are thus common, especially when there is poor contrast with a picture background (as in many film sub-titles), or when characters are read from a distance (as with teletext, which tends to be watched at the same distance as normal TV programmes).

The array of symbols (right) shows one way of im-

proving this situation. It is the result of a 1983 study undertaken at the Institute for Perception Research in Eindhoven (Netherlands) using matrices of 12 × 10 elements. Several versions of each character were designed and their legibility tested in recognition experiments. The designers claim that the larger matrix produces characters that are more readily identifiable, discriminable, and acceptable. (From F. L. van Nes, 1983.)



Methods of filtering have also been devised which eliminate the problem of vertical ‘stepping’ (the effect which produces jagged edges to curved characters): different tones of grey are used to achieve the impression of curves (‘grey scaling’). This method (below) was first seen in public during the BBC’s General Election programme, in June 1983. (From N. E. Tanton, 1984.)



Above: Four dot-matrix configurations for the letter a that were used in the discrimination experiments.

33 Graphology

Graphology, in its linguistic sense, is the study of the systems of symbols that have been devised to communicate language in written form. It must be clearly distinguished from the psychological sense of the term, which refers to the study of handwriting as a guide to character and personality (p. 189). It also needs to be seen in contrast with *graphetics*, the study of the physical properties of manuscript, print, and other forms of graphic expression (§32). Linguistic graphology is an abstract study (as is its counterpart in the study of speech, *phonology*, §28), dealing with the kind of elements used in a language's writing system, the number of elements there are and how they interrelate, and the rules governing the way these elements combine in written texts.

GRAPHEMES

The term 'graphology' was coined on analogy with 'phonology', and several of the phonological notions used in the study of speech have also been applied to the study of written language. In particular, the idea of a *grapheme* has been developed, analogous to *phoneme* (p. 160). Graphemes are the smallest units in a writing system capable of causing a contrast in meaning. In the English alphabet, the switch from *cat* to *bat* introduces a meaning change; therefore, *c* and *b* represent different graphemes. It is usual to transcribe graphemes within angle brackets, to show their special status: ⟨c⟩, ⟨b⟩. The main graphemes of English are the 26 units that make up the alphabet. Other graphemes include the various marks of punctuation: ⟨.⟩, ⟨;⟩, etc., and such special symbols as ⟨@⟩, ⟨&⟩, and ⟨£⟩.

Graphemes are abstract units, which may adopt a variety of forms. The grapheme ⟨a⟩, for example, may appear as *A*, *a*, *ɑ*, or in other forms, depending on the handwriting style or typeface chosen. Each of these possible forms is known as a *graph* (cf. *phone* in speech). There is a vast amount of physical variation in the shapes of graphs that does not affect the underlying identity of the grapheme. Whether a word is printed *cat*, *CAT*, *cat*, or even *caT* or *cAt*, we still recognize it as a sequence of three graphemes ⟨c⟩, ⟨a⟩, ⟨t⟩.

Variants and features

When graphs are analysed as variants of a grapheme, they are known as *allographs* (analogous to *allophones*, p. 160). It is sometimes possible to work out the rules governing the use of particular allographs: in English, for example, we find 'capital letters' at the beginning of a sentence or proper name and in a few other contexts; otherwise, 'small letters' are used. However, the choice of most allo-

graphs seems to be dictated by factors that are little understood, such as fashion, prominence, elegance, or personality (§32).

Graphology also makes use of the notion of *distinctive features* (p. 162). A grapheme is perceived as a single configuration, or *gestalt*, and not as a set of lines and dots; but it is nonetheless possible to analyse the shapes into their components, to determine what the salient parameters of contrast are – curve vs straight line, presence vs absence of dot, left-facing vs right-facing curve, and so on. In French, accents are contrastive (as in ⟨é⟩, ⟨ê⟩, and ⟨è⟩). In Chinese and Japanese, the contrasts are carried by the strokes that constitute the characters. However, no general typology of distinctive graphological features has yet been established.

Functional differences

The analogy between graphology and phonology is important, but there is no identity of function (§31). Graphemes may signal phonemes, but they may also signal words or word parts (as with the numerals, where each grapheme ⟨1⟩, ⟨2⟩, etc. is spoken as a word that varies from language to language). Graphemes of punctuation show links and boundaries between units of grammar that may have nothing to do with the sound of speech (notably, the use of the hyphen (p. 205)). And several of the morphological relationships between words (p. 90) are conveyed by graphology more clearly than phonology: for example, the link between *sign* and *signature* is closer in writing than in speech (where the *g* is pronounced in the second word, but not in the first), and the same applies to such sets as *telegraph*/*telegraphy*/*telegraphic*, where there are several stress and vowel changes in speech, but none in writing.

Language differences

Languages sometimes differ in their choice of allographs to mark linguistic units.

Word classes

There are several differences between the personal pronouns:

English *I, you*.
German *ich* (I), *Sie* (you).
French *je* (I), *vous* (you).
Spanish *yo* (I), *Vd.* (=usted),
Vds. (=ustedes) (singular and plural forms of 'you').

Nouns in German all begin with a capital letter:

English *the lamp, a hammer*
German *die Lampe, ein Hammer*

Days and months

English *Monday, Tuesday...*

French *lundi, mardi...*

Spanish *lunes, martes...*

English *January, February...*

German *Januar, Februar...*

Spanish *enero, febrero...*

French *janvier, février...*

Language names

English *I speak Portuguese*

Portuguese *Falo português.*

Questions and exclamations

In Spanish, question marks and exclamation marks are used both at the beginning and at the end of a sentence, the first one being inverted:

¿Como se llama este pueblo? 'What is this village called?'

¡Qué día! 'What a day!'

SPECIAL WRITING SYSTEMS

Graphological studies have a functional as well as a formal dimension. Within a language, several kinds of system may be invented in order to perform a specialized set of functions. One classification recognizes five types, differentiated according to the purpose for which they were devised (after J. Mountford, 1973):

Orthography The writing system in standard, everyday use, which consequently attracts most study.

Stenography A system that enables writing to take place at speed, as in the many systems of shorthand (p. 206).

Cryptography A system devised to keep a written message secret (p. 58).

Paedography A system devised to help children to read, as in such alphabets as i.t.a. (p. 217).

Technography A system that enables a specialized field to perform its function, such as phonetic transcription (p. 158), chemical notation, cartography, or computer coding.

Graphology at breakfast

A comparative study of writing systems usually deals with different languages; but it is important to remember that different systems may coexist within a single language. In Yugoslavia, Roman and Cyrillic scripts are both used for Serbo-Croat. In Chinese, there is now the use of the romanized alphabet *pin-yin* alongside the use of characters (p. 312). In Japan, however, four writing systems are in regular daily use (five, if arabic numbers are counted as a separate system), as can be seen from the back of this 1985 cornflakes packet:

- The English alphabet is noticeable in the brand names, the vitamin letters, and the gift advertisement (advertising is a variety in which English script and loan words are very common, p. 390).

- The more complex-looking characters are *kanji* logograms (p. 200), derived from Chinese. For example, the large characters at the top right of the illustration read respectively (from top to bottom): 'morning' + 'food' + 'newspaper' – in other words, 'breakfast newspaper'. The same two 'breakfast' graphemes occur at the beginning of the headline (reading from left to right): the typeface differences are worth noting.

- Several graphemes from the rounded *hiragana* syllabic script can be seen on the page. They are used for various particles that express grammatical distinctions.

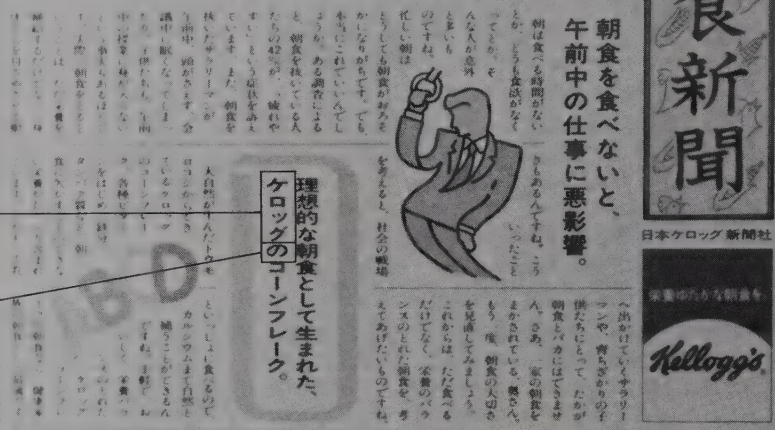
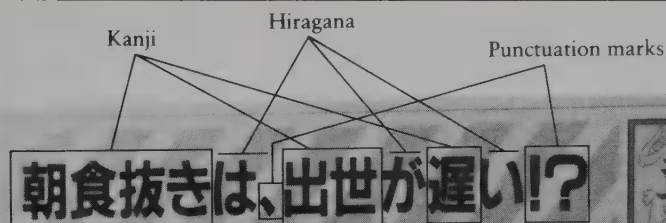
There are three hiragana symbols in the headline, as shown.

- Loan words (from languages other than Chinese) are expressed in the angular *katakana* syllabic script (p. 201). Immediately below 'Big Chance', for example, we find a syllable-by-syllable 'translation' of the English 'Stoneware Morning Set',

ke
ro
g
gu
no
(Kellogg's)

Stoneware
Morning Set

which comes out as (allowing for long vowels and consonants) *su-to-o-n-u-e-a . mo-o-ni-n-ga-se-t-to*. The translation of *Kellogg's* is itself interesting: *Kellogg* is a loan word, so it is in *katakana* (*ke-ro-g-gu*), but the 's' is a particle, so it is in *hiragana* (the symbol *no* expressing possession).



ケロッグ オリジナル
モーニングセット
シリアルボウル2個+
マグカップ2個
電子レンジにも使える
丈夫なストーンウェアです。

応募方法 下の応募マークを切りとって、官製ハガキにはがれないように貼るか、又は、封筒に入れて応募下さい。(一連のハガキ又は封筒で何回でも応募できます。) ①住所 ②氏名 ③年齢 ④電話番号 ⑤性別は必ずお記入ください。
応募の宛先 〒104-91 東京都中央区京橋郵便局私書箱125号
ケロッグ・モーニングセットプレゼント係
賞品期間 昭和60年11月30日まで。(当日消印有効)
抽選・発表 第1回抽選は6月30日、以降毎月、月末締め切り、抽選を行います。尚、当選者の発表はプレゼントの発送をもってかえさせていただきます。



The Somali problem

One of the stated aims of the 1969 revolution in Somalia was to solve the problem of which writing system to use for the country's main language, Somali.

For several years, the question had been highly controversial, with the merits of Latin, Arabic, and Osmanian scripts all being advocated. The last of these was named after its early 20th-century inventor, Osman Yusuf, and shows an interesting mixture of Arabic, Italian, and

Ethiopic elements. It is drawn (right) with accompanying Latin equivalents (from D. Diringier, 1968).

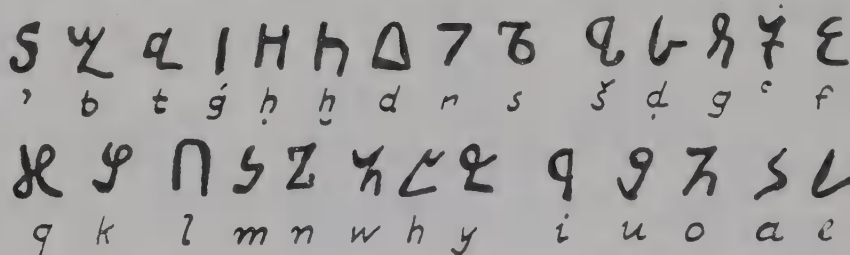
The role of Latin script, mainly deriving from Italian influence in the area, is evident in the way vowels as well as consonants are symbolized (unlike in Arabic), and also in the left-to-right direction of the writing. Some letter shapes are taken over from the Latin alphabet, though they are not given the same phonetic values;

others are arbitrary inventions, displaying the general influence of Ethiopic scripts. Arabic influence is found in the order of the letters, and

in the ways of representing long vowels (not shown here).

The Osmanian alphabet was not successful. In Janu-

ary 1973 a Latin script was finally adopted, and given official status.



The history of writing

Myths and legends of the supernatural shroud the early history of writing, as they do of speech (§§3, 49). Archaeological discoveries provide enthralling pinholes of illumination along with frustrating problems of interpretation. An account of the early history of writing has gradually emerged, but it contains many gaps and ambiguities.

The matter is complicated by the fact that, in this early period, it is by no means easy to decide whether a piece of graphic expression should be counted as an artistic image or as a symbol of primitive writing. In principle, the difference is clear: the former convey personal and subjective meanings, and do not combine into a system of recurring symbols with accepted values; by contrast, the latter is conventional and institutionalized, capable of being understood in the same way by all who are using the system. When the product is a rock carving or painting of an animal, there is little doubt that its purpose is non-linguistic (though whether it has an aesthetic, religious, or other function is debatable). However, when the product is a series of apparent geometrical shapes or tiny characters, the distinction between art and writing becomes less obvious. The languages may even reflect the problem: in early Greek, and in Egyptian, the same word was used for both 'write' and 'draw'.

One point, at least, is fairly clear. It now seems most likely that writing systems evolved independently of each other at different times in several parts of the world – in Mesopotamia, China, Meso-America, and elsewhere. There is nothing to support a theory of common origin. There are of course similarities between these systems, but these are not altogether surprising, given the limited ways of devising a system of written communication.

Precursors

The earliest examples of a conventional use of written symbols are on clay tablets discovered in various parts of the Middle East and south-east Europe from around 3500 BC. Large numbers of tablets made by the Sumerians have been found in sites around the Rivers Tigris and Euphrates in present-day Iraq and Iran. For example, on tablets from the city-state of Uruk, about 1,500 symbols have been listed, most of them abstract in character. They seem to have recorded such matters as land sales, business transactions, and tax accounts.

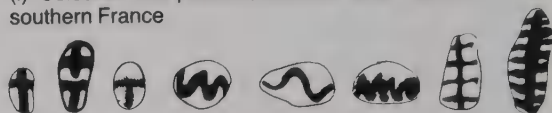
Several correspondences have been noted between the symbols used on these tablets and the clay tokens that were used throughout the area for several thousand years before the advent of writing. These tokens, of several distinctive shapes, seem to have been used as a system of accounting from at least the 9th millennium BC. A selection of tokens from Susa, dating from the end of the 4th millennium BC, is shown right. The adjacent diagram

shows the relationship between some of the tokens and the incised characters that appear in the earliest Sumerian tablet inscriptions (not all of which can be interpreted). The similarity between the three-dimensional tokens and the two-dimensional inscriptions is striking. (After D. Schmandt-Beserat, 1978.)

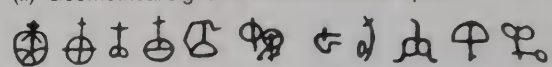
Primitive picture-writing

Exploration has revealed many primitive pictures and signs that resemble writing, but that lack the systematization we expect of a writing system. Human figures, geometric signs, and other shapes have been found carved or painted above and below ground on rocks ('petroglyphs'), buildings, tombs, pottery, and other objects in many parts of the world. Their significance is generally unknown. (From D. Düringer, 1968.)

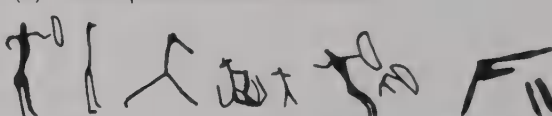
(i) Coloured river pebbles, from the Azilian culture of southern France



(ii) Geometrical signs on stones found in Spain



(iii) Various patterns found in California

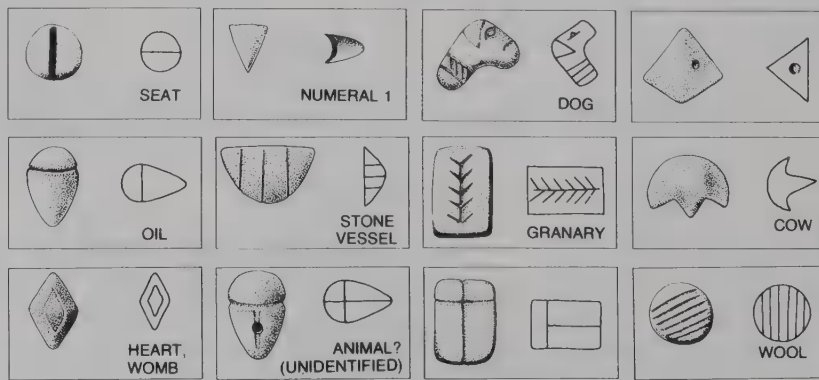


Clay tokens

These tokens from Susa, dating from around 3000

BC, appear in many different shapes. Some of the commonest shapes are here compared with the in-

cised characters in the earliest Sumerian inscriptions (only some of which have been interpreted).



Types of writing system

It is possible to talk about writing systems on the basis of such graphetic factors (§32) as the size, style, and configuration of the symbols, or the direction in which they are written; but this does not help us to understand what the graphemes are and how they are used. In principle, any of the systems to be described below could be written in almost any set of graphetic conventions. Sometimes, for example, several directions are used during the history of a language, as in early Greek, which at different periods was written right-to-left, left-to-right, and even using alternate directions (in *boustrophedon* writing, p. 185).

A more useful approach to writing systems is to classify them into cases that show a clear relationship between the symbols and sounds of the language (*phonological* systems) and those that do not (*non-phonological* systems). The vast majority of present-day systems are phonological; the non-phonological systems are mainly found in the early history of writing, which is where we begin.

NON-PHONOLOGICAL SYSTEMS PICTOGRAPHIC

In this system, the graphemes (often referred to as *pictographs* or *pictograms*) provide a recognizable picture of entities as they exist in the world. For example, a set of wavy lines might represent the sea or a river, and outlines of people and animals represent their living counterparts. There is no intention to draw the reality artistically or exactly, but the symbols must be sufficiently clear and simple to enable them to be immediately recognized and reproduced as occasion demands as part of a narrative.

To 'read' such a script, it is enough only to recognize the symbols, and the sequence may then be verbally described in a variety of ways, in whatever language one happens to speak. There is thus a great deal of possible ambiguity when it comes to reading sequences of pictograms, and many of these scripts have proved difficult or impossible to decipher. The problem can be illustrated with a modern pictogram, such as the road sign (right). Without knowing the context, the sign could be 'read' in all kinds of ways – someone has been/will be/is digging/clearing/stopping a landslide – or even (as was discovered in a competition to find the most absurd road-sign interpretation) struggling to put up an umbrella on a windy day! Modern drivers know the likely context, so ambiguity is uncommon. When we are studying 5,000-year-old pictograms, the likely context may not be known. The many undeciphered or partly-deciphered pictographic scripts of ancient Crete illustrate the size of the problem (cf. the Phaistos disc, p. 183).

Pictograms constitute the earliest system of writing and are found in many parts of the world where the remains of early people have been discovered.

They have been discovered in Egypt and Mesopotamia from around 3000 BC, and in China from around 1500 BC.

Pictographic symbols

Below: Some of the pictographic symbols used on seals and tablets in the early Minoan period in Crete (from D. Diringer,

1968). Over 100 symbols represent human figures, body parts, animals, and other everyday objects. Not everything is immediately

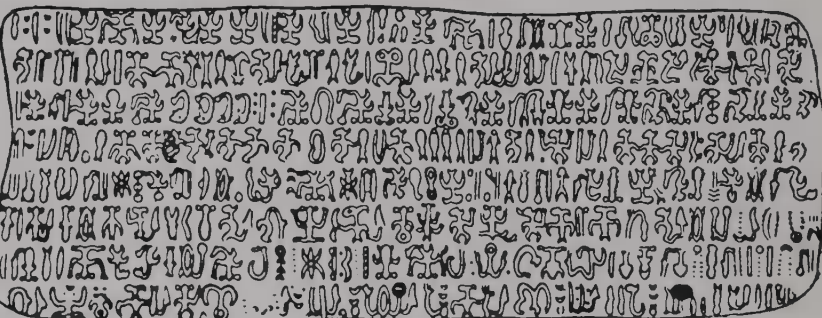
recognizable, showing that there has been some development towards an ideographic system.



Below: A drawing of one of the wooden tablets carved with symbols, found on Easter Island (from D. Diringer, 1968). The direction of writing alternates (*bous-*

trophedon, p. 185), with the alternate rows inverted: the reader has to turn the tablet upside down at the end of each line. The pictographic character of many symbols

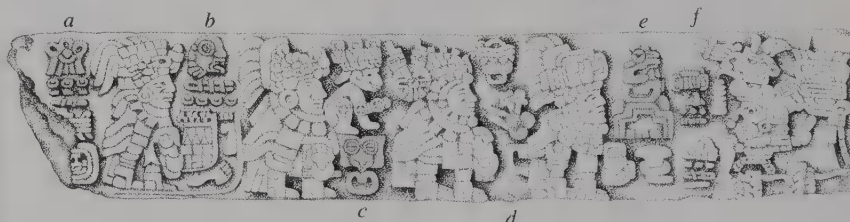
is clear (e.g. birds, fish), but others cannot be interpreted. The script as a whole has not been deciphered.



Below: Drawing of a Zapotec inscription from the old city of Monte Albán in south-western Mexico (from J. Marcus, 1980). Four visitors to the city are

being met by a Zapotec ruler. Their names (indicated by the shaded sections) are (a) '13 Knot', (b) '9 Monkey', (c) '1 Owl', and (d) 'Treble Scroll'. In front

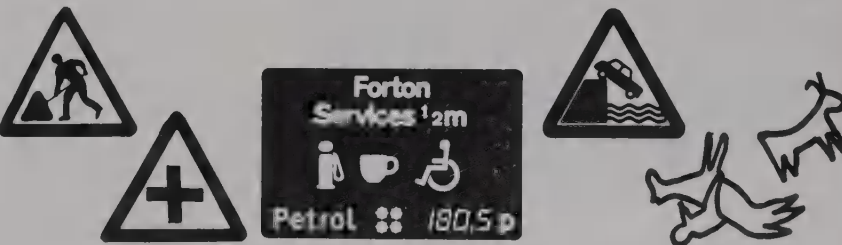
of the latter is a place name, (e) 'Hill of 1 Jaguar', and (f) the name of the Zapotec ruler, which is not fully decipherable.



Below: Some modern pictographic road signs, alongside an Indian rock drawing from New Mexico. The parallel between the

two cultures is instructive. In the one case, the road leads to water, and vehicles should take care; in the other, the rocky trail is

safe for the mountain goat, but not for the rider. The parallel would have been even closer, if the modern sign had contained a fish!



IDEOGRAPHIC

Ideographic writing is usually distinguished as a later development of pictographic. *Ideograms*, or *ideographs*, have an abstract or conventional meaning, no longer displaying a clear pictorial link with external reality. Two factors account for this. The shape of an ideogram may so alter that it is no longer recognizable as a pictorial representation of an object; and its original meaning may extend to include notions that lack any clear pictorial form. In early Sumerian writing, for example, the picture of a starry sky came to mean 'night', 'dark', or 'black'; a foot came to represent 'go', 'stand', and other such notions.

It is rare to find a 'pure' ideographic writing system – that is, one in which the symbols refer directly to notions or things. Most systems that have been called ideographic in fact contain linguistic elements. The symbols stand for words in the language, or parts of the symbols represent sounds. The Sumerian, Egyptian, Hittite, and other scripts of the early period were all mixtures of pictographic, ideographic, and linguistic elements.

CUNEIFORM









The cuneiform method of writing dates from the 4th millennium BC, and was used to express both non-phonological and phonological writing systems in several languages. The name derives from the Latin, meaning 'wedge-shaped', and refers to the technique used to make the symbols. A stylus was pressed into a tablet of soft clay to make a sequence of short straight strokes. In later periods, harder materials were used. The strokes are thickest at the top and to the left, reflecting the direction of writing: at first, symbols were written from top to bottom; later, they were turned onto their sides, and written from left to right.

The earliest cuneiform was a development of pictographic symbols. Subsequently, the script was used to write words and syllables, and to mark phonetic elements. It was used for over 3,000 years throughout the Near East by such cultures as the Sumerians, Babylonians, Assyrians, and Hittites, finally dying out as the Christian era approached. The latest cuneiform tablets date from the 1st century BC. The script could not be read until the 19th century, when several of the languages it represented were finally deciphered.





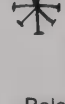
The columns right show a series of original pictograms, first vertically, then in the altered position used by later cuneiform. Two versions of cuneiform are shown – an illustration from the early period, and one from the later period, when simplified symbols were introduced by the Assyrians (after D. Diringer, 1968).

Early ideograms

Some Hittite ideograms, used in the 2nd millennium BC


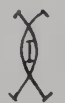
 ox
  stool
  city
  god
  king
  river
  speak
  great

(From D. Diringer, 1968.)

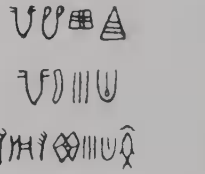
 Married love, with pillows for head and feet (a sign of wealth).
  Quarrel between husband and wife (a pillow is between them).
  A woman with six children, a husband, and a pillow.
  A man comes to a woman who has a husband and asks her to live with him.
  Three men seek the same married woman.




































































(From D. Diringer, 1968.)

Below: Ideograms from Nsibidi, a system discovered in southern Nigeria in 1904. Most of the signs express a range of marital situations and relationships, as in the following examples:

 Married love.
  Married love, with pillow.

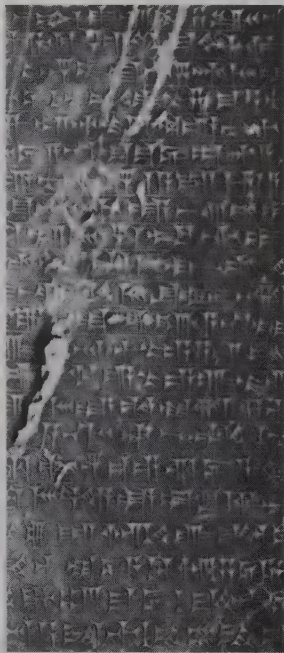
Below: Seal inscriptions from the Indus Valley, north-west India. The writing system has not been deciphered, but it is thought to contain a mixture of ideographic and phonetic graphemes, representing proper names. (From D. Diringer, 1968.)



				mountain
				head
				mouth
				to speak
				food
				to eat
				water
				in
				to drink
				to go
				to stand
				bird
				fish
				ox
				cow
				barley
				grain
				sun
				day

Today's ideograms

Modern signs are frequently ideographic, as with the diagonal lines used to express prohibition (e.g. no right turn). Signs such as 'no dogs allowed' and 'do not iron' mix pictograms and ideograms.



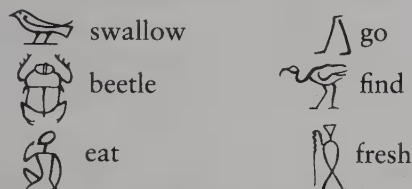
Part of the Black Obelisk of Shalmaneser III (858–824 BC), discovered at Nimrud. The monument is carved with scenes showing tribute bearers and Assyrian cuneiform texts.

EGYPTIAN HIEROGLYPHIC

In Egypt, a form of pictography developed around 3000 BC, which came to be called *hieroglyphic* (from the Greek 'sacred carving'), because of its prominent use in temples, tombs, and other special places. The term has also come to be used for scripts of a similar character from other cultures, such as the Hittite, Mayan, or Indus Valley; but the most fully developed system of hieroglyphic writing is undoubtedly the Egyptian. The system continued in use for three millennia, until it was finally replaced by the Coptic-based script of the early Christian era.

The units of the writing system are known as *hieroglyphs*. They tend to be written from right to left, with the symbols generally facing the beginning of a row; but vertical rows are also found, following the line of a building. The script gives the general impression of being pictorial, but in fact it contains three types of symbol that together represent words:

- Some symbols are used as ideograms, representing real-world entities or notions:

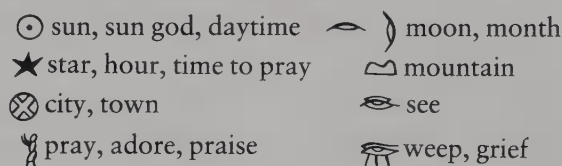


- Some symbols (*phonograms*) stand for one or more consonants, in much the same way as the *rebus* system is used in present-day children's games (p. 65). For example, in English we might use a picture of a bee followed by the letter (phono-

gram) *R* to represent the word *beer*, or followed by *K* to represent the word *beak*. In hieroglyphic, this convention was used to express two-consonant sequences as well as single consonants.



- Determinative** symbols are signs that have no phonetic value but are placed next to other symbols to tell the reader what kind of meaning a word has. Words that would otherwise appear to be identical could thus be differentiated. An analogy might again be drawn with a word game in English that could distinguish the two senses of the word *table* by adding a chair (for the item of furniture) and an eye (for the typographical arrangement). Egyptian symbols that were commonly used as determinatives included the following:



A combined example

The hieroglyph is composed of two elements: which is the ideographic symbol for 'wood', and which are the phonetic symbols for *h* and *t* respectively. Combined, these would represent the word *hiti*. However, *hiti* had two meanings: 'carve' and 'retreat'. These are therefore distinguished by the addition of a determinative: the addition of a knife symbol produces 'carve', and the addition of a pair of legs walking backwards produces 'retreat' (after H. Brunner, 1975).

Royal names

Two Egyptian royal names, in hieroglyphic, showing (a) the royal-divine names, (b) the personal names.

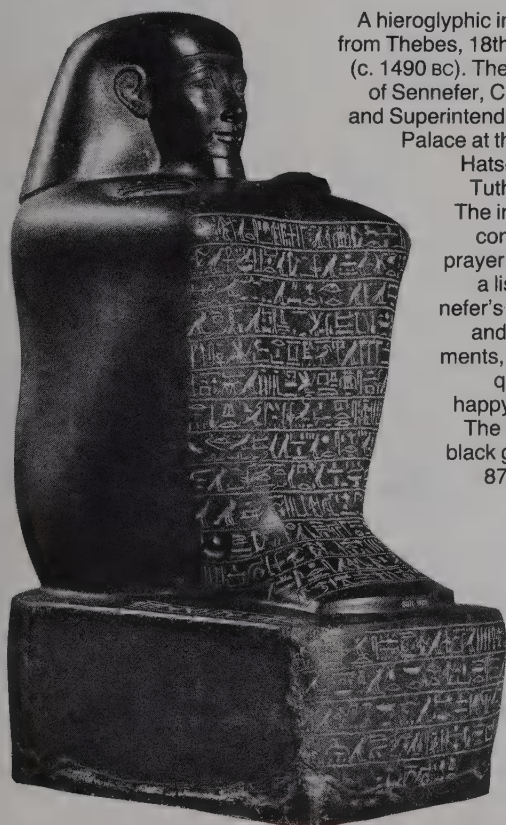
Amen-em-het I (reigned 1991–1962 BC)



Below: Alexander the Great (356–323 BC).



The names are surrounded by a ring, or *cartouche*, which was intended to protect the bearer of the name from harm. (From D. Diringer, 1968.)

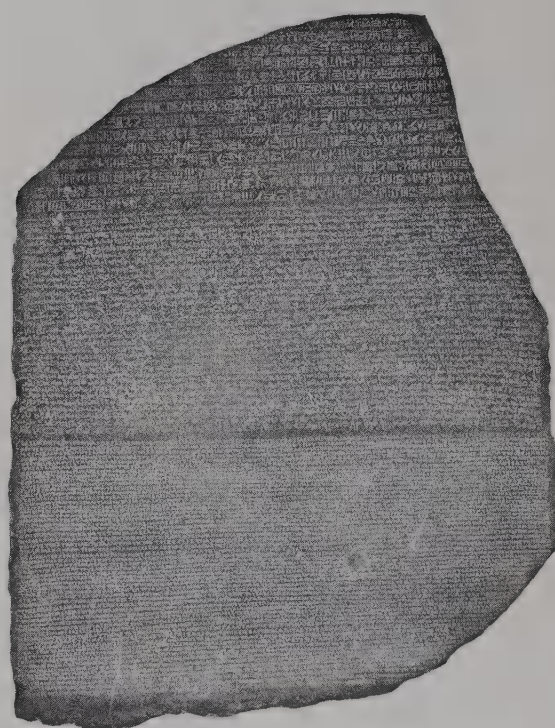


A hieroglyphic inscription from Thebes, 18th Dynasty (c. 1490 BC). The statue is of Sennefer, Chancellor and Superintendent of the Palace at the time of Hatshepsut or Tutmosis III. The inscription consists of a prayer to Osiris, a list of Sennefer's positions and achievements, and a request for a happy afterlife. The statue, of black granite, is 87 cm high.

The Rosetta stone

Egyptian hieroglyphic remained undeciphered until the 19th century. Members of Napoleon's Egyptian expedition of 1799 discovered a black basalt stone, measuring 114 × 72 cm, at Rashid (Rosetta). The stone was carved with three different scripts: hieroglyphic, the derived *demotic* script, used for everyday purposes, and Greek.

The Greek version could of course be translated, and this provided the key to the other texts. The stone commemorates the accession of Ptolemy V Epiphanes (205–180 BC). It thus contains several royal names, whose phonetic values could be related to those of the names in Greek. The text was finally published in 1822 by the French Egyptologist Jean-François Champollion (1790–1832). The Rosetta stone is now in the British Museum.



LOGOGRAPHIC

Logographic writing systems are those where the graphemes represent words. The best-known cases are Chinese, and its derivative script, Japanese *kanji* (pp. 195, 313). The symbols are variously referred to as *logographs*, *logograms*, or – in the case of oriental languages – *characters*. But there are two terminological complications. First, because Chinese writing derives from an ideographic script, with several pictographic elements, the characters are commonly referred to as ideographs. However, this term is really not appropriate, as the characters refer to linguistic units, and not directly to concepts or things. Secondly, the characters in fact often represent *parts* of words (morphemes, p. 90) as well as whole words, so that even the term 'logographic' is slightly misleading; but in the absence of a more appropriate term (such as 'morphographic'), it continues to be used.

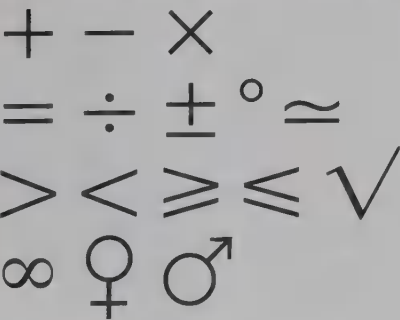
Several thousand graphemes are involved in a logographic system. The great Chinese dictionary of K'ang Hsi (1662–1722) contains nearly 50,000 characters, but most of these are archaic or highly specialized. In the modern language, basic literacy requires knowledge of some 2,000 characters. Similarly, in Japanese, 1,850 characters are prescribed by the Japanese Ministry of Education and adopted by law as those most essential for everyday use. Of these, 881 are taught during the six years of elementary school.

Most languages make use of some logograms: a selection of widely used graphemes is given below.

Right: Chinese and Japanese characters are classified on the basis of the number of strokes used to write them. The increasing order of graphic complexity can be seen in this list of 300 primary characters in Chinese, which may be used individually or as part of compound forms. (From D. Diringer, 1968.)

Modern logograms

These symbols are widely used in modern written languages. Their spoken equivalents, of course, vary from language to language. The most developed logographic systems are found in scientific notations, such as in logic and mathematics (p. 381).



f(z) = \int_{-1}^{1-\eta} e^{z\varphi(t)} dt + \int_{1-\eta}^1 e^{z\varphi(t)} dt = I_1 + I_2

Chinese characters

Traditionally, Chinese characters are divided into six types (*liu shu* 'six scripts').

■ *hsing sheng* Most characters are of this type, containing two elements. There is a semantic element, known as a 'radical' (similar to the 'determinatives' of hieroglyphic, p. 199). This is combined with a phonetic element, whose function is to remind the reader of how the word is to be pronounced.

For example, the word 'mother' *mā* is expressed by the semantic element 'woman' 女 followed by a phonetic indicator *mā* 馬. The word for 'scold' is also *mā* (with a different tone, p. 172), and this is expressed by the semantic element 'mouth' 口 (repeated) followed by the

same phonetic indicator. The meaning of the *ma* character when used alone ('horse') is disregarded.

女 馬 'mother' 罵 'scold'

■ *chih shih* These characters represent abstract ideas and are closest to ideograms, e.g.

Character	English
中	'middle'
大	'large'
小	'small'
一	'one'

■ *hui i* Compound characters in which the elements have a semantic connection, e.g. 'sun' + 'moon' = 'bright' 明 'woman' + 'woman' = 'quarrel' 女 女 'man' + 'man' + 'man' = 'crowd' 人 人 人

■ *chuan chu* Characters formed by modifying the shape or orientation of a character to produce a word of related meaning, e.g. the character for 'corpse' 尸 derives from that for 'man' 人.

■ *chia chieh* Characters that were borrowed from others of similar pronunciation, e.g. 萬 *wan* 'ten thousand' derives from the use of this character for *wan* 'scorpion'.

■ *hsiang hsing* A small group of characters that retain a close connection with original pictograms, e.g. the forms for (a) 'sun', 'day' (ri), (b) 'mountain' (*shān*) and (c) 'field' (*tián*).

	Ancient form	Modern form
(a)	☉	日
(b)	山	山
(c)	田	田

一 1	乚 31	九 61	子 91	斤 121	弗 151	缶 181	𠂔 211	亞 241	垂 271
丨 2	丶 32	乚 62	中 92	戶 122	冊 152	至 182	𠂔 212	金 242	琴 272
丶 3	刀 33	井 63	心 93	午 123	皿 153	辛 183	𠂔 213	來 243	旁 273
ノ 4	力 34	刀 64	止 94	牛 124	且 154	衣 184	谷 214	兔 244	寅 274
厂 5	勹 35	才 65	𠂔 95	令 125	目 155	交 185	豆 215	𠂔 245	魚 275
乙 6	乃 36	广 66	氏 96	不 126	目 156	亥 186	呂 216	𠂔 246	鳥 276
乚 7	又 37	弋 67	丑 97	木 127	巨 157	系 187	克 217	𠂔 247	鹿 277
乚 8	乂 38	凡 68	互 98	开 128	四 158	虫 188	臣 218	函 248	𠂔 278
乚 9	乂 39	凡 69	云 99	水 129	只 159	束 189	囧 219	留 249	率 279
く 10	冂 40	凡 70	无 100	火 130	民 160	未 190	西 220	果 250	离 280
冂 11	乚 41	乚 71	井 101	犬 131	凸 161	走 191	卵 221	𠂔 251	𠂔 281
二 12	乚 42	口 72	丹 102	爪 132	出 162	舟 192	𠂔 222	𠂔 252	壺 282
上 13	丁 43	口 73	𠂔 103	夭 133	丙 163	自 193	角 223	𠂔 253	象 283
人 14	𠂔 44	回 74	亢 104	壬 134	𠂔 164	自 194	囧 224	𠂔 254	𠂔 284
人 15	𠂔 45	尸 75	六 105	凶 135	禾 165	耳 195	𠂔 225	𠂔 255	𠂔 285
人 16	三 46	己 76	文 106	日 136	禾 166	臣 196	𠂔 226	面 256	𠂔 286
人 17	𠂔 47	巳 77	方 107	日 137	𠂔 167	𠂔 197	𠂔 227	革 257	𠂔 287
人 18	𠂔 48	弓 78	𠂔 108	月 138	𠂔 168	而 198	𠂔 228	肩 258	𠂔 288
人 19	𠂔 49	𠂔 79	𠂔 109	巴 139	瓜 169	西 199	𠂔 229	𠂔 259	𠂔 289
九 20	个 50	𠂔 80	欠 110	玉 140	戊 170	西 200	𠂔 230	𠂔 260	𠂔 290
九 21	△ 51	小 81	气 111	主 141	矢 171	西 201	𠂔 231	𠂔 261	𠂔 291
十 22	勺 52	𠂔 82	毛 112	玄 142	冬 172	𠂔 202	𠂔 232	𠂔 262	𠂔 292
七 23	久 53	巾 83	手 113	白 143	疋 173	肉 203	𠂔 233	𠂔 263	𠂔 293
冂 24	久 54	𠂔 84	𠂔 114	𠂔 144	皮 174	𠂔 204	𠂔 234	𠂔 264	𠂔 294
冂 25	𠂔 55	山 85	𠂔 115	瓦 145	穴 175	𠂔 205	𠂔 235	𠂔 265	𠂔 295
冂 26	夕 56	𠂔 86	斗 116	田 146	它 176	𠂔 206	𠂔 236	𠂔 266	𠂔 296
𠂔 27	女 57	土 87	𠂔 117	由 147	宁 177	𠂔 207	𠂔 237	𠂔 267	𠂔 297
𠂔 28	𠂔 58	工 88	𠂔 118	甲 148	米 178	𠂔 208	𠂔 238	𠂔 268	𠂔 298
𠂔 29	大 59	干 89	牙 119	𠂔 149	羊 179	羽 209	𠂔 239	𠂔 269	𠂔 299
𠂔 30	𠂔 60	也 90	予 120	母 150	𠂔 180	𠂔 210	𠂔 240	𠂔 270	𠂔 300

PHONOLOGICAL SYSTEMS SYLLABIC

In a system of syllabic writing (a *syllabary*), each grapheme corresponds to a spoken syllable, usually a consonant-vowel pair. Such systems have been found from earliest times (e.g. Mycenaean Greek) and in modern times can be seen in Amharic, Cherokee, and Japanese *kana*. The number of graphemes in a syllabary varies – from around 50 to several hundred.

Cypriot

The clearest example of a syllabic script in classical times comes from Cyprus, where it was used from about the 6th to the 3rd century BC. Typical symbols are shown below, along with an interpretation of the sound values (from O. Masson, 1961).

The Cypriot (or Cypriote) syllabary was deciphered towards the end of the 19th century; the inscriptions are mostly in Greek, though the script seems to have been designed for a different language. There is no way of indicating vowel length, several Greek sounds cannot be distinguished, and syllables containing two consonants had to be expanded as two syllables (e.g. *ptolin* → *po-to-li-ne*), much as modern Japanese has to do with foreign loan words. The script is mainly written from right to left. The system may be distantly related to the early linear script known as Linear B (p. 301), which was also largely syllabic in character.

	a	e	i	o	u
	✱	✱	✱	≧	Υ
y	∅			↘	
w	Λ	I	Y	∩	
r	Ω	∩	∩	∩	∩
l	Λ	8	≤	+	∩
m	Λ	Λ	Λ	∩	Λ
n	∩	∩	∩	∩	∩
p	∩	∩	∩	∩	∩
t	∩	∩	∩	∩	∩
k	∩	∩	∩	∩	∩
s	∩	∩	∩	∩	∩
z	∩	∩	∩	∩	∩
x	∩	∩	∩	∩	∩

Katakana

The Japanese *katakana* syllabary contains 75 graphemes, three of which enter into combinations to produce a further 36 forms.

The system contains a few phonetic features, such as the regular use of っ to mark the voiced element in a contrast. The system is

used mainly to write foreign words which have come to be used in Japanese (other than those of Chinese origin):

アメリカ
America

コーヒー
coffee

ジャンボジェット
jumbo jet

オーストラリア
Australia

ジャズ
jazz

テレビ
television

ア	カ	ガ	サ	ザ	タ	ダ	ナ	ハ	バ	パ	マ	ラ	ワ	ファ	ン
a	ka	ga	sa	za	ta	da	na	ha	ba	pa	ma	ra	wa	fa	n
イ	キ	ギ	シ	ジ	チ	ヂ	ニ	ヒ	ビ	ピ	ミ	リ		フィ	
i	ki	gi	shi	ji	chi	ji	ni	hi	bi	pi	mi	ri		fi	
ウ	ク	グ	ス	ズ	ツ	ヅ	ヌ	フ	ブ	プ	ム	ル			
u	ku	gu	su	zu	tsu	zu	nu	fu	bu	pu	mu	ru			
エ	ケ	ゲ	セ	ゼ	テ	デ	ネ	ヘ	ベ	ペ	メ	レ		フェ	
e	ke	ge	se	ze	te	de	ne	he	be	pe	me	re		fe	
オ	コ	ゴ	ソ	ゾ	ト	ド	ノ	ホ	ボ	ポ	モ	ロ		フォ	ヲ
o	ko	go	so	zo	to	do	no	ho	bo	po	mo	ro		fo	o
ヤ	キャ	ギャ	シャ	ジャ	チャ	ヂャ	ニャ	ヒャ	ビャ	ピャ	ミャ	リャ			
ya	kya	gya	sha	ja	cha	ja	nya	hya	bya	pya	mya	rya			
ユ	キュ	ギュ	シュ	ジュ	チュ	ヂュ	ニュ	ヒュ	ビュ	ピュ	ミュ	リュ			
yu	kyu	gyu	shu	ju	chu	ju	nyu	hyu	byu	pyu	myu	ryu			
ヨ	キョ	ギョ	ショ	ジョ	チョ	ヂョ	ニョ	ヒョ	ビョ	ピョ	ミョ	リョ			
yo	kyo	gyo	sho	jo	cho	jo	nyo	hyo	byo	pyo	myo	ryo			

Cherokee

This syllabary was invented in 1821 by a half-Cherokee Indian named Sequoyia, and came to be

used by the people and missionaries for many years. Its 85 symbols show the strong influence of the

Latin alphabet, but the Latin symbols are not used with their original sounds. (From H. A. Gleason, 1955.)

D	a	R	e	T	i	o	u	i	Λ
f	ga	h	ge	y	gi	A	go	J	gu
0	ha	p	he	A	hi	f	ho	Γ	hu
W	la	∫	le	p	li	G	lo	M	lu
∫	me	∩	mi	H	ni	3	mo	∩	mu
∩	na	∩	ni	Z	no	∩	na	∩	na
I	gwa	∩	gwe	∩	gwi	∩	gwo	∩	gwa
U	sa	4	se	b	si	Φ	so	∩	su
b	da	f	de	J	di	Λ	do	S	du
∩	dla	L	dle	G	dli	∩	dlo	∩	dlu
G	dza	∩	dze	h	dzi	K	dzo	J	dzu
G	wa	∩	we	∩	wi	∩	wu	∩	wa
∩	ya	∩	ye	∩	yi	∩	yo	∩	ya

ALPHABETIC

With alphabetic writing, there is a direct correspondence between graphemes and phonemes, which makes it the most economic and adaptable of all the writing systems. Instead of several thousand logograms, or several dozen syllables, the system needs only a relatively small number of units, which it then proves easy to adapt to a wide range of languages. Most alphabets contain 20–30 symbols, but the relative complexity of the sound system (§28) leads to alphabets of varying size. The smallest alphabet seems to be Rotokas, used in the Solomon Islands, with 11 letters. The largest is Khmer, with 74 letters.

In a perfectly regular system, as in some of the alphabets that have been devised by linguists to record previously unwritten languages, there is one grapheme for each phoneme. However, most alphabets in present-day use fail to meet this criterion, to some degree, either because the writing system has not kept pace with changes in pronunciation, or because the language is using an alphabet not originally designed for it. Languages vary greatly in their graphemic/phonemic regularity. At one extreme we find such languages as Spanish and Finnish, which have a very regular system; at the other,

we find such cases as English and Gaelic, where there is a marked degree of irregularity. The extent to which there is a lack of correspondence between graphemes and phonemes is inevitably reflected in the number of arbitrary 'spelling rules' that children have to learn (p. 213).

There are also many alphabets where only certain phonemes are represented graphemically. These are the 'consonantal' alphabets, such as Aramaic, Hebrew, and Arabic, where the marking of vowels (using diacritics) is optional. There are also cases, such as the alphabets of India, where diacritics are used for vowels, but the marking is obligatory, with the diacritics being attached to the consonantal letters.

The earliest-known alphabet was the North Semitic, which developed around 1700 BC in Palestine and Syria. It consisted of 22 consonant letters. The Hebrew, Arabic, and Phoenician alphabets were based on this model. Then, around 1000 BC, the Phoenician alphabet was itself used as a model by the Greeks, who added letters for vowels. Greek in turn became the model for Etruscan (c. 800 BC), whence came the letters of the ancient Roman alphabet, and ultimately all western alphabets.

New alphabets from old

The development of the early alphabet, and the relationship between several modern alphabets.

Phoenician	Old Hebrew	Early Greek	Classical Greek	Etruscan	Early Latin	Modern Roman	Greek form	Greek name	Cyrillic	Hebrew form	Hebrew name	Arabic form	Arabic name
𐤀	א	Α	Α	Α	Α	Aa	Αα	alpha	Аа	𐤀	'aleph, 'alef	ا	'alif
𐤁	ב	Β	Β	Β	Β	Bb	Ββ	beta	Бб	𐤁	beth	ב	bā
𐤂	ג	Γ	Γ	Γ	Γ	Cc	Γγ	gamma	Вв	𐤂	gimel	ג	tā
𐤃	ד	Δ	Δ	Δ	Δ	Dd	Δδ	delta	Гг	𐤃	dāleth	ד	thā
𐤄	ה	Ε	Ε	Ε	Ε	Ee	Εε	epsilon	Дд	𐤄	hē	ה	jīm
𐤅	ו	Ζ	Ζ	Ζ	Ζ	Ff	Ζζ	zēta	Ее	𐤅	vav, waw	ו	hā
𐤆	ז	Η	Η	Η	Η	Gg	Ηη	ēta	Ёё	𐤆	zayin	ז	khā
𐤇	ח	Θ	Θ	Θ	Θ	Hh	Θθ	thēta	Жж	𐤇	heth	ח	dāi
𐤈	ט	Ι	Ι	Ι	Ι	Ii	Ιι	iota	Зз	𐤈	teth	ט	dhāi
𐤉	י	Κ	Κ	Κ	Κ	Jj	Κκ	kappa	Ии Йй	𐤉	yod, yodh	י	rā
𐤊	כ	Λ	Λ	Λ	Λ	Kk	Λλ	lambda	Кк	𐤊	kāph	כ	zāy
𐤋	ל	Μ	Μ	Λ	Λ	Ll	Μμ	mu	Лл	𐤋	lāmedh	ל	sin
𐤌	מ	Ν	Ν	Λ	Λ	Mm	Νν	nu	Мм	𐤌	mēm	מ	shin
𐤍	נ	Ξ	Ξ	Λ	Λ	Nn	Ξξ	xi	Нн	𐤍	nūn	נ	šād
𐤎	ס	Ο	Ο	Λ	Λ	Oo	Οο	omicron	Оо	𐤎	samekh	ס	qād
𐤏	ע	Π	Π	Λ	Λ	Pp	Ππ	pi	Пп	𐤏	'ayin	ע	lā
𐤐	פ	Ρ	Ρ	Λ	Λ	Qq	Ρρ	rho	Рр	𐤐	pē	פ	zā
𐤑	צ	Σ	Σ	Λ	Λ	Rr	Σσς	sigma	Сс	𐤑	sade, šadhe	צ	'ayn
𐤒	ק	Τ	Τ	Λ	Λ	Ss	Ττ	tau	Тт	𐤒	qōph	ק	ghayn
𐤓	ר	Υ	Υ	Λ	Λ	Tt	Υυ	upsilon	Уу	𐤓	rēsh	ר	fā
𐤔	ש	Φ	Φ	Λ	Λ	Uu	Φφ	phi	Фф	𐤔	sin	ש	qāf
𐤕	ת	Χ	Χ	Λ	Λ	Vv	Χχ	chi, khi	Хх	𐤕	shin	ת	kāf
𐤖		Ψ	Ψ	Λ	Λ	Ww	Ψψ	psi	Цц	𐤖	tāv, taw	ת	lām
𐤗		Ω	Ω	Λ	Λ	Xx	Ωω	omega	Чч	𐤗		ת	mim
𐤘						Yy			Шш	𐤘		ת	nūn
𐤙						Zz			Щщ	𐤙		ת	hā
									Ъъ	𐤙		ת	wāw
									Ьь	𐤙		ת	yā
									Ыы	𐤙		ת	
									Ээ	𐤙		ת	
									Юю	𐤙		ת	
									Яя	𐤙		ת	

Graphological contrasts

Once a writing system has been devised, it can be used to convey a wide range of graphological contrasts. These are best illustrated from the range of possibilities available in alphabetic systems.

Spelling The essential identity of words is conveyed by the correct selection and sequence of graphemes – the spelling rules of the language. This is the main component of any graphological description. It is a study that needs to include, not only the ‘normal’ rules that have to be learned in order to read and write, but any dialectal, stylistic, or ‘free’ variations. Dialectal variation is illustrated by American–British differences such as *color/colour* or the use of *thru* for *through*. Stylistic variation can be illustrated by the way authors adapt the spelling system to reflect or suggest the pronunciation of non-standard speech (p. 180). An interesting example is the use of *shuvvle* for *shovel*, in portrayals of Cockney speech: the two forms have identical pronunciations, in fact, but the former manages to convey the impression of a non-standard accent. Free variations (p. 161) include such alternatives as *judgment/judgement* and *-ise/-ize*.

Special symbols A large number of symbols are available to express frequently occurring meanings in an economical way. Most of these are logograms (p. 200), such as +, @, £; but some do not relate to individual words, such as ✂, used to mark the place where paper may be cut; ➡, which indicates a direction; ☎, marking a telephone number; †, showing that a person is dead. Special symbols may also be used to help organize a written text (such as asterisks or superscript numbers relating to footnotes) or to draw attention to part of it (such as a large star before a name in an advertisement). An important use of the asterisk has been to show omitted letters, especially in taboo words (p. 61).

Abbreviations Shortened forms of words are a major feature of written language, as in the use of titular contractions and abbreviations such as *Mr*, *Dr*, *Ms*, *Lt*, and *Capt*, or the use of acronyms, such as *COD*, *VIP*, and *NATO*. The abbreviations may even come from a different language, and the full form may not be known, e.g. *e.g.* (= *exempli gratia*), *i.e.* (= *id est*), and *etc.* Some abbreviations are spoken as words (e.g. *NATO* is usually /'neitəu/); some are spelled out (e.g. *VIP* is always /'vi: 'pi:/); some are automatically expanded (e.g. *Mr* is /'mistə/); and some permit a choice (e.g. *viz.* spoken as /viz/ or as *namely*).

Graphic contrasts Italic, boldface, capitalization, colour, and other graphic variations are major ways of expressing semantic contrasts, some of which are illustrated on pp. 180–1 and in §32.

The size of the graphemes, for example, is a major way of conveying the relative importance of parts of a message, such as in advertisements or invitations. The switch from Roman to Gothic type may convey an ‘old world’ connotation, as in many Christmas cards and shop signs. However, it should be noted that not all languages have the same set of possibilities – for example, there is no use of italics or capitalization in Hebrew.

Capitalization Initial capital letters mark both lexical and grammatical units (p. 194), usually sentences or words. A single graphic contrast is involved: big vs small. The graphic contrast between large and small capital letters (A vs A) conveys no conventional meaning difference. Also, capitalization does not apply to numbers: if 33 were to appear at the beginning of a sentence, it would not be written 33.

Spatial organization

The general disposition of symbols on a page (or other format) can itself convey semantic contrasts. This is something newspaper editors are very much aware of when they juxtapose stories on the same page – in one case, a story about the Ethiopian famine of 1984 was placed next to a story about the mountains of food being stored in Europe. If the stories had been on different pages, the effect would have been lost. Other examples of contrastive layout include the use of captions under pictures (particularly noticeable when the caption is placed under the wrong picture), the placing of headlines or titles, the layout of headings and sub-headings in a script or report, and the layout of literary texts, especially poetry (pp. 72, 388).

Deviant spelling

The use of abnormal spelling to make a point is more common than we might think. It is sometimes used as an economical way of expressing a contrast in poetry, or identifying a personality in a story. And it is a commonly used device in the world of advertising, where it can make the name of a product or shop stand out and be remembered, or provide the basis for a legal trade mark. (After S. Jacobson, 1966.)

Bar-B-Q
EZ Lern (U.S. driving school)
Fetherwate
Firetuf



Hyway Inn
Kilzum (insect spray)
Koffee Kake
Kwik Koin Wash
Loc-tite
Masqit
No-glu

Resistoyl
Rol-it-on
Savmor (discount store)
Strippit
Tini-plugs
Wundertowl

PUNCTUATION

The punctuation system of a language has two functions. Its primary purpose is to enable stretches of written language to be read in a coherent way; its secondary role is to give an indication of the rhythm and colour of speech (though never consistently). It roughly corresponds to the use of suprasegmental features (§29), but it differs from speech in that its contrasts are to some extent taught in schools, and norms of punctuation are conventionally laid down by publishing houses in their style manuals.

Features that separate

Punctuation is mainly used to separate units of grammar (sentences, clauses, phrases, words, §16) from each other. The various marks are organized in a broadly hierarchical manner: some identify large units of writing, such as paragraphs; others identify small units, such as words or word parts; others identify units of intermediate size or complexity. The main English-language conventions are as follows:

- *space*: separates words; identifies paragraphs – the first sentence begins a new line, with the first word usually indented; extra space may also be inserted between paragraphs, especially to mark a break in the discourse.
- *period (full stop)*: identifies the end of a sentence, along with question and exclamation marks; sometimes followed by a wider space than is usual between words (printing and typing conventions differ); also used to mark abbreviations (though practice varies); a sequence of (usually three) periods indicates that the text is incomplete.
- *semi-colon*: identifies the coordinate parts of a complex sentence, or separates complex points in a list (as in the previous paragraph).
- *colon*: used mainly to show that what follows it is an amplification or explanation of what precedes it – as in the present sentence.
- *comma*: a wide range of uses, such as marking a sequence of grammatical units, or a unit used inside another; displays a great deal of personal variation (such as whether it should be used before *and* in such lists as *apples, pears, and plums*).
- *parentheses ()* and *brackets []*: used as an alternative to commas to mark the inclusion of a grammatical unit in the middle or at the end of a sentence.
- *dash*: used in pairs with the same function as parentheses or brackets; used singly to separate a comment or afterthought occurring at the end of a sentence or to express an incomplete utterance; in informal writing, often replaces other punctuation marks.

The semantics of layout

The importance of layout for semantic effect can be seen in this poem of José Paulo Paes (translated by Edwin Morgan). The spacing between the words gives time for the reader (who knows Descartes' famous dictum) to build up an expectation that the last word is going to be *sum*. The effect would be lost if the poem had been printed in a single line.

The Suicide, or Descartes à Rebours

cogito

ergo

boom

JOSÉ PAULO PAES
translated by Edwin Morgan

- *quotation marks (inverted commas)*: identify the beginning and end of an extract of speech, a title, a citation, or the 'special' use of a word. The choice of single vs double quotes is variable: the latter are more common in handwritten and typed material, and in American printing.
- *hyphen*: marks two kinds of divisions within a word – to show that a word has been split in two because of the end of a line (a feature that has no spoken counterpart), and to relate the parts of a phrase or compound word to each other (as in *pickled-herring merchant* – vs *pickled herring-merchant* – and *washing-machine*); practice varies greatly in the latter use, with British English using hyphens in many contexts where American English would omit them.

Features that convey meaning

Some punctuation features express a meaning in their own right, regardless of the grammatical context in which they occur. (Special symbols of this kind are illustrated on the facing page.)

- *Question mark*: usually expresses a question, but occasionally found with other functions, such as marking silence (p. 180) or uncertainty (e.g. *this is an interesting (?) point*).
- *Exclamation mark*: shows varying degrees of exclamatory force (e.g. *!!!*); also, some special uses (e.g. *John (!) was there*).
- *Apostrophe*: most commonly used to mark the genitive singular or plural (*cat's, cats'*), and grammatical contractions (*I'm, won't*); found also in certain words (*o'clock, fish 'n' chips*); subject to a great deal of usage variation (*St Johns* or *St John's?* *Harrods* or *Harrod's?*) and uncertainty (**ice cream cone's, *today's bargains*).

Shorthand

Shorthand is a method of writing at speed using special symbols or abbreviations for the usual letters and words of speech. It is a system intended for a limited readership (usually only one person, the writer) and for short-term preservation (apart from the occasional literary or scientific diary). It is therefore prone to idiosyncratic use: it is quite common for secretaries trained in the same system to be unable to read each other's shorthand.

The practice of shorthand writing is variously known as stenography ('narrow writing'), tachygraphy ('quick writing'), and brachygraphy ('short writing'). It is best known from its use in press reporting and in clerical and secretarial work – mainly the verbatim recording of legal proceedings and the dictation of business correspondence – though in recent years the advent of voice-recording equipment has somewhat reduced the demand for professional shorthand skills.

Shorthand was well known in Ancient Greece and Rome – the earliest recorded instance is the system used by the historian Xenophon to write the memoirs of Socrates. In 63 BC, a Roman free-man, Marcus Tullius Tiro invented a system for recording the speeches of Cicero – a system that continued in use for over 1,000 years. Julius Caesar was one of many in this early period who learned the use of shorthand.

The use of shorthand died out in the middle ages because of its imagined association with witchcraft. The 16th century saw a revival and produced the first printed manual in English: Timothy Bright's *Characterie: An Arte of Shorte, Swifte, and Secrete Writing by Character* (1588). Shorthand became extremely popular in 17th-century England, especially in relation to the aims of the movement to find a universal language (§58). Several systems were invented – notably, those of John Willis, Thomas Shelton, Jeremiah Rich, and William Mason. It came to be studied in school. In church, sermons would be written down and taken home for later study. In the 18th century, the demands of the Industrial Revolution promoted the use of shorthand in business administration, and its popularity grew in Europe. Finally, the 19th century saw the invention of the main shorthand systems that are still in present-day use.

There are a variety of methods of writing shorthand. Some abbreviate the normal spelling of words; others are based on ways of representing the sounds of speech; still others require the user to learn a list of arbitrary symbols; and there are several combinations of these approaches. The result is that over 400 shorthand systems have been devised for the English language alone.

Samuel Pepys's diary

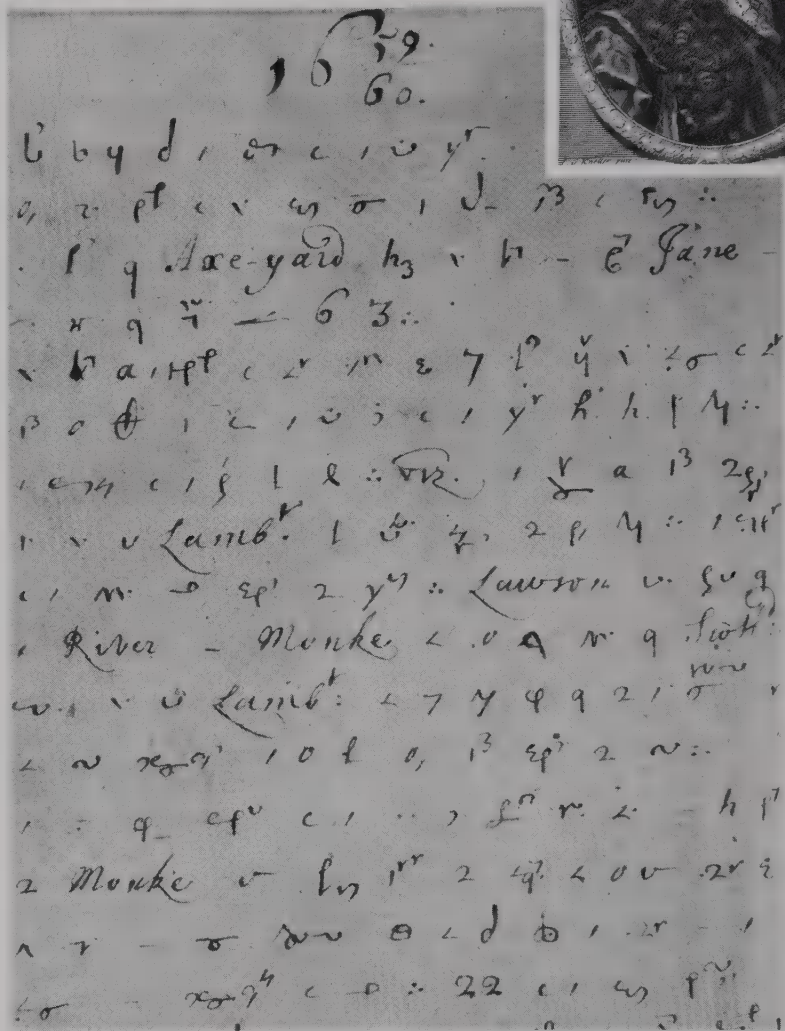
A page from Samuel Pepys's original shorthand diary. The diary was written between 1660 and 1669, when Pepys was forced to stop writing because of failing eyesight. It consists of six small volumes, totalling over 3,000 pages, written in a system devised by the early 17th-century translator, Thomas Shelton. The system contains reduced forms of letters, dots for vowels, abbreviated words,

and 265 arbitrary symbols, such as 2 for *to*, a larger 2 for *two*, 5 for *because*, 6 for *us*, etc. There are also several 'empty' symbols, used presumably to foster the secrecy of the work, and several of the more censorable passages are written in various foreign languages.

The diary remained unread for several decades, as Pepys left no key to the system, and it was not deci-

phered until the beginning of the 19th century. It was first published in 1825.

Samuel Pepys (1633–1703).



General Bertrand's diary

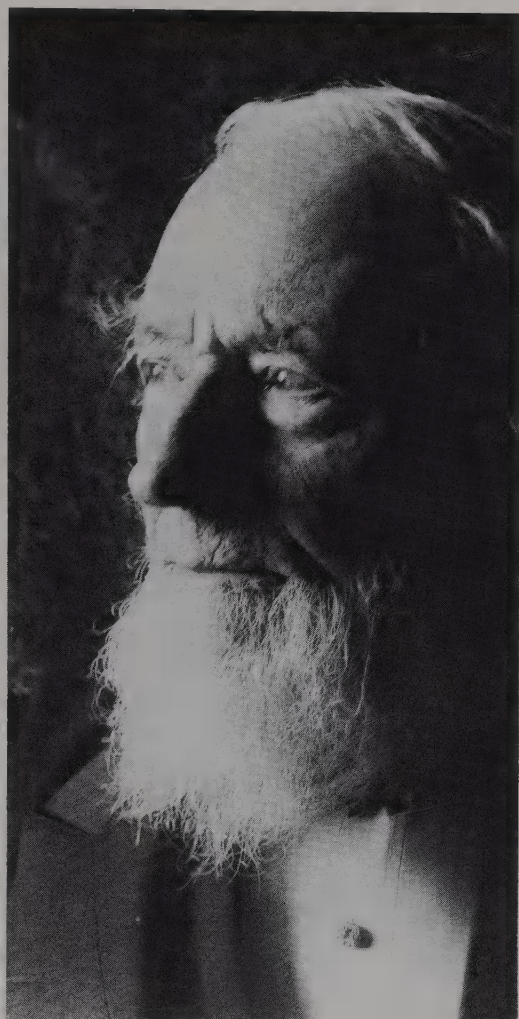
N. so. le mat. en cal: il déj. bi. se. trv. un. peu fat...

This is part of an entry (for 20 January 1821) from the diary of General Henri-Gatien Bertrand, who was companion to Napoleon during his exile on the island of

Saint Helena. The diary is written in such an abbreviated style that it is tantamount to a shorthand system. This kind of private shorthand is probably quite widespread among diarists.

An interpretation of the passage reads: *Napoléon sort le matin en calèche: il déjeune bien, se trouve un peu fatigué* ('Napoleon goes out in the morning in a carriage: he lunches well, finds himself a little tired').

Isaac Pitman (1813–1897)



Pitman's *Stenographic Sound Hand*, published in 1837, was based on the sounds of English. The system uses a combination of straight lines, curves, dots, and dashes, as well as a contrast in positioning and shading (heavy vs light). Several of the graphic contrasts relate systematically to the sound system (§27); for example, all stop consonants are shown by straight lines; all labial consonants slope backwards; and the distinction between voiced and voiceless sounds is indicated by line thickness. Most vowels are omitted.

Pitman's is the main system in use in Britain, and is widely used in other English-speaking countries. The phonetic principles of the approach also make it relatively easy to adapt for use with other languages.

John Robert Gregg (1867–1948)

Gregg devised an alternative to Pitman which avoided the latter's reliance on shading and positioning. His approach uses separate symbols for consonants and vowels, and all symbols are written on a single line in the same thickness. His symbols also make

more use of loops and circles, compared with Pitman's angular system, and the line of writing more closely resembles a longhand script. It is now the main system in use in the USA, and has been adapted to several other languages.

	2000	Pitmanscript	Gregg	Teeline
amateurs				
thieves				
fastened				
neighbour				
security				

Outlines compared Five words transcribed in Pitman 2000, Pitmanscript, Gregg, and – a relative newcomer – Teeline, a combination of shorthand and speedwriting that is becoming increasingly popular in the 1980s.

Shorthand by machine

A stenotype machine, invented in 1906 by W. S. Ireland, an American court-reporter. It is mainly used to record the verbatim proceedings of law courts and legislative meetings.

It is a small machine, with a keyboard of 22 keys that the operator strikes using both hands simultaneously. The left-hand fingers type consonants occurring before vowels, and these are printed on the left of the paper; the right hand fingers type consonants occurring after vowels, and these appear on the right. The thumbs type the vowels, which ap-

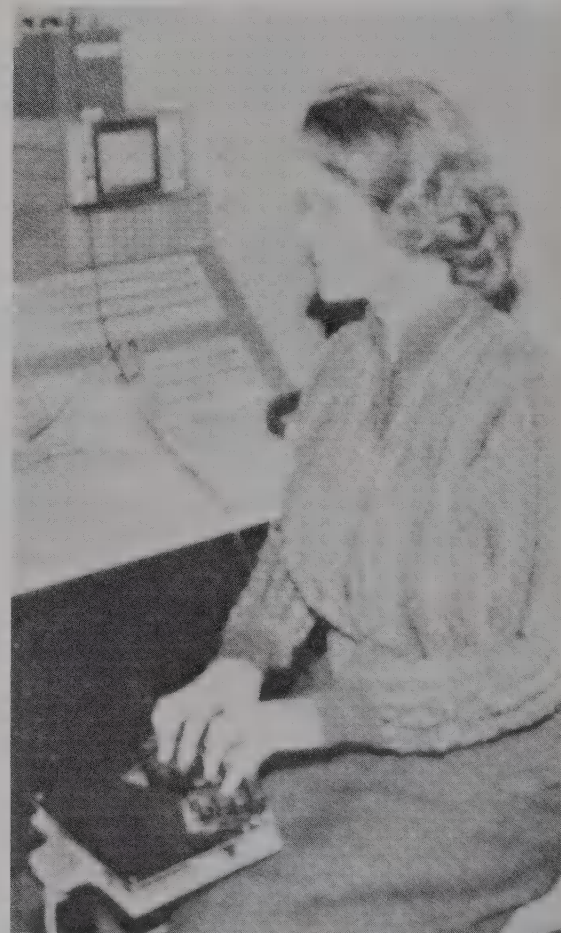
pear in the centre. The sequences of letters are then printed (without noise) on a roll of paper. The printout looks strange, because some words are abbreviated, and some letters have to be typed using combinations of other letters.

An experienced stenotype operator has no diffi-

culty keeping up with normal conversational speed (p. 269). The system is standard, so that the output of different operators is mutually intelligible (not always the case with pen shorthand). However, the expense of the machines, and the training of operators, has limited the application of the approach.

■		EJ	PR	S
T				
TK	■	U	PB	
	■	F		
	H	EJ		■
T		O	E	R
	P	H	A	PB
	H	A		■
ST	■	EJ	F	■
T		O		
KP	H	U	PB	
K	■	EU		T
	WH	EU		S
T	P	E		L
	HR	O	E	S
	■		PB	○
T		O		
	R	O	R	D
■	P	E	RPB	S
T	H	A		L
	O			TS
	W	E		S
			B	
T	P	O	■	
TKPW	O			T
		E	PB	
		F	P	L

A sample of stenotype shorthand



34 The process of reading and writing

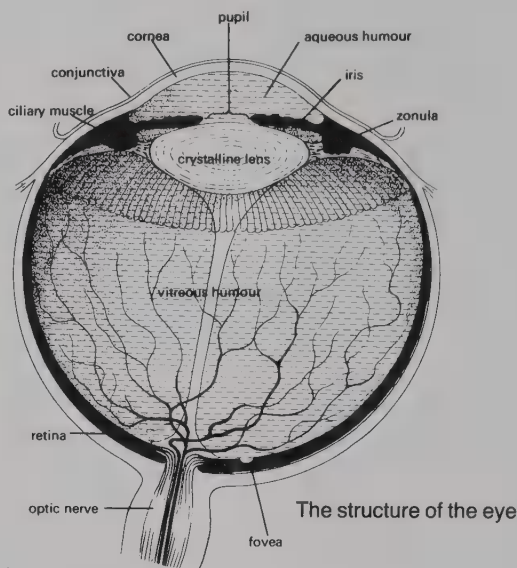
Reading

It might have been thought desirable, before beginning the account of written language, to present an anatomical and physiological description of the visual and manual systems in human beings, in much the same way as the articulatory/auditory systems were presented for speech in Part IV. However, this is not usually done in linguistic discussions of reading and writing because there is so little that can be said in our present state of knowledge. The study of what happens when language is visually perceived and processed is very recent, and while a certain amount is now known about the likely processing operations involved, the neuroanatomical correlations of these processes remain obscure. Moreover, there is perhaps little in principle that *can* be said, given that the structures of the eye and hand do not seem to be biologically adapted for written language in the way that the vocal organs are for speech (though, given the relatively recent development of writing, §33, this is hardly surprising). As a result, the bulk of the enquiries are carried out by psychologists concerned less with the structure and function of the eyes, and more with models of the 'deeper' ways in which the brain works when it processes written language.

Eye movements

One physiological topic has attracted considerable attention, however: the nature of eye movements. These movements can be recorded using various techniques, such as by attaching a mirror to a contact lens placed on the cornea; it is then possible to film a beam of light reflected off the mirror. (See also the computational technique described below.) Using such methods, researchers have shown that the eyes work together, and that when searching for an object they move in a series of rapid jerks, known as *saccades* (from French, 'the flick of a sail'). Between each movement there is a period of relative stability, known as a *fixation*. During reading, the eyes do not follow lines of print in a smooth linear manner but proceed in a series of saccades and fixations. We usually make 3–4 fixations a second, though rate and duration can be affected by the content of what is read, and there are some interlanguage variations.

What happens during a fixation is of particular importance in studying the process of reading. The nerve cells that convert light into electrical pulses are located in the *retina*, at the back of the eye. The central region of the retina, where these receptor cells are packed closely together, is known as the *fovea*. It extends for some 2° of visual angle,

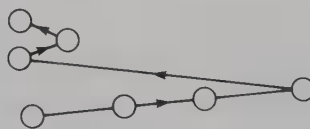


and is the area that gives the best visual detail, such as is required for identifying graphic forms. The further a stimulus is from the fovea, the poorer our ability to discriminate. The *parafoveal* area surrounds the fovea, and this in turn is surrounded by the *periphery*. These areas are less involved in the act of reading, but they do have some relevance in the detection of larger visual patterns in a text.

Perceptual span

How much linguistic material can be seen during a fixation? Most information about visual perceptual span comes from using a tachistoscope: subjects are presented with a briefly flashed sequence of letters or words, and are then tested to see how many they recall. In a single exposure of 1/100 sec, it is usually possible to recall 3–4 isolated letters or 2–4 short words. Several factors affect subjects' performances, such as the distance of the stimuli from the eyes, or whether the letters or words are linguistically connected.

However, this approach does not replicate what actually happens in reading, where people make several fixations a second and do not have to name what they have seen. Accordingly, several other methods of studying perceptual span have been tried. One sophisticated study involved the use of computer technology (K. Rayner & G. W. McConkie, 1977). An eye-movement monitor illuminated the eye with invisible infra-red light, and measured



The vehicle almost flattened a pedestrian

A sequence of eye movements

Fixations are shown as circles, and the order of movement is shown by arrows; information about the duration of each fixation is not given. In the fixations for sentence 'The vehicle almost flattened a pedestrian' given here the reader spends most of the time at the beginning of the sentence. Note (i) that the word *a* does not receive a separate fixation (and possibly nor does *the*); (ii) the first part of the sentence is looked at three times. Effects of this kind require a complex explanation, in which physical features of a text (such as word length) interact with its semantic properties.

the amount of light reflected from certain parts of the eye's surface. A computer was then attached to this equipment and programmed to check the eye position 60 times a second, keeping a record of where the person was looking and how long each movement or fixation took. The text to be read was displayed on a screen, also under the control of the computer, thus enabling the researchers to make changes in the display during the period of an eye movement.

In one experiment, a piece of text was 'mutilated' by replacing each letter with an *x*. When subjects looked at this display, the computer automatically replaced the *x*'s within a certain region around their point of central vision with the letters from the original passage. This created a 'window' of normal text in the subject's foveal region for that fixation. When the subject's eyes moved, the old window was replaced by *x*'s and a new window was created. The size of the window was under the control of the researcher: in the table (see right), a window of 17 characters is shown. Subjects had no difficulty reading under these conditions, unless the window became too small.

By using different window sizes and mutilating the text in different ways, it was possible to draw various conclusions about perceptual span. Reducing the window size slowed the subjects' reading speeds, but it did not affect their ability to comprehend the text (even if all the reader could see was nine letters – little more than a word at a time). The study suggested that subjects were using letter information no further than 10 or 11 positions from their centre of vision, though information about word-length and general shape could be obtained from further away. A follow-up study also showed that these regions were not symmetrical around the centre of vision: on the left side, the area used during a fixation was restricted to four letter positions.

It is possible to conclude that, when looking at a text of average type size about 30 cm away, readers do not usually identify more than two or three short words (about 10 letters) on each fixation. Larger units cannot be seen 'all at once'.

THEORIES OF HOW WE READ

Following a fixation during reading, a visual pattern of graphic features is conveyed to the retina, and then transmitted via the optic nerve for interpretation by the brain (§45). The stages involved in this process are not well understood, and several different theories have been proposed to explain what happens when fluent readers read. One reason why the field is so controversial is that it is extremely difficult to obtain precise information about the events that take place when people read. In fact, very little actually seems to happen, apart from the eye movements – and these do not begin to explain *how* the reader is managing to draw meaning out of the graphic symbols. Similarly, if people are tested after they have read something,

we may find out something about *what* they have read, but not about how they read it. Nor are experimental situations necessarily convincing, because they make readers do abnormal things. And analysing the behaviour of people with reading handicaps may produce results that do not apply to healthy readers (p. 259).

Given the difficulties, the field of reading research would not seem to be a particularly promising or attractive one. It is, however, an area that has attracted many investigators, partly by virtue of its very complexity, and partly because any solutions to the problem of how we read would have immediate application in areas of high social concern. A large number of children have great difficulty in learning to read, and many never read well. Estimates suggest that between 10% and 20% of the U.S. population are functionally illiterate (p. 272). Such figures thus bring a sense of urgency to reading research.

'Reading' in all of this does not mean simply 'reading aloud', which might be done by a suitably equipped automatic machine that would not know what it was saying. 'Reading' crucially involves appreciating the sense of what is written: we read for meaning. It is this link – between graphology (§33) and semantics (§17) – that has to be explained by any theory of reading.

Joint reading

Smith has taught himself to read Russian letters, but he hasn't had time to learn the language. Bronski was brought up speaking Russian, but he never learned to read. One day, Bronski gets a letter in Russian from a relative. He cannot read it. He shows it to Smith. Smith cannot understand it. But all is well: Smith reads the words aloud; Bronski recognizes them, and interprets them. He is happy. But who is 'reading'?

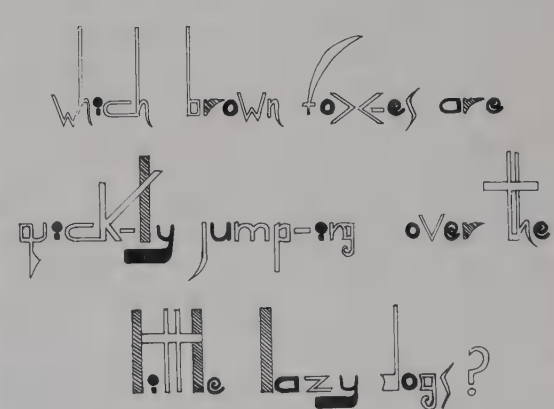
Fixation windows

A line of text on four successive fixations, using Rayner and McConkie's technique. Each window area is 17 letters wide – that is, eight letter positions to the left of fixation (marked with a dot) and eight to the right.

Fixation number	Text
1	Xxxxhology means perxxxxxxxx xxxxxxxxxxx xxxx xxxx xxxxxxxx Xxxx xx x
2	XXXXXXXXXXXXXXS personality diaxxxxxxxx xxxx xxxx xxxxxxxx. Xxxx xx x
3	XXXXXXXXXXXXXXS xxxxxxxxxxxx xiagnosis. from hanx xxxxxxx. Xxxx xx x
4	XXXXXXXXXXXXXXS xxxxxxxxxxxx xxxxxxxxxxx xxxm hand writing. Xxxx xx x

Graphic typography

One of several typographic systems designed for research in visual pattern identification. The general aim of such research is to see whether, by varying visual form, words can be made more discriminable and pronunciation features more salient. The typography, which enhances the main graphic features of letters, makes the visual shape of a word stand out more clearly than it does when printed in a conventional way. It should be noted that each letter is the same whenever it occurs. Certain morphemes (p. 90)



are separated with dashes, and a few pronunciation cues are added; for exam-

ple, / and r are shaded, and vowels are darker. (From L. Brooks, 1977.)

READING BY EAR OR BY EYE?

Most people have encountered the struggle that takes place as a child is learning to read. A major feature of this task is that words and letters are 'sounded out'. It is as if reading is possible only if the symbols are heard – reading 'by ear'. One theory of reading therefore argues that a phonic or phonological step is an essential feature of the process – a theory of 'phonic mediation'. The view implies that reading is a serial or linear process, taking place letter-by-letter, with larger units gradually being built up.

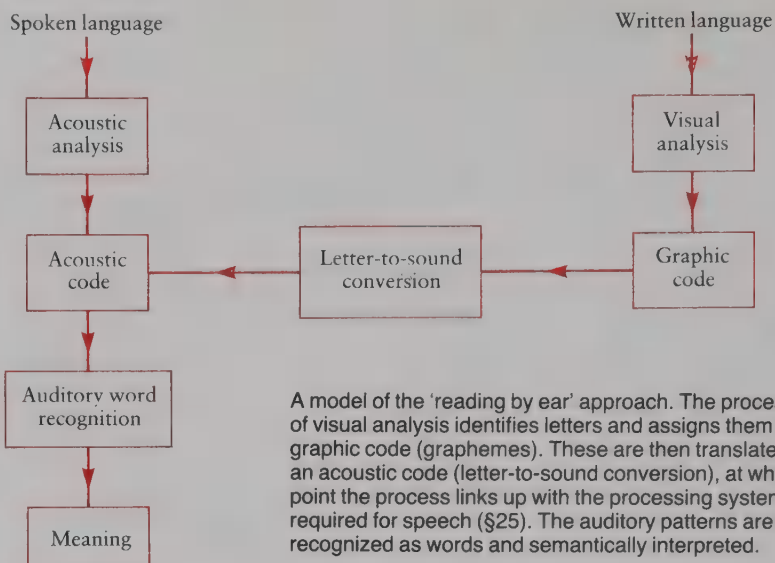
The alternative view argues that there is a direct relationship between the graphology and the semantics, and that a phonological bridge is unnecessary (though it is available for use when reading aloud). Words are read as wholes, without being broken down into a linear sequence of letters and sounded out – reading 'by eye'. Readers use their peripheral vision to guide the eye to the most likely informative part of the page. Their knowledge of the language and general experience helps them to identify critical letters or words in a section of text. This initial sampling gives them an expectation about the way the text should be read, and they use their background knowledge to 'guess' the remainder of the text and fill in the gaps. In this view, a text is like a problem that has to be solved using hypotheses about its meaning and structure.

The arguments for and against these views are complex and multifaceted, deriving from the results of a vast number of experiments on aspects of reading behaviour. Some of the points that have been raised are summarized below.

Support for the ear

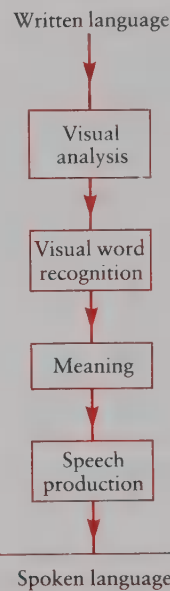
- Associating graphemes and phonemes is a natural process, which cannot be avoided when first learning to read.
- Letter recognition is very rapid – about 10–20 msec per letter – which is enough to account for average reading speeds (around 250 words per minute). These speeds are similar for both silent and oral reading (though the latter is slightly slower, presumably for articulatory reasons), and are close to the norms for spontaneous speech (p. 125).
- Statistical studies of word frequency (§15) show that most words in a text are of very low frequency, several occurring only once over long periods; some will be completely new to a reader. Readers can therefore have few expectancies about such material and will need to decode it phonologically. It is an everyday experience to break new long words up into phonemes or (more usually) syllables: try *picomalesefeso*, and see.
- When people read difficult material, they often move their lips, as if the phonology is needed in order to help comprehension. There may be other sub-vocal movements not so far observed.
- It is difficult to see how the 'eye' theory can handle the many variations in type and handwriting.

Reading by ear



Reading by eye

A model of the 'reading by eye' approach. The process of visual analysis identifies letters and assigns them to a graphic code (graphemes). The visual patterns produced are recognized as words and given a semantic interpretation. The semantic code stored in the brain may then be used to activate an associated acoustic sequence of events, should this be needed (as in reading aloud).



ing. Yet we are able to read these variations quite rapidly, even in experimental situations (using such forms as *BoAt*).

- Reading by eye would be a very complex matter. Each word would have to be given a separate orthographic representation in the brain, along with a separate retrieval process. This is not a parsimonious explanation.

Support for the eye

- Fluent readers are not confused by such homophones as *two* and *too*. Phonology cannot help in such cases. Moreover in words like *tear*, there is no way of deciding which pronunciation is involved (/tiə/ or /tɛə/) until *after* the reader has selected a meaning.

- In one type of reading disorder ('phonological dyslexia', p. 272), people lose the ability to convert isolated letters into sounds; they are unable to pronounce even simple nonsense words, e.g. *pob*). But they *are* able to read real words, showing that a non-phonological route from print to meaning must exist.

- The 'ear' theory does not explain how some people can read at very rapid speeds, which can be in excess of 500 words per minute. The eyes can take in only so many letters at a time. Rapid reading poses less of a problem for the 'eye' theory, as it simply requires that readers increase their sampling as they speed up.

- In brief exposure experiments, people identify whole words more rapidly than isolated letters. For example, if subjects are shown BAG, BIG, A, I, IBG, etc., and asked whether they have just seen A or I, they perform best with the familiar words. This is the 'word superiority' effect.

- The fact that different sounds are written identically, and different letters can have the same pronunciation, complicates a phonological view. Also, some orthographic rules seem totally unrelated to the phonology, e.g. *skr-* is acceptable in English speech, but does not occur in normal writing.

- Some higher-order processing must be involved in reading, because of several observed effects. Experiments have shown that it is easier to recognize letters in real words than in nonsense words. Typographic errors are often not noticed when reading through a text (the proof-corrector's problem). Errors made by fluent readers while reading aloud are usually syntactically or semantically appropriate; they make few phonologically induced errors (cf. the findings of speech perception, p. 147).

Compromise?

It is evident that neither approach explains all aspects of reading behaviour; it is likely that people make use of both strategies at various stages in learning and in handling different kinds of reading problem. The 'ear' approach (sometimes referred to as a 'bottom-up' or 'Phoenician' theory, because of its reliance on basic letter units) is evidently very important during the initial stages. Perhaps after several exposures to a word, a direct print-meaning pathway comes to be built up. But the 'eye' approach (sometimes referred to as a 'top-down' or 'Chinese' theory, because of its reliance on whole-word units) is certainly needed in order to explain most of what goes on in fluent adult reading.

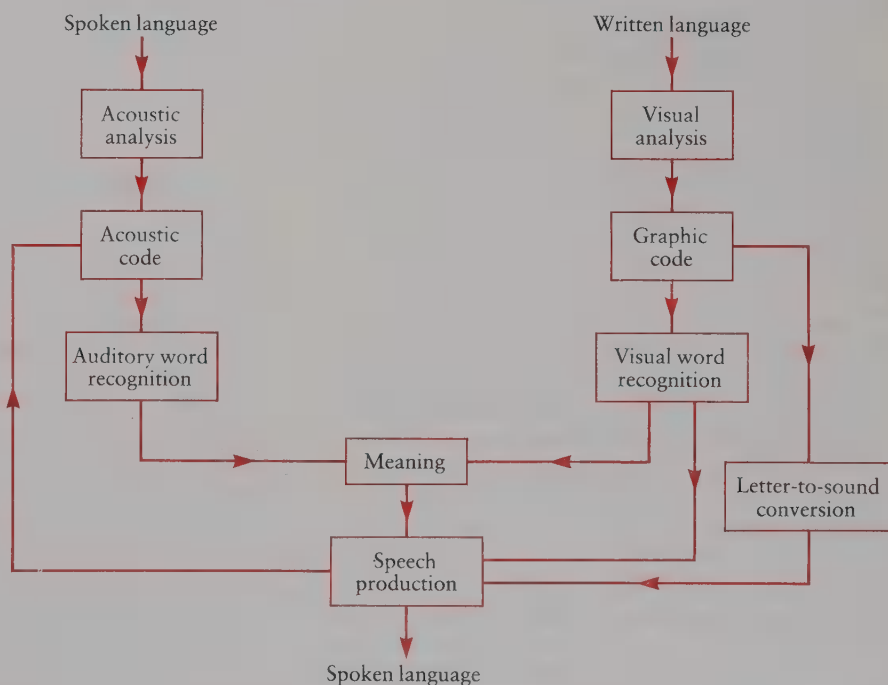
It should be noted that some of the arguments that come to mind, in relation to this issue, do not clearly support either theory. For example, it has been argued that people who have been profoundly deaf since birth, and who subsequently learn to read, provide clear support for the 'eye' theory; in their cases a phonological bridge cannot be available. However, the fact that such people do have great difficulty in learning to read could be interpreted to show the importance of phonological mediation after all. Similarly, the existence of Chinese and Japanese *kanji* (pp. 195, 200) is sometimes proposed in support of the view that a phonological stage is unnecessary. But here too the evidence is ambiguous. Logographic systems seem to be difficult to learn, with few users mastering more than about 4,000 symbols out of the 50,000 or so which exist. On the other hand, very little is known about the orders of difficulty that are encountered in learning *kanji* symbols, and the degrees of expertise that exist in using logographic systems.

As with most major theoretical oppositions, elements of both approaches are required to explain the experimental findings. As a consequence, several 'compromise' models have been devised, which integrate the main features of both 'ear' and 'eye' theories. Some of these models are extremely complex, postulating a large number of components and pathways, but this is only to be expected. Despite the clear visual signals provided by the written medium, learning to read is a complex process, and only an appropriately sophisticated theory will explain it.

A combined model

This incorporates some of the findings from the experimental work referred to in this section. It is based on the approach of the British psychologist John Morton (1933–), but it ignores several detailed features of that model (especially on the output side) and does not use his distinctive terminology, in which the units of word recognition and production are referred to as *logogens*.

1. Familiar words are visually analysed, recognized, and assigned a meaning. Their spoken form may be retrieved from the speech-production system, which may be activated by the meaning (reading with understanding) or by the visual patterns directly (reading without understanding).
2. Unfamiliar words are visually analysed and may then be analysed phonologically (letter-to-sound conversion). The resulting sound pattern can be referred back to the auditory word-recognition system, to see whether it 'rings a bell'.



Writing

It is extremely difficult to discover what happens when people compose a written text. Few satisfactory experimental techniques have been devised. Direct observation of the handwritten product gives very limited information, for it fails to preserve the order in which revisions are made. Direct observation of people engaged in writing tells us little about what is going on 'beneath the surface'. And introspection is of little value, for as we think about our writing activity, so we destroy its naturalness. Fluent writers are in any case unaware of what they do when they put pen to paper.

Only the most general of accounts can be given of what is involved in the writing process, therefore. Models of this process recognize at least three factors.

- There must be a planning stage, in which thoughts are organized, and a lexical/grammatical outline prepared. This involves writers working out what their readers need to know, in order for their message to be understood. In particular, they must anticipate the effect their words will have (§21).

- Writers need to be aware of the linguistic and social conventions affecting their use of written language. These include such general considerations as the need to make handwriting legible, to stay within the constraints of a single writing system, and to follow the normal conventions of graphic expression (such as writing in the expected direction) as well as the specific requirement to follow the rules of spelling and punctuation (§33).

- Writers need to choose a specific medium of expression, such as handwriting, typing, or word processing, and this requires a consideration of motor-control abilities. Several factors are involved, such as hand-eye coordination, hand grip or position, position of the body, and so on. Many people have a slow handwriting speed, or have difficulty holding an implement or working a machine (most noticeable in the case of physical handicap, p. 280). The result is not simply that a message takes longer to write. The attention and memory may be so taken up with controlling the motor activity that linguistic content and structure may be affected. People can forget what they wanted to write, even after they have begun to write it.

However, these three factors are not the whole story. For example, they do not allow for the fact that a great deal of written composition is *rewriting*. Any model must take into account the act of revision – from the first stages of making notes, jottings, and headings, through various drafts, to the final version. This is a promising field of research – the self-corrections and errors introduced while composing written language. How do writers ensure that their work is legible, readable, and lucid? How do they detect problems in these respects? How do they identify the problems? How

do they correct them? Are the corrections appropriate? Many such questions await answers.

A model of written composition must also allow for the fact that what people see when they write may affect the way they think. Authors' comments are illuminating: 'It doesn't look right now I've written it down', 'That's not what I'm trying to say.' Meaning does not always exist prior to writing; often the process operates in reverse. A typical comment is Edward Albee's: 'I write to find out what I'm thinking about' (§5). Such remarks emphasize the main lesson to be learned from the study of the process of writing: it is not a merely mechanical task, a simple matter of putting speech down on paper. It is an exploration in the use of the graphic potential of a language – a creative process, an act of discovery.

Time to think

An extract from a video study describing the writing behaviour of some high school boys. The length of the writer's pauses between words is marked in seconds. In line 5, for example, he paused for 16.6 secs; he then changed the period to a colon, and paused again before continuing.

'Pause' refers only to the ceasing of the writer's pen

movement. During these pauses, other kinds of body activity may be taking place: the eyes may scan the text or look away, and the hand may move away from the text (presumably reflecting major decision-making) or stay close to it (suggesting that the writer expects to resolve the problem quickly).

The evidence suggests that pauses reflect the oc-

currence of mental planning and provide clues to the difficulty of the writing task. Variations in pause length may thus convey information about the process of writing, especially when considered along with other temporal aspects of writing. (From A. Matsuhashi, 1982.)

- 1 Truly⁶successful^{1.1}person⁵.to⁸-person^{2.3}communi-
- 2 ^{1.8}cation^{3.5}is^{1.9}difficult^{1.3}because^{6.9}people⁶in⁹general^{1.1}are⁹poor
- 3 ^{1.0}listeners. ^{7.0}They^{1.0}would⁷rather^{1.4}listen⁵to⁹themselves^{1.9}speaking
- 4 ^{2.1}than⁴someone⁷else⁵. ^{4.7}It⁹is⁷my⁷feeling^{1.9}that^{9.7}this⁸occurs
- 5 ^{1.6}because^{1.1}of^{1.2}a⁸basic^{2.7}self-centeredness. ^{16.6} ^{5.5}people^{4.8}tend^{1.2}to
- 6 ^{1.9}be⁶more⁵interested⁷in⁷their⁹own⁷lives^{1.5}to^{1.2}bother^{1.0}exposing
- 7 ^{1.3}themselves⁷to⁵how⁷others⁸live.

Some things that writers do

A piece of handwritten text, showing four of the things that writers do while composing:

Deletion: elimination of false starts, and unnecessary or wrongly chosen words.

Rearrangement: separating or bringing together material; changing logic or word order.

Consolidation: making the text more compact or streamlined, while retaining the content.

Differentiation: adding or expanding material.

Note that the changes give no information about the sequence of events that occurred while the text was being written.

The various ^{constraints} constraints which ~~are~~ apply in this situation pose special problems for the analyst:
There are three main issues which at the present time need to be borne in mind:
(a) How many people are involved?
(b) How much material equipment is required?

Spelling

Reading and writing have long been thought of as complementary skills: to read is to recognize and interpret language that has been written; to write is to plan and produce language so that it can be read. It is therefore widely assumed that being able to read implies being able to write – or, at least, being able to spell. Often, children are taught to read but given no formal tuition in spelling; it is felt that spelling will be ‘picked up’. The attitude has its counterpart in the methods of 200 years ago, when teachers carefully taught spelling, and assumed that reading would follow automatically.

Recent research into spelling errors and ‘slips of the pen’ has begun to show that matters are not so simple. There is no necessary link between reading and writing: good readers do not always make good writers. Nor is there any necessary link between reading and spelling: there are many people who have no difficulty in reading, but who have a major persistent handicap in spelling – some researchers have estimated that this may be as many as 2% of the population. There seems moreover to be a neuro-anatomical basis for the distinction, as shown by brain-damaged adults who can read but not spell, and vice-versa (p. 272).

With children, too, there is evidence that knowledge of reading does not automatically transfer to spelling. If there were a close relationship, children should be able to read and spell the same words; but this is not so. It is commonplace to find children who can read far better than they can spell. More surprisingly, the reverse happens with some children in the early stages of reading. One study gave children the same list of words to read and to spell: several actually spelled more words correctly than they were able to read correctly.

Why so difficult?

Why should reading and spelling be so different? It is partly a matter of active, production skills being more difficult than passive, receptive ones. Spelling is a more conscious, deliberate process, which requires awareness of linguistic structure, and a good visual memory, to handle the exceptions to the regular patterns. It is possible to read by attending selectively to the cues in a text, recognizing just a few letters, and guessing the rest. It is not possible to spell in this way: spellers have to reproduce all the letters.

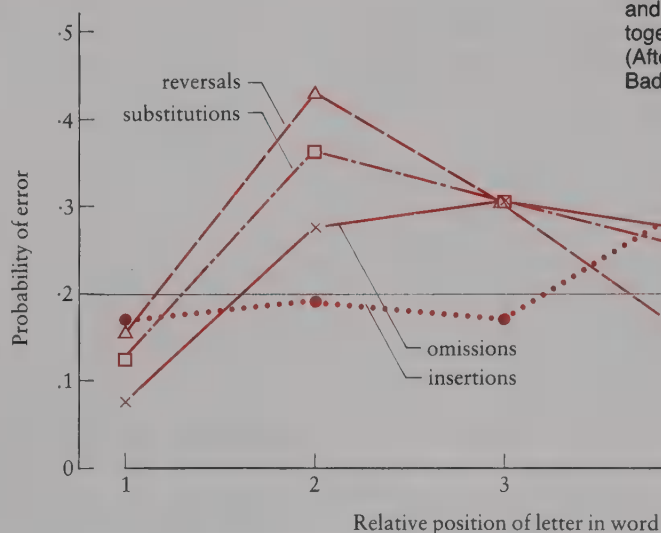
Also, more things can go wrong while spelling: there are far more graphemic alternatives for a phoneme than there are phonemic alternatives for a grapheme. For example, *sheep* has really only one possible pronunciation, /ʃi:p/; whereas the form /ʃi:p/ could be written in at least three different ways – *sheep*, *sheap*, *shepe*. One study worked out that in English there are 13.7 spellings per sound, but only 3.5 sounds per letter (G. Dewey, 1971).

However, the differences between reading and spelling cannot be explained simply by arguing that spelling is ‘more difficult’, for this would not explain such facts as children who can spell better than they read. Rather, the two skills seem to involve different learning strategies. Whereas reading is largely a matter of developing direct links between graphic expression and meaning (p. 211), spelling seems to involve an obligatory phonological component from the very outset. The study of spelling errors shows that we learn to spell by making associations between graphemes and phonemes, and not simply on the basis of how grapheme sequences ‘look’. Visual strategies *can* be important; for example, with irregular words, where a phonological strategy could not work, people do sometimes write down alternative spellings to see which ‘looks right’. But for the most part, it is the signs of phonological activity that are the most noticeable – as when we see beginners painfully writing C-A-T and saying the letter names of sounds as they write, or adult writers sounding out words (especially long words) while writing them down.

Why is there this preference for phonology? Perhaps because spelling involves a conscious ability to form linear sequences of letters – an ability that is routinely required for processing the linear phoneme-strings of speech, but that is not found in visual pattern recognition (as is required for whole-word reading). To be a good speller, we need to have both this phonological awareness (to cope with the regular spelling patterns) and a good visual awareness (to cope with the exceptions). Poor spellers, it seems, lack this double skill.

Spelling mistakes

Spelling mistakes are not very common in adult handwritten texts – descriptive studies suggest that, on average, about 1% of letters are affected, and 1–1.5% of words. One study classified errors into four formal types: omissions (*buton*), additions (*hopefull*), substitutions (*attendance*), and inversions (*tabel*). Other possibilities are rare. The diagram shows which kind of error occurs in different letter positions in a word. There is very little difference in the first letter. Insertion errors are much more likely towards the end of a word, whereas the other types are more likely towards the beginning. Substitutions and omissions seem to go together. (After A. M. Wing & A. D. Baddeley, 1980.)



Where does the irregularity come from?

■ The basic fact is that, in the Anglo-Saxon period, an alphabet of 27 graphemes (the 23-letter Latin alphabet, plus four other symbols) had to cope with a sound system of nearly 40 phonemes. Later, *i/j* and *u/v* were distinguished, and *w* was added, but many sounds still had to be signalled by combinations of letters.

- The printing process caused complications. Many early printers were foreign (especially from Holland), and they used their own spelling norms. Also, until the 16th century, line justification (p. 183) was often achieved by abbreviating and contracting words, and also by adding extra letters (usually an *e*) to words, rather than extra space.

■ In the 16th century, there was a fashion to make spelling reflect Latin or Greek etymology (p. 330), e.g. the *g* was added in *reign* (from *regno*), and the *b* in *debt* (from *debitum*). Unfortunately, many false forms were concocted: for example, the *s* of *island* was added because the word was thought to come from Latin *insula*, whereas in fact it is Anglo-Saxon in origin.

- | | | |
|-----------|-------------|--------------|
| anonymous | epitome | idiosyncrasy |
| armadillo | excrescence | inclemency |
| balcony | exhilarate | intrigue |
| bizarre | galleon | moustache |
| brusque | gazette | piazza |
| canoe | genteel | pneumonia |
| caustic | grotesque | potato |
| chaos | grotto | system |
| cocoa | harass | vogue |

A page from John Hart's *A Methode or Comfortable Beginning for all Unlearned, Whereby They May Bee Taught to Read English, in a Very Short Time, With Pleasure* (1570)

well to hide the points you wish your finger, or some Paper sette to cover the
fine in the line you take leucll, so cause him to haue the more regarde to the
shapes of the letters.

The ghoti phenomenon

214 · V THE MEDIUM OF LANGUAGE: WRITING AND READING

SPELLING REFORM

A desire to eradicate irregular spelling can be traced back to the 16th century. In 1551, John Hart (d. 1574) complained of the 'vices' of English writing, which cause it to be 'learned hard and evil to read'. In the following centuries, several experimental orthographies were published. By the 19th century, the view that English needed a more consistent orthography had attracted widespread British and American support. A landmark was the publication in 1844 of an augmented Roman alphabet known as 'Phonotypy' by Isaac Pitman (1813-97). Soon after, in 1876, the Spelling Reform Association was founded in the USA, followed by the Simplified Spelling Board (1906), and

the Simplified Spelling Society (1908) in Britain. A system of 'Nue Spelling' was devised and widely promulgated, and this was followed by many other proposals in the first half of this century. Systems of spelling reform are of several kinds. Some, such as Nue Spelling (p. 216), are *standardizing* systems: they aim for a more regular use of the familiar letters; no new symbols are invented. Others, such as i.t.a. (p. 217) are *augmenting* or *supplementing* systems, which add new symbols to those of the regular alphabet. Occasionally, *supplanting* systems are devised, in which all the letters are new: an example is Shaw's Proposed British Alphabet (p. 216).

THE PROS AND CONS OF SPELLING REFORM

Advantages

- Children would save an enormous amount of time and emotional effort in learning to read.
- It would be of great help to children with learning difficulties.
- Because fewer letters would be used (an estimated saving of 15%), there would be a great saving in writer's time, and in the time and costs of typing, printing, and associated matters (paper, ink, storage, transport, etc.).
- There would be considerable benefits to foreign learners of English, and thus to the spread of English throughout the world.

Disadvantages

- There would be a major break in continuity between old and new spelling, especially in the more radical schemes. The period of transition would present major problems. It is difficult to see how a programme of spelling reform could be implemented in a practical or realistic way.

- All who have learned old spelling have a vested interest in it, and few would be willing to learn an alternative system, or wish to have their children learn one. The problem of inertia and conservatism is probably insuperable.
- The saving in costs might be outweighed by the need to reprint important works in new spelling.
- As a phonetic principle came to be intuitively recognized, differences between accents might promote diversity of spellings.
- There seems to be no agreement amongst the various groups of reformers about an optimum system. Also, the arguments are often presented in an evangelistic manner, which many find unappealing.

The history of the spelling reform movement indicates that the disadvantages are generally felt to outweigh the advantages. The problems, it would seem, are too great to be overcome. But the enthusiasm of spelling reform bodies all over the world continues unabated.

Parliamentary proposals

The Simplified Spelling Society's publication *New Spelling* was presented to Parliament in 1949. The new system was to be introduced in three stages.

1. It would first be introduced into the primary schools; after five years, old spelling would cease to be taught.
2. During the next five years, new spelling would be compulsory in films, advertisements, and public announcements.
3. After ten years, it would be compulsory in all legal documents, records, etc. New literature would not be granted copyright unless it was printed in new spelling.

The bill was rejected, but by only 87 votes to 84! A subsequent bill, in 1953, in fact passed its first stage, though later opposition by the Ministry of Education forced it to be withdrawn.

Some irregular English spellings

all	course	listen	shoulder
although	debt	move	some
among	do	none	sugar
answer	does	of	sure
are	done	once	talk
aunt	dough	one	two
autumn	early	only	was
blood	eye	own	water
build	folk	people	were
busy	friend	pretty	what
castle	gone	quay	where
clerk	great	receive	who
climb	have	rough	whole
colour	hour	said	women
comb	island	salt	you
come	journey	says	young
cough	key	scarce	
could	lamb	shoe	

Sound-spelling correspondences

A U.S. spelling study (p. 214) plotted the correspondences between English vowels and their spellings. A selection of their results illustrates the way some of these relationships are highly regular, whereas others are much less so. The spelling of /a/ was entirely regular in their sample (though a few rare exceptions do exist, e.g. <i>plait</i>). On the other hand, the spelling of /ɪ/ is split between <i>i</i> and <i>y</i> , and there are many exceptions (using all vowel letters, as in <i>women</i> , <i>busy</i> , and <i>village</i>).	Sound	Spelling	%	Example
	/i:/	e	72	me
		ee	10	see
		ea	10	meat
	/eɪ/	a	80	late
		ai	9	sail
		ay	6	say
	/aɪ/	i ... e	74	side
		y	14	shy
		igh	6	high
	/əʊ/	o ... e	87	hope
		oa	5	boat
		ow	5	low
	/u:/	u ... e	90	rune
		ew	3	few
		i	73	bid
	/ɪ/	y	23	happy
		e	93	set
		ea	4	stealth
	/a/	a	100	cat
		u	88	hut
		o	10	son
	/ʌ/	o	95	cot
		a	5	wash

SOME SPECIFIC PROPOSALS

World English Spelling

Forskor and seven yeerz agoe our faathers braut forthh on this kontinent a nue naeshon, konseevd in liberti, and dedikaeted to the propozishon that aul men ar kreeaeted eekwal. Nou wee ar en.gaejd in a graet sivil wor, testing whether that naeshon, or eni naeshon soe konseevd and soe dedikaeted, kan long enduer. Wee ar met on a graet batlfeeld ov that wor.

Regularized English

Regularized English iz a system ov spelling which lays down definit rules ov pronunciation which wood make it eazier for aull children to lern to read and write. In aull probability it wood lead to a saving ov at least wun year's wurk for aull schoolchildren. It wood aulso contribute very largely towaurdz abolition ov the existing amount ov illiteracy and backwardness in reading.

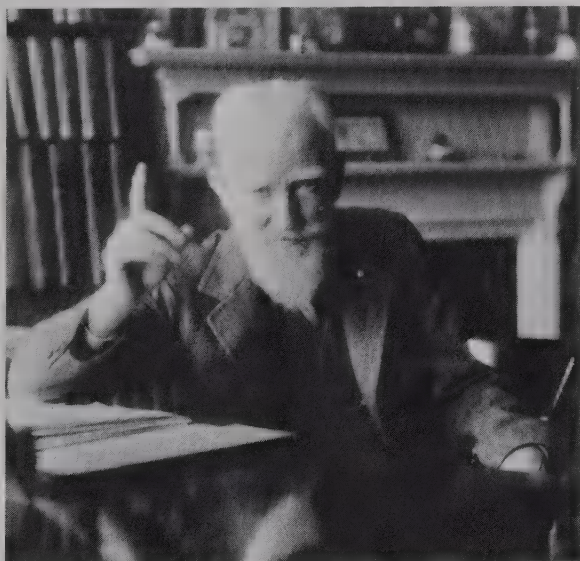
New Spelling

Forskor and seven yeez agoe our faadherz braut forth on dhis kontinent a nue naeshon, konseevd in liberti, and dedikaeted to dhe propozishon dhat aul men ar kreeaeted eekwal. Nou we ar en,gaejd in a graet sivil wor, testing whedher dhat naeshon, or eni naeshon soe konseevd and soe dedikaeted, kan long enduer. We ar met on a graet batlfeeld ov dhat wor.

Simpler Spelling Association

forskor and sevn yerz ægo ar fahærz brøt forþ on
his kontinænt æ niu næfæn, kænsevd in libærti, and
dedikated tu þe propæzifæn hat ol men ar kreated
ekwæl.

naí wē ar engajd in ə grāt sivil wōr, testiŋ
hwehōr þat naŋsōn ɔr eni naŋsōn so kənsəvd and
so dedikated, kan lōŋ endiur. wē ar met ɒn ə grāt
batl-feld ɒv þat wōr.



George Bernard Shaw (1856–1950)

[illegible]

KEY

Tall :										
	peep	tot	kick	fee	thigh	so	sure	church	yea	hung
Deep :										
	bib	dead	gag	vow	they	zoo	measure	judge	woe	ha-ha
Short :										
	lo!l	mime	if	egg	ash	ado	on	wool	out	ah
	roar	nun	eat	age	ice	up	oak	ooze	oil	awe

The Shaw alphabet for writers

One of the most recent alphabet inventions was inspired by George Bernard Shaw (1856–1950); it is often referred to as 'Shavian'. As a writer, Shaw felt there was an enormous waste of time and effort involved in English spelling, and he was a vigorous campaigner for a new alphabet. He himself always wrote in Pitman's Shorthand, which was then transcribed by a secretary.

In his will, Shaw appointed the Public Trustee to seek and publish an alphabet of at least 40 let-

ters to enable English to be written without indicating single sounds by groups of letters or by diacritical marks. He termed this the 'Proposed British Alphabet'. There was a competition, and in due course Kinsley Read's design was adjudged the winner.

The alphabet follows the normal basic conventions of English, being read from left to right, and using word spaces. Punctuation and numerals are unchanged. There are four types of letter: *shorts*, *talls* (letters with ascending strokes), *deeps*

(letters with descending strokes), and *compounds*.

Several phonetic principles are used; e.g. voiceless and voiced consonants (§27) are related by reversed shapes. Capitals are not distinguished. Proper names are identified by a raised 'name' dot. The four words *the*, *of*, *and*, and *to* are given separate symbols: ϵ , τ , \backslash , and 1 respectively. In the diagram above, the letter names are given below the symbols: the sound of each letter is given in bold type.

Arguing the case

The flavour of the arguments surrounding spelling reform is well captured in this extract from a letter written by Shaw to the periodical *Tit-Bits* (22 March 1946). He is reacting to an earlier proposal from the reformer, Mont Follick:

Everything that Dr Follick says about our spelling is true; but it was said by Alexander J. Ellis a hundred years ago, and has been repeated again and again by the most eminent phoneticians without producing the smallest effect. The reason is that as so presented the change has seemed enormously expensive and the phonetically spelt texts ridiculous and even sometimes obscure.

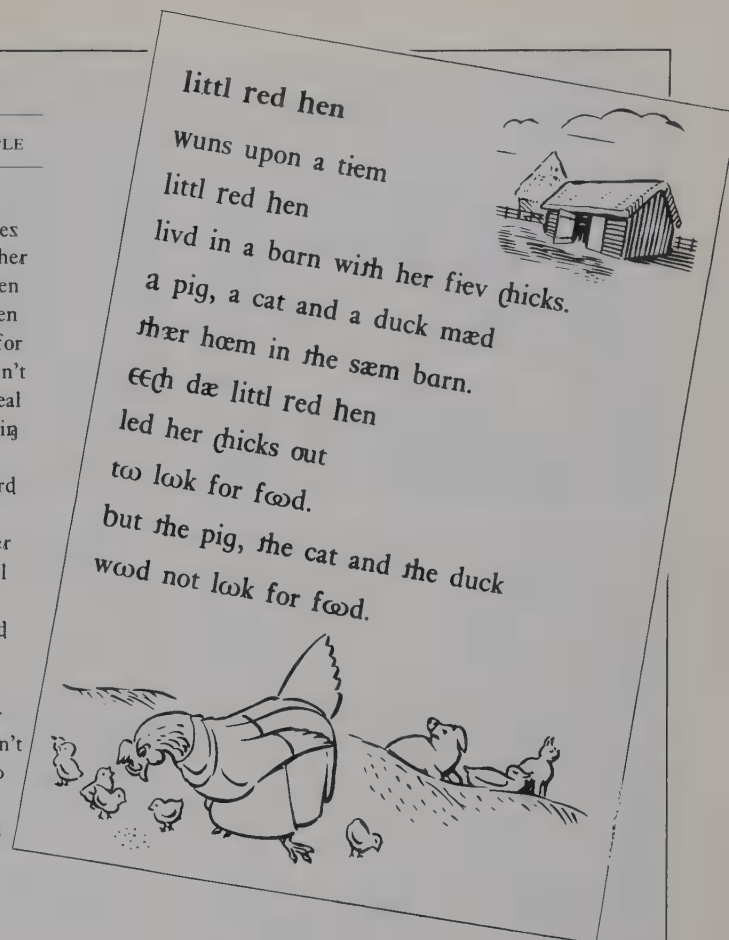
What is needed is a new alphabet of not less than 42

letters, which is the lowest number sufficient to represent all the sounds of spoken English recognizable by a single symbol each. Dr Follick, by confining himself to 22 letters of the present alphabet, is compelled to represent single sounds by several letters, and has landed himself in such monstrosities as 'ei tscheir' to spell 'a chair'; 9 letters for 3 sounds! I can write 'a chair' 12 times in a minute, and 'ei tscheir' only 9 times. The number of minutes in a day is 1,440. In a year 525,600!!!

To realize the annual difference in favour of a forty-two letter phonetic alphabet as against Dr Follick's Ootomatik alphabet you must multiply by the number of minutes in the year, the

number of people in the world who are continuously writing English words, casting types, manufacturing printing and writing machines, by which time the total figure will have become so astronomical that you will realize that the cost of spelling even one sound with two letters has cost us centuries of unnecessary labour. A new British 42 letter alphabet would pay for itself a million times over not only in hours but in moments. When this is grasped, all the useless twaddle about enough and cough and laugh and simplified spelling will be dropped, and the economists and statisticians will be set to work to gather in the orthographic Golconda.

Traditional column			Augmented column		
NAME	CHARACTER	EXAMPLE	NAME	CHARACTER	EXAMPLE
1. ^o ae	*æ	*ænjel	25. ^o zess	*s	houses
2. bee	b	beetl	26. whae	wh	whether
3. kee	c	curly	27. chae	ch	chicken
4. dee	d	didn't	28. ith	th	thicken
5. ee	ee	eeven	29. thee	th	thærfor
6. ef	f	færly	30. ish	fh	fhōdn't
7. gae	g	given	31. zhee	z	uegzueal
8. hae	h	hasn't	32. ing	g	thigking
9. ie	ie	ievery	33. ur	r	absurd
10. jae	j	jeneral	34. ah	a	father
11. kae	k	kwickly	35. aw	au	aufōl
12. el	l	lieon	36. at	a	atlas
13. em	m	mætor	37. et	e	ended
14. en	n	never	38. it	i	idiot
15. oe	œ	œnly	39. ot	o	offis
16. pee	p	prievæt	40. ut	u	urher
17. rae	r	rythm	41. oot	ō	wōdn't
18. ess	s	sudden	42. oo	ō	tattō
19. tee	t	tueba	43. ow	ou	allou
20. ue	ue	uesfōl	44. oi	oi	annoī
21. vee	v	very			
22. wae	w	werther			
23. yae	y	yugster			
24. zee	z	zombi			



i.t.a. The Initial Teaching Alphabet, devised in 1959 by James Pitman (1901–1985), is a system of 44 lower-case letters, each corresponding to a single phoneme (§28). Extra symbols are introduced to handle contrasts not systematically represented by traditional orthography – hence its characterization as an ‘augmented’ Roman

alphabet. The 24 traditional letters are retained. Capitals are larger versions of the lower-case letters. The i.t.a. is not a proposal for the permanent reform of English spelling, but a system intended to assist children in their first encounter with reading. Irregularities are not eliminated, simply postponed. The main aim was to design a system that

closely resembled traditional orthography, to ensure an easy transfer to normal spelling in due course. As a result, certain features often eliminated in spelling-reform proposals are retained on the grounds that they will aid this transition; for example, the system keeps double letters, as in *appl*, and vowels in unstressed syllables are not all

reduced to one. The system is a compromise between simplification and familiarity. The i.t.a. is not a ‘method’ for teaching reading (p. 250); but it can be used in relation to several such methods. For example, phonetic approaches might be aided by the consistent links between graphemes and phonemes; and look-and-say approaches might find

the appearance of each letter in only one form helpful, because it would remove variations in the visual patterns of words. At its peak, i.t.a. was being used in several countries, including some where English was being taught as a second language (§62). In recent years, however, its popularity has declined.

A successful reform

The differences between British and American spelling show that changes can be introduced if circumstances are right. The changes derive from the rules introduced by Noah Webster (1758–1843), such as the use of *-or* for *-our* and *-er* for *-re*. In his later writings, Webster came to advocate spelling reform.

Examples of the spelling differences include the following (* indicates a rule that applies to many other words of the same type).

U.S.	Britain
catalog	catalogue
cruelst	cruellest*
gray	grey
honor	honour*
license (noun)	licence
liter	litre*

U.S.	Britain
program	programme (except in computing)
theater	theatre*
traveler	traveller*
worshipping	worshipping

Several spellings have come to be used in both countries, but there are still strong usage preferences:

U.S.	Britain
encyclopedia	encyclopaedia*
jail	gaol
leaped	leapt*
omelet	omelette
practice (verb)	practise

Right: The opening of Webster's successful ‘Blue-backed Speller’ (1783)

Analysis of Sounds in the English Language.

IN the English alphabet there are twenty-five single characters, that stand as representatives of certain sounds.

A, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z. H is not a mark of sound, but it qualifies or gives form to a succeeding sound.

In order to understand these letters or rather the sounds they represent, it is necessary to define the meaning of the words, vowel, diphthong, and consonant.

A vowel is a simple articulate sound. A simple sound is formed by opening the mouth in a certain manner, without any contact of the parts of it. Whenever a sound can be begun and completed with the same position of the organs, it is a simple sound.

A diphthong is a union of two simple sounds, pronounced





PART VI

The medium of language: signing and seeing

In recent years, the study of spoken and written language has been supplemented by interest in a third means of linguistic communication – sign language, or simply, ‘sign’. This mode of behaviour is of particular importance because, like speech (and unlike writing, and other codes), several of its manifestations have a natural, biological basis. Most of this interest is directed at the various natural sign languages used by the deaf population (§46), but any survey must also take into account the nature of the artificially constructed sign languages and systems that have been devised to help hearing people communicate with the deaf. Other kinds of signing behaviour used by the hearing population are more restricted in character; these are described in relation to nonverbal communication in §64.

Sign is one of the most neglected aspects of communication study, as is reflected in the regrettably small extent of this part of the encyclopedia. The neglect is due to several factors – not least the widespread popular as well as scholarly reluctance to accept the possibility that sign could be a real language, worthy of systematic study. Researchers

in the field face several difficulties. The number of people for whom signing is their natural, everyday language is relatively small, and it is not always easy to find people who are able to communicate in a fluent and unselfconscious way. Moreover, it is only since the 1970s that film and video techniques have become sufficiently routine to enable the basic data to be recorded for analysis. But recording the data is only a first step: special ways of analysing and transcribing the data have to be devised, to enable appropriately detailed descriptions to be made. As a result, the true complexity of this medium of visual communication has begun to be appreciated only in recent years.

Part VI therefore begins with a consideration of several popular fallacies about sign language, in particular stressing the importance of seeing sign as a language in its own right. The study of sign language structure is then introduced with reference to American Sign Language, which has attracted most of the linguistic research since the 1960s. Part VI concludes by looking at some of the other signing systems that have been developed for use with the hearing-impaired population.

A filmed sequence of signs from British Sign Language, used as part of an experiment into the way deaf people remember signs. The signs, in sequence, are: true, you, chew, car, brother, two, blue, through, new, who, few, cold, agree, milk, worth, wash, shoe, break, paper, make.

35 Sign language

Myths and reality

The first step in considering the nature of sign language is to eradicate traditional misconceptions about its structure and function. Popular opinions about the matter are quite plain: sign language is not a real language but little more than a system of sophisticated gesturing; signs are simply pictorial representations of external reality; and because of this, there is just one sign language, which can be understood all over the world. It is now clear, from the results of the first research studies of this subject, dating from the 1960s, that all of these opinions are wrong.

A clear distinction must be drawn, first of all, between sign language and gesture. To sign is to use the hands in a conscious, 'verbal' manner, to express the same range of meaning as would be achieved by speech (especially by grammar, §16). By contrast, gesturing is far less systematic and comprehensive; there are in fact very few hand gestures (§64), and these are used in an *ad hoc* way to express a small number of basic notions. Everyone can gesture; but few have learned to sign. (A similar point can be made about facial expressions and body movements.)

Some of the hand movements of sign language can be plausibly interpreted by non-signers because they reflect properties of the external world (they are *iconic*); but the vast majority of signs are not. It is possible that many of the signs were iconic when they were first devised, but little information is available about this point in the past, which some have speculated may be as early as the origins of human language (§49). In any case, whatever the original situation, the iconicity has been lost in most instances because of the influence of linguistic change, which affects sign as it does spoken language (§54).

As a result of linguistic change, and because of independent creation in different parts of the world, no single sign language exists. There are many such languages (American, French, Danish ...), and they are not mutually intelligible. They use different signs and different rules of sign formation and sentence structure. Even within an area that uses the same spoken language, the differences may be so great as to preclude mutual comprehension – as happens, for example, between British and American Sign Language (BSL and ASL).

Sign languages have a structure of comparable complexity to spoken and written language and perform a similar range of functions. There are rules governing the way signs are formed, and how they are sequenced – rules that have to be learned, either as children (e.g. from deaf parents, §46) or

Comparing sign languages

When a comparison is made of different sign languages, structural differences clearly emerge. In a study of Chinese Sign Language (CSL) and American Sign Language (ASL), for example, it proved possible to identify several systematic differences in the use of hand shapes and movements.

- There are signs in both languages that have the same form, but different meaning; for example, ASL signers recognize the CSL

sign for *father*, but interpret it as the ASL sign *secret*; CSL *help* is equivalent to ASL *push*.

- Some CSL signs use sign shapes or movements which are not possible formations in the ASL system, such as the signs for *Wednesday* and *introduce*.

- Some CSL signs have the form of possible signs in ASL, but are not in fact actually used in ASL; for example, elements of the CSL sign for *distracted* are like the ASL signs for *yellow*

low and *separate*, but the particular CSL combination is not an ASL sign. (After E. Klima & U. Bellugi, 1979.)



CSL *distracted*



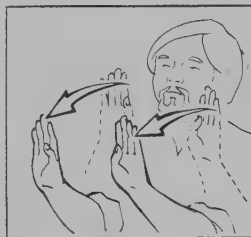
CSL *father*, like ASL *secret*



CSL *Wednesday*



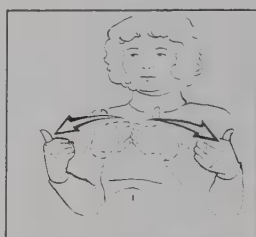
ASL *yellow*



CSL *help*, like ASL *push*



CSL *introduce*



ASL *separate*

Iconic signs?

The signs of sign language are often deceptively iconic. After its meaning has been revealed, a sign may appear 'obvious'; but it proves not so easy to predict the meaning from the shape of the sign alone. This can be seen even in a sign language which aims for maximum iconicity. The pictures are of Gestuno, a system adopted by the Unification of Signs Commission of the World Federation of the Deaf in 1975. Once one is told that these are animal signs, it becomes possible to make reasonable guesses at what they mean – but even so, the guesses are often wrong (glosses are given at the foot of the page).



1: hen 2: horse 3: lion
4: monkey

as adults (e.g. when working with the deaf). There are a large number of signs available within a sign language (around 4,000 have been recorded in ASL), and these are used to convey a considerable range of meaning. When two fluent signers communicate, they provide impressive evidence of the creative potential of sign, and of its social and psychological reality as a language.

MODERN DEVELOPMENTS

Very little information is available about the early history of sign languages. References to deaf signing are found in Greek and Roman writings, but there are no details. In recent times, the study of signing is dated from the work of the French educator, Abbé Charles Michel de l'Épée (1712–89), who in 1775 developed a sign language for use in a school for the deaf in Paris. The origins of his system are obscure: several of his signs were modifications of those used by the French native deaf population, but he also made some use of the Spanish manual alphabet (p. 225), and he may have incorporated some of the signs used by the Spanish Benedictine monks. Several foreign educators studied at his school, and the influence of this system spread to many parts of the world, including Russia, Ireland, and America. For example, the American educator Thomas Gallaudet (1787–1851), together with Laurent Clerc (1785–1869), a teacher of the deaf, brought the signs to the USA, where they came to be used alongside those already in use by the American deaf population. Modern American Sign Language (ASL, or Ameslan) derives from this system.

When a sign language becomes widely used, it develops the same kind of dialects and varieties as occur in spoken language. This kind of variation can be seen in ASL, which is now used by over half a million deaf people, many of whom use it as a native language. Some varieties are regional in origin (§8), but many are due to the age at which the sign language is learned, and to social factors, such as the home environment (whether the parents are deaf) and the educational background of the signer. A further important variable is the extent to which the sign language has been influenced by the spoken language of the community. A dialect continuum (p. 25) seems to exist among the American deaf, and this is probably a universal phenomenon. The continuum ranges from ASL varieties that show no influence of spoken language to those that have been markedly shaped by properties of English – by word order, in particular. Several pidgin varieties of signing exist along this continuum (§55).

An important stage in the history of sign language analysis took place in the 1960s, when the term *cherology* was coined on analogy with *phonology* (§28) to refer to the study of the contrastive units (*cheremes*) that occur in a sign language. The structural analyses subsequently made provided a valuable indication of the difficulty researchers face as they try to 'capture' the dynamic, multi-dimensional properties of sign.

In this approach, three classes of cheremes are identified (after W. C. Stokoe *et al.* 1965):

- *tab* (*tabula*) the location in the sign space where a sign is made;
- *dez* (*designator*) the active hand configuration used to make the sign; and
- *sig* (*signation*) the action of the active hand. Signs are described as simultaneously occurring combinations of tab, dez, and sig.

Various constraints affect the use of these contrasts. Not all possible combinations occur. Some are physically impossible. Some are not used by convention – for example, signs are not made from head to shoulder but from head to chest. There is a strong tendency towards hand symmetry: if a sign requires two active hands, both hands will have identical shapes and orientations. Several such constraints govern the structure of a sign language, and a major focus of recent research has been to discover the rules governing sign formation, and the contexts (such as poetry, irony, or humour) where departures from these rules are tolerated.

Transcribing signs

A series of signs with their tab and dez elements transcribed (see below). Sig actions cannot be clearly shown without moving film. The pictures show the right hand as dez and the left, when used, as tab. Left-handed signers often use the left hand as dez. The triple mark above the V shows that the sign is made with the fingers bent.

Tab Π Dez G



Tab [] Dez L



Tab √ Dez H



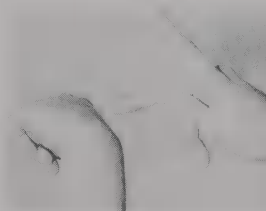
Tab √ Dez V̂



Tab Q Dez w_v



Tab Q Dez K_√



Some ASL sign symbols

Tab

- Π neck
- [] trunk
- √ upper arm
- ✓ elbow, forearm
- Q wrist, arm on its back
- ⓓ wrist, arm face down

Dez

- 5 spread hand
- G index finger points from fist
- H index and second finger, side by side, extended
- I little finger extended from compact hand
- K index finger points from fist, and thumb touches middle of second finger
- L thumb and index finger at right angles, others usually bent into palm
- O fingers curved and squeezed together over thumb
- V index and second fingers extended/spread ('victory')
- W thumb and little finger touch, other fingers extended/spread

Sig

- ^ upward movement
- ∨ downward movement
- > rightward movement
- palm-up rotation
- ▾ palm-down rotation
- # closing action
- ⦿ circular action
- ⊙ entering action

Some ASL words

- 5[⊙] # included
- [⊙] F[^] soul, spirit(ual)
- [⊙] F[⊙] tea
- [⊙] H[^] resign, quit

Note: When two sig elements are placed horizontally, they are signed in sequence; when placed vertically, they are signed together.

36 Sign language structure

A great deal is now known about the structure of natural signing, following several years of detailed study of American Sign Language (ASL). It has become clear that this language has a highly developed structure which needs to be described in its own terms. And as research continues on other sign languages, similar conclusions are beginning to emerge.

Describing sign language 'in its own terms' is, however, easier said than done. We are so used to thinking of language in terms of the structures of speech or writing that it is extremely difficult to grasp what is going on when a completely different medium is involved. This can be seen by considering the effect of a monologue in sign when it is given a fairly literal 'translation' into English. Here is an extract from one study (I. M. Schlesinger & L. Namir, 1978, p. 100):

Two children. One marry. Two grandchildren. Work close frat building. One still school. Mother gone. My aunt true me phone. Sorry can't funeral. Me work. Me awful cry. Come night.

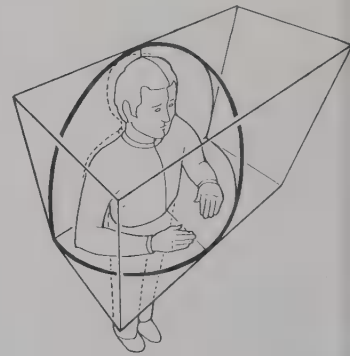
This kind of transcription inevitably gives the impression of a reduced or simplified language – the grammar is highly telegraphic, there are no inflectional endings, and words are omitted. But this is to judge one language by the criterion of another – something that breaks a cardinal principle of modern language study (§2). A word-for-word translation from a foreign language (§57) would give just as odd a result. In omitting articles or the copula verb *be* (as in *man happy*), for example, ASL is no different from Russian. And, conversely, ASL makes use of many conventions that other languages lack – such as the simultaneous use of signals (e.g. hand signs plus facial expressions, eye movements, and shifts of the body), that literal translations cannot easily convey. Moreover, the speed of fluent signing – between one and two signs per second – produces a conversational rate that is comparable to that of speech. It usually takes longer to make a sign than to pronounce a word, but many signs express a meaning far more succinctly than the corresponding spoken output.

THE USE OF SIGN SPACE

The expressive potential of sign can be appreciated only by looking at signing behaviour in some detail. There is, first of all, a three-dimensional *sign space*: vertically, this consists of the distance just below the waist to the top of the head (signs are rarely made above the head, below the waist, or towards the back of the head or body); laterally, the space forms a 'bubble' which extends outwards in front of the signer from extreme right to extreme left. Within this space, there is room to make an indefi-

nately large number of signs, and it is possible to see several organizational principles operating. 'Locations' can be established that identify different sentence elements or semantic functions.

- Time relationships can be expressed by dividing the space into neutral (present), further forward (future), and further back (past) areas; these areas can then be used both for tense forms and for time adverbs (*then, now, next, last*, etc.).
- Several persons (pronouns) can be distinguished using different spatial areas: *you* is front-centre; one third-person form is signed to the right; another to the left; and others divide up the intervening space. Moreover, once a space is established for a given person, it is normally 'reserved' for that person for the remainder of the conversation.
- Questions can be signalled by an appropriate accompanying facial expression, such as raised eyebrows and backwards head tilt.
- Great use is made of reduplication (p. 175) to express such notions as plurality, aspect, degree, or emphasis; for example, such verbal meanings as continuity, repetition, or habituality can all be signed by repeating a verb sign with varying speed.
- The use of pause between signs or sign sequences is available to mark grammatical boundaries.
- The whole spatial area can be enlarged or confined to express 'louder' or 'quieter' signing.

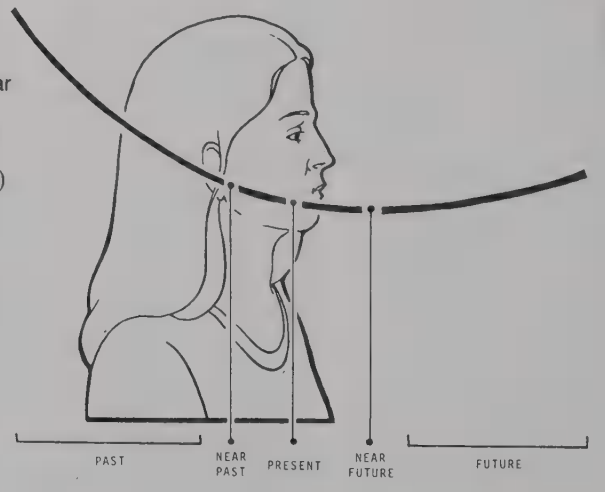


The normal signing space

The time line

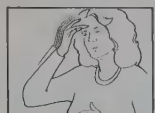
A line along the vertical plane, near the signer's ear and cheek, is regularly used to express time relationships.

(From N. Frishberg, 1979.)



Aspect modulations

ASL makes use of a complex system of simultaneous sign 'modulations', analogous in function to the sequential inflections of spoken morphology (p. 90). These can be illustrated by the forms used to convey semantic contrasts of aspect (p. 93). In one study, the variations on the sign for *sick* were analysed, and several aspectual modulations were recognized. Eight of these are illustrated in the figure below. The horizontal dimension represents the relative length of the sign, and the vertical divisions show the number of repetitions of the movement. The blank sections represent the relative durations of 'holds' (i.e. points at which the hand is held steady). Muscular tension, accentuation, and certain other characteristics of the movements are not represented. (After E. Klima & U. Bellugi, 1979.)



Uninflected sign meaning 'be sick'



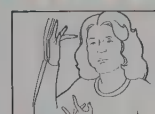
Predispositional aspect (circular modulation)
'prone to be sick'



Susceptative aspect (thrust modulation)
'get sick easily'



Continuative aspect (elliptical modulation)
(three repetitions)
'sick for a long time'



Incessant aspect (tremolo modulation)
'never stops being sick'



Frequentative aspect (marcato modulation)
'often sick'



Intensive aspect (tense modulation)
'very sick'



Approximative aspect (lax modulation)
'sort of sick'

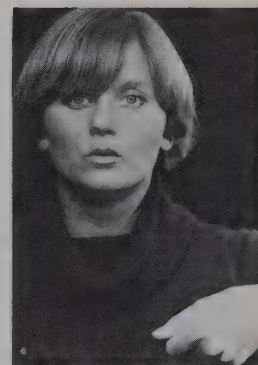
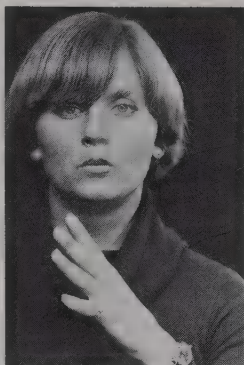


Resultative aspect (accelerando modulation)
'became sick'

Relative sign duration

Structure contrasts

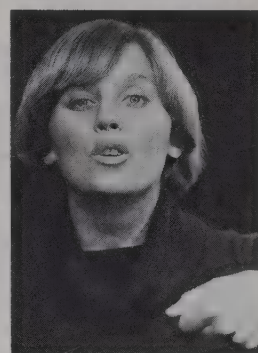
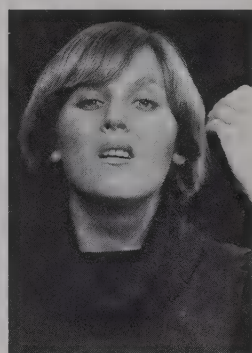
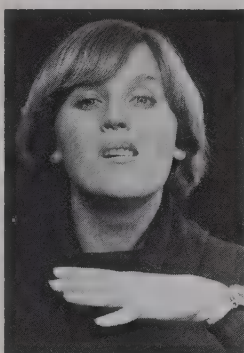
The non-manual activities which accompany a sequence of signs can have an important structural function in ASL.



(a) The sequence of signs 'woman-forget-purse' is used as a statement, *The woman forgot the purse* (the articles are not separately signed).



(b) The same sign sequence is accompanied by a forward movement of the head and shoulders, and the eyebrows are raised: this would express the yes-no question, *Did the woman forget the purse?*



(c) The same sign sequence is used as part of the sentence 'woman-forget-purse-recently-arrive' (*The woman who forgot the purse has just arrived*). Here, the relative clause section (*The woman who forgot the purse*) is signalled by having the brow and upper lip raised, and the head tilted back. (After S. K. Liddell, 1980.)

37 Types of sign language

Several sign languages may be in regular use within the boundaries of a particular speech community. The most widely used are the concept-based systems that have developed naturally among the deaf communities, and it is these that are most commonly referred to as 'sign language' – American Sign Language, British Sign Language, Danish Sign Language, etc. In addition, in recent years educators and linguists have devised several new kinds of signing system. These are mainly taught to deaf children or adults, but they are also sometimes found being used with other handicapped populations, such as the mentally retarded.

The greatest proliferation of new signing systems has been within the English speech community. Most approaches involve modifications of ASL or BSL, with the aim of bringing the signing closer to spoken English. Several of these systems emerged in the late 1960s in the USA, notably Seeing Essential English (1966), and its two derivatives, Linguistics of Visual English (1971) and Signing Exact English (1972). Other systems were devised that closely followed the structure of speech, such as Signed English (1969) and Manual English (1972). Given the urgent need for progress in the edu-

cational domain, and the sincerity and enthusiasm of the creators, all of the systems have been put to valuable use in a range of teaching situations. However, objective techniques for evaluating their relative strengths and weaknesses have not so far been devised.

Each of these systems aims to reflect the structure of English, but they do this in different ways. All follow English word order, but they differ in the way they form signs, and in how much finger spelling (see below) they use. Many arbitrary decisions have to be made by the system's creator; for example, it is not obvious how to allocate signs to such forms as irregular nouns, verbs, or adjectives (§16). Should past-tense forms (*took, gone, etc.*) be signed with the same sign as past participle (*taken, went, etc.*) or with different signs? Should *took* be signed as 'take + PAST', 'take + -ed', 'take + e + d', or 't + o + o + k'? There are many such possibilities, and different systems go in different directions, with varying degrees of consistency.

Amer-Ind

Over the centuries, the North American Indians have spoken hundreds of languages from several different families (p. 320). It is not surprising, then, that they developed a form of signing as a means of communication between different tribes. Following early descriptions of this 'hand talk', an adaptation was made for use with the handicapped by Madge Skelly (1903–), an Indian-born speech pathologist. The system is conceived as a gestural code, rather than a language. It contains a limited number of signs, representing concrete meanings, and it has no grammatical structure apart from sequence. The signs are chosen so as to be immediately recognizable, so that the viewer can interpret without formal instruction, and regardless of language background. Four signs are illustrated below.

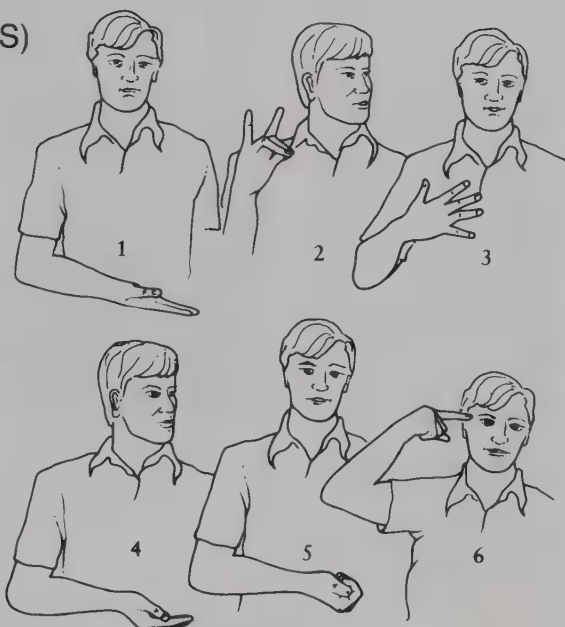
Paget-Gorman Sign System (PGSS)

The earliest proposal to be widely adopted in modern times was based on Richard Paget's *A Systematic Sign Language* (1951).

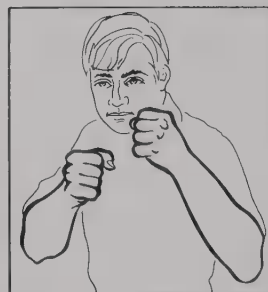
After his death in 1955, this system was developed in Britain by his widow, Grace Paget, and Pierre Gorman, at that time librarian of the Royal National Institute for the Deaf. It contains some 3,000 signs, representing the words and morphemes (p. 90) of spoken English. Sentences are signed following English word order. The system makes use of a set of 'basic' signs – semantic fields such as 'action', 'animal', 'colour', 'container', and 'food'. Different words belonging to each field are identified with reference to the same basic sign, plus an identifying sign.

Six of the PGSS basic signs

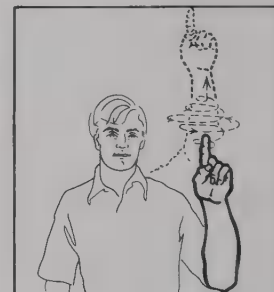
- | | |
|----------|-------------|
| 1 action | 4 container |
| 2 animal | 5 thing |
| 3 colour | 6 think |



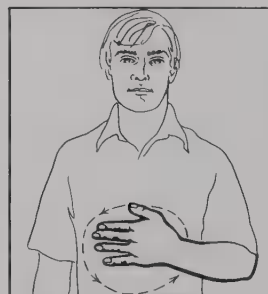
The different colour words, for example, are all derived from the basic sign above. To sign *blue*, one hand is held as for *colour*, while the first finger of the other hand is held pointing up, back outwards, in line with the signer's side (i.e. the colour of the sky). To sign *red*, the same basic sign is used, while the other hand makes the sign for *blood*.



fight



heaven



hungry



mirror

Finger spelling

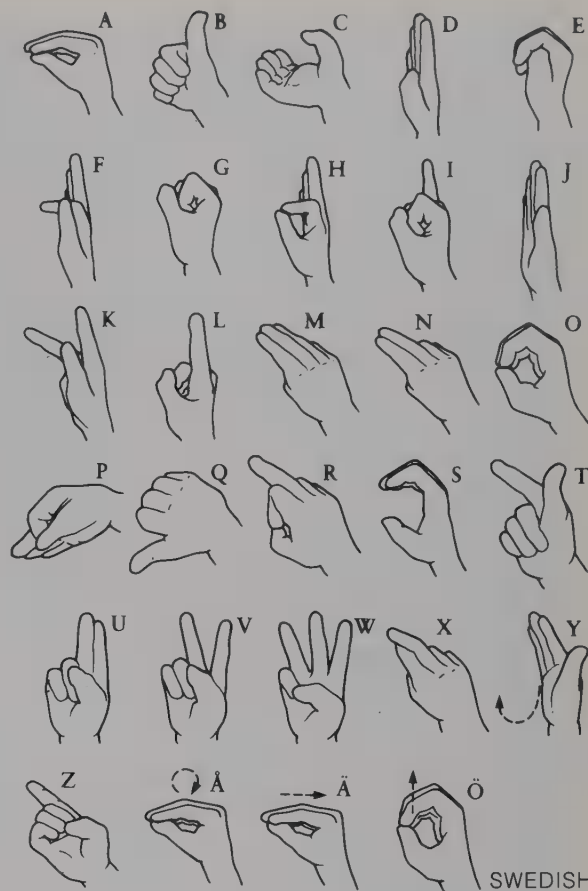
Finger spelling, or dactylo-logy, is a signing system in which each letter of the ordinary alphabet is given its own sign. The principle can be applied to any language which has developed an alphabetic writing system. However, there are conventional differences: in particular, the British manual alphabet is formed using two hands, whereas the American and Swedish systems, for example, use only one.

The main strength of finger spelling is its great scope and flexibility. It is quick to learn and can then be used to sign an indefinite number of words. It is a particularly useful system for signing proper names, which are not given their own signs in other sign systems. However, it is a slow system to use, rarely exceeding 300 letters per minute (about 60 words). Moreover, it cannot be used at all unless one is able to spell (a problem for young children, who also have difficulty controlling the hand shapes required). From the receiver's point of view, it is difficult to distinguish the hand shapes at a distance, and, even close to, intelligibility can be a problem if the rate of signing speeds up, and the signer begins to omit letters.

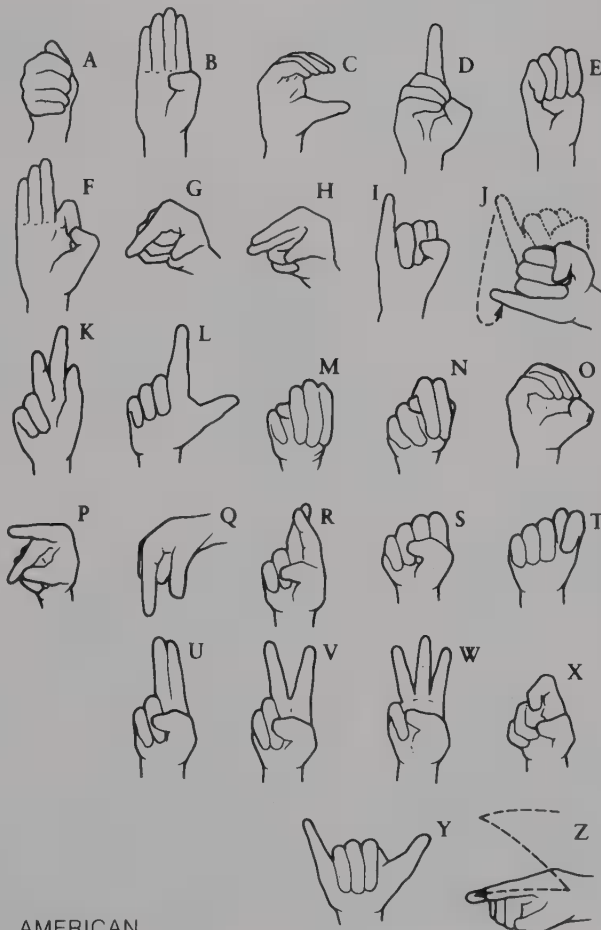
Finger spelling is best thought of as an auxiliary signing system, a convenient bridge between spoken or written language and sign language proper. The use of the method has been documented from the 17th century. The philosopher George Dalgarno, for example, recommended its use by all members of a family whenever it contained a deaf child, arguing that the acquisition of spelled language would thereby be as natural as the acquisition of spoken language. In modern times, some educational approaches make a great deal of use of it – the 'Rochester' method in the U.S., for example, is based on a combination of finger spelling and speech, and it is reported that a Cyrillic manual alphabet is widely used in the Soviet Union.



ENGLISH



SWEDISH



AMERICAN

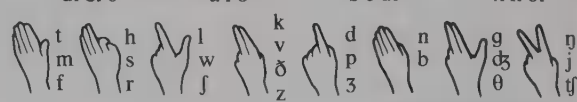
Cued speech

Normal lip-reading techniques allow only certain sounds – those towards the front of the mouth – to be easily distinguished; and there are many sentences which lip readers find difficult to make out, especially when the context is unclear (such as *It is in the tin*, where the lip position is almost identical throughout). Cued speech hopes to eliminate such difficulties by making it possible for a deaf person to 'see' the sounds of speech as they are spoken. It is a system of hand cues that are used alongside lip movements to draw attention to the phonemic (§28) contrasts of speech. The system was devised in 1966 by the American educator R. Orin Cornett (1913–), and it has since been adapted for use in over 30 languages.

Below: The system uses 36 cues for the 44 English phonemes. Vowel cues are shown by the position of the hand. Four positions are recognized: at the side, throat, chin, and mouth. Each position signals a group of three vowels of different lip shapes; vowels with the same lip shape can then be readily distinguished by noting the accompanying sign. Consonant cues are shown by the shape of the hand. There are eight hand shapes, each of which is associated with a group of consonants of different lip shapes; as with vowels, consonants with the same lip shape can then be distinguished by noting the accompanying sign.



Side position Throat position Chin position Mouth position
a: ɜ: ə a i u d e u: ʌ i: ɔ:







PART VII

Child language acquisition

The study of how children learn to speak has proved to be one of the most fascinating, important, and complicated branches of language study in recent years. The fascination of the subject stems from the natural interest people take in the developing abilities of young children. Its importance lies in the way that language acquisition research can assist our understanding of language as a whole, and also in the many applications of this research – especially in the field of child language handicap (Part VIII). The complexity arises from the enormous difficulties that are encountered as soon as anyone attempts to establish and explain the facts of language development, especially in the very young child.

Part VII begins, therefore, with a discussion of some of the approaches and methods that have been used to find out about children's language – diaries, recordings, experiments, tests, profiles, and other procedures. The result of this enquiry has been an explosion of information about many details of language acquisition, and an increased awareness of such general issues as the nature of developmental stages, and the relationship between speech production and comprehension in the course of early learning. Several major theoretical accounts of child language acquisition have also been proposed in recent years, and these are reviewed in the final part of this section.

Following these general observations, sections 39–43 examine different aspects of the language acquisition process in somewhat greater detail. We begin with the early development of vocalization in infants during the first year of life, and the associated emergence of the skills of speech perception and speech interaction. Around 1 year of age, a more clearly defined linguistic ability is apparent, and it then proves possible to begin analysis in conventional linguistic terms, using the distinctions recognized in Parts III and IV. We look separately at phonological, grammatical, semantic, and pragmatic development, with particular reference to studies of preschool children.

Once children arrive in school, they meet a completely fresh range of factors that influence their language development. The final section of this Part therefore reviews recent and contemporary educational approaches to the question of how linguistic skills should be fostered in school. We begin with a discussion of the issues that arise in relation to spoken language (or 'oracy'), proceed to a review of the corresponding approaches that have been proposed in relation to the teaching of reading, and conclude with an account of current thinking about the most neglected area of all, the child's developing awareness of written language.

An ingenious way of fostering an early interest in words: a 'reading express' in a public library.

38 Investigating children's language

For over 200 years, scholars have shown an interest in the way children learn to speak and understand their first language. Several small-scale studies were carried out, especially towards the end of the 19th century, using data recorded in parental diaries. But detailed, systematic investigation did not begin until the middle decades of the 20th century, when the tape recorder came into routine use. This made it possible to keep a permanent record of samples of child speech, so that analysts could listen repeatedly to obscure extracts, and thus produce a detailed and accurate description. Since then, the subject has attracted enormous multi-disciplinary interest, notably from linguists and psychologists, who have used a variety of observational and experimental techniques to study the process of language acquisition in depth.

Central to the success of this rapidly emerging field lies the ability of researchers to devise satisfactory methods for eliciting linguistic data from children. The problems that have to be faced are quite different from those encountered when working with adults (p. 410). Many of the linguist's routine techniques of enquiry cannot be used with children. It is not possible to carry out certain kinds of experiments, because aspects of children's cognitive development – such as their ability to pay attention, or to remember instructions – may not be sufficiently advanced. Nor is it easy to get children to make systematic judgments about language – a task that is virtually impossible below the age of 3. And anyone who has tried to obtain even the most basic kind of data – a tape recording of a representative sample of a child's speech – knows how frustrating this can be. Some children, it seems, are innately programmed to switch off as soon as they notice a tape recorder being switched on.

Since the 1960s, however, several sophisticated recording techniques and experimental designs have been devised. Children can be observed and recorded through one-way-vision windows or using radio microphones, so that the effects of having an investigator in the same room as the child can be eliminated. Large-scale sampling programmes have been carried out, with children sometimes being recorded for several years. Particular attention has been paid to devising experimental techniques that fall well within a child's intellectual level and social experience. Even pre-linguistic infants have been brought into the research: acoustic techniques are used to analyse their vocalizations, and their ability to perceive the world around them is monitored using special recording equipment (§39). The result has been a growing body of reliable data on the stages of language acquisition from birth until puberty.

Ancient questions

Child language study has exercised its fascination on rulers and scholars alike for over 2,000 years, especially in relation to such questions as the origins and growth of language (§49). Many felt that the study of linguistic development in the child (language *ontogenesis*) would provide clues about the linguistic development of the human race (language *phylogenesis*). Some interesting similarities have been noted between the vocal tracts of infants and non-human primates (§49), but there is still a great gap between the emotional expression of infants and the propositional content of adult language, which studies of acquisition have not yet been able to bridge.

Someone who was remarkably modern in his

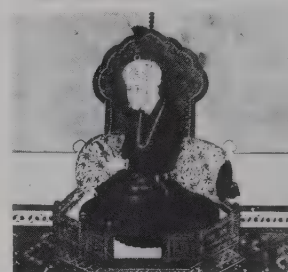
views was the Mogul Emperor of India, Akbar the Great (1542–1605). He believed that speech arose from people listening to others, and that children who were isolated from human contact would not be able to speak. A contemporary Persian account, the *Akbarnama* of Abu'l-Fazl, takes up the story:

As some who heard this appeared to deny it, he, in order to convince them, had a *serai* [mansion] built in a place which civilized sounds did not reach. The newly born were put into that place of experience, and honest and active guards were put over them. For a time, tongue-tied wet-nurses were admitted there. As they had closed the door of speech, the place was commonly called the Gang Mahal (the dumb-house). On the 9th August

1582 he went out to hunt. That night he stayed in Faizabad, and next day he went with a few special attendants to the house of experiment. No cry came from that house of silence, nor was any speech heard there. In spite of their four years, they had no part of the talisman of speech, and nothing came out except the noise of the dumb.

(From H. Beveridge, 1897–1910, pp. 581–2.)

Akbar the Great



Parental diaries

The earliest approach to the study of child language was to keep a written diary of observations about one's own child. Several 19th-century scholars engaged in this task, including August Schleicher and Charles Darwin. The approach fell out of favour with the advent of audio- and video-recording techniques, which permitted a more systematic, objective, and comprehensive analysis. It has nonetheless occasionally been used with good effect in recent decades – notably in Werner Leopold's four-volume study of his daughter Hildegard, published between 1939 and 1949, *Speech Development of a Bilingual Child*.

Below are some extracts from the earliest known diary study, by the German philosopher Dietrich Tiedemann (1748–1803) about his son, Friedrich, kept between 1782 (when the child was 6 months) and 1784:

On February 10th he showed the first signs of surprise and approval; so far his only expressions of pain, anger, impatience, and pleasure had been crying, writhing, laughing. Now, when he saw something new and delightful, he greeted it with the exclamation 'ach!' – the natural sign of admiration...

After all manner of exercise in the production of tones, and after the acquisition of some skill in using the speech organs variously, he commenced, on the 14th of March, to articulate consciously and to repeat sounds. His mother said to him the syllable 'Ma'; he gazed attentively at her mouth, and attempted to imitate the syllable...

A few words he pronounced clearly on November 27th and knew also their meanings exactly; these were 'Papa' and 'Mama'...

On the 8th of March, at

the sight of an object, he would repeat its name if he had frequently heard it, but he still found it hard to pronounce words of several syllables.

On the 30th of July he finally succeeded in uttering complete, though short sentences, for example: *There he stands, There he lies*...

[February 14, 1784] This is as far as my observations go. Other business prevented me from their continuation. I greatly desire that others may make similar ones; it will then be possible to determine various things by comparison, and that important branch of psychology, too little exploited as yet, which studies the development of human faculties – the foundation of pedagogy – will make appreciable progress thereby. (From C. Murchison & S. K. Langer, 1927.)

RESEARCH PARADIGMS

There is no single way of studying children's language. Linguistics and psychology has each brought its own approach to the subject, and many variations have been introduced to cope with the variety of activities in which children engage, and the great age range that they present. Two main research paradigms are found.

Naturalistic sampling A sample of a child's spontaneous use of language is recorded in familiar and comfortable surroundings. One of the best places to make the recording is in the child's own home, but it is not always easy to maintain good acoustic quality, and the presence of the researcher or the recording equipment can be a distraction (especially if the proceedings are being filmed). Alternatively, the recording can be made in a special setting, such as a research centre, where the child is allowed to play freely with toys while talking to parents or other children, and the observers and their equipment are unobtrusive.

A good quality, representative, naturalistic sample is generally considered an ideal datum for child language study. However, the method has several limitations. These samples are informative about speech production, but they give little guidance about the way children understand what they hear around them. Moreover, samples cannot contain everything, and they can easily miss some important features of a child's linguistic ability. They may also not provide enough instances of a developing feature to enable the analyst to make a decision about the way the child is learning. For such reasons, the description of samples of child speech has to be supplemented by other methods.

Experimentation The methods of experimental psychology have been widely applied to child language research. The investigator formulates a specific hypothesis about children's ability to use or understand an aspect of language, and devises a relevant task for a group of subjects to carry out. A statistical analysis is made of the subjects' behaviour, and the results provide evidence that supports or falsifies the original hypothesis – or, at least, suggests ways in which the experiment might be better designed next time!

Using this approach, as well as other methods of controlled observation, researchers have come up with many detailed findings about the production and comprehension of groups of children. However, it is not easy to generalize the findings of these studies. What may obtain in a carefully controlled setting may not apply in the rush of daily interaction. Different kinds of subjects, experimental situations, and statistical procedures may produce different results or interpretations. Experimental research is therefore a slow, painstaking business; it may take years before researchers are convinced that all variables have been considered and a finding is genuine.

Sampling: how much? how often?

Those who do research in child language are always being pulled in two directions, when they have to decide questions of sampling. They can choose to follow a single child, or a small group of children, in an intensive way, taking relatively large samples at frequent intervals. Or they can select a large number of children and take smaller samples at less frequent intervals. Both procedures have their strengths and limitations. The former enables the researcher to plot the gradual emergence of linguistic patterns from absence to acquisition; but it is unable to provide confident generalizations about these patterns, given the small number of children examined. The latter permits such generalizations, but is likely to miss points of significant progress that fall between the sampling intervals.

Depending on the method used, therefore, sampling intervals can range from every few days, especially when the children seem to be undergoing a period of rapid progress, to 3 months or more. The major research programme launched by the American psychologist Roger Brown (1925–) in the 1960s sampled three children for at least two hours a month – in one case, for half an hour a week. By contrast, a British programme of the 1970s, directed by the psycholinguist Gordon Wells (1935–), involved 128 children, and took a half-hour sample from each child every three months. Even larger numbers of children are sometimes used, but this restricts the research to the study of a very small set of linguistic features. It should be borne in mind, too, that large samples do not guarantee the occurrence of important features. In the Wells project, a search for passive verbs (e.g. *was kicked*) in 18,000 utterances from 60 children who were recorded three times between 3 and 3½ years of age, produced next to nothing: 12 children used such a verb a total of 19 times!

Half-hour samples are a popular measure, though often people use a sample consisting of a fixed number of utterances (e.g. 100 utterances taken from some point in a recording session). Whatever the length, samples need to be as representative as possible of the child's language, and researchers therefore need to anticipate the influence of such factors as time of day, the nature of the setting, and the presence of observers (p. 231).

Research cooperation

Children do not always see the need to cooperate to the best of their ability in language acquisition research, as the following story shows:

Another week we noticed that Adam would sometimes pluralize nouns when they should have been pluralized and sometimes would not. We wondered if he could make grammatical judgments about the plural, if he could distinguish a correct form from an incorrect form. 'Adam', we asked. 'which is right, "two shoes" or "two shoe"'? His answer on that occasion, produced with explosive enthusiasm, was 'Pop goes the weasel!' The two-year-old child does not make a perfectly docile experimental subject. (From R. Brown & U. Bellugi-Klima, 1964, p. 134.)

Longitudinal vs cross-sectional

Studies that follow the progress of a set of variables over time in the same set of children are known as *longitudinal* studies. Most child language research is of this form. However, it is also possible to build up a 'composite' picture of lan-

guage emergence, by studying a set of variables in a group of children of different ages, using different subjects at each age. This is known as a *cross-sectional* study. Combined designs are also possible.

Talking dolls

How do we know when young children are able to recognize errors in what people say? One ingenious research technique made use of a doll that was able to 'talk'. A toy panda, about 75 cm tall, was brought into a nursery where children (aged between 3 and 5) were playing. They were told that this was a very special kind of panda, because he was learning to talk. He wanted the children to come and see him one at a time, and talk to him so that his speech would improve. They were all very willing to help.

In the test sessions, two experimenters were involved. One stayed in the room with the panda and the child, playing with various materials. The other was outside the room, observing the session through one-way-vision glass and speaking into a

microphone linked to a loudspeaker in the panda's head. The children were trained to press a bell when the panda said something they thought was right, and to press a buzzer when he was wrong. The panda would also ask the children why he was wrong, if they did not spontaneously give a reason.

The children adapted to this situation enthusiastically, and so the technique was used in several kinds of study. It proved to be a very good way of testing sentence comprehension and conversational skills. In one of the comprehension studies, for example, a car was placed in each of four garages, and a fifth car was left outside. The doll then said such sentences as 'all the garages have cars in them' (which was true) and 'all the cars are in the garages' (which was

false). The children's reactions then showed how far they were able to grasp the distinction between the sentences.

The main reason for developing this method was to reduce the extent to which a child might be influenced by an adult experimenter, or overawed by an artificial test situation. It proved to be an extremely successful technique, and it has since been used in studies of speech production as well as of comprehension and interaction. By putting the children 'in charge', researchers are able to elicit a natural speaking style, and to observe several structures (such as the use of commands) that are often avoided when talking to adults. (After P. Lloyd & M. Donaldson, 1976.)

Chu-Chu and child exchanging names at the beginning of a session.



Task effects

Setting up an experimental task so that it does not hinder a child's performance is never easy. Even the simplest tasks can hide snags that make it difficult or impossible to interpret a response correctly. Where the child is seated, how the toys are arranged, and how the experimenter gives the instructions can all cause problems. The apparently simple instruction to 'Put the car behind the lorry', to test knowledge of 'behind', illustrates some of the difficulties.

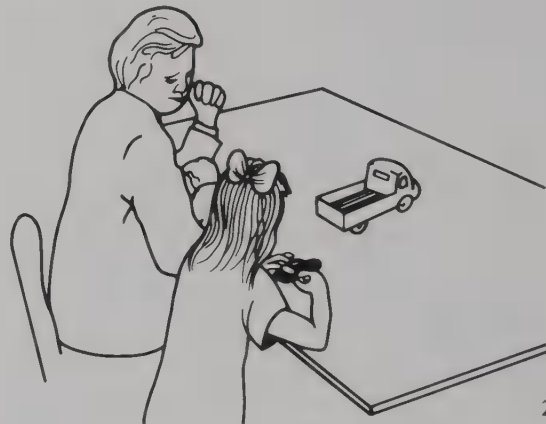


1. The child is sitting opposite the experimenter. Should she put the car behind the lorry from her own point of view, at X, or from the experimenter's, at Y, or should she use her knowledge of the real world, and place the car at the back end of the lorry, at Z, as it would appear when travelling along the road? A failure to respond, or a wrong placement, may reflect only her confusion, not her lack of knowledge of what the preposition means.

2. Now the child is alongside the experimenter, but there is still a problem. The tail end of the lorry is facing her. So she is still faced with the problem of what the experimenter intends.

3. A ball does not have a front and a back end, so there should be no difficulties from the real world here. Unfortunately, it has

been placed near the back of the table, so that the child has difficulty reaching behind it. Also, she might think that the car will fall off the table if she places it so far away. Such factors could once again lead her to act indecisively, or to put the car somewhere else, thus giving a misleading impression about her linguistic knowledge.



Individual differences

There has been a natural emphasis in language acquisition research on the universal characteristics of development. However, there are many individual differences which also need to be taken into account. Children may vary in their rate and strategies of learning for a variety of reasons, to do with such factors as sex, intelligence, personality, and social background (§§6–10). There are 'fast developers' and 'slow developers'. But it has not yet been possible to generalize about the way these variables affect the course of language development.

Popular notions nonetheless exist. For example, it is widely believed that girls learn to speak more rapidly than boys, and several researchers have noticed a trend for girls to be linguistically superior, at early ages. But there is negligible evidence for a definite effect. Samples tend to be very small, and measures selective. Such differences as are found seem to be due more to the effect of the different ways in which boys and girls are brought up, rather than to physiological or genetic factors. Parental style and expectations seem to be far more important.

Observer effects

The presence of research observers in a recording session may affect the mother more than the child! But it has taken some time for this point to be appreciated by researchers.

One of the first findings about maternal language concerned the presence of grammatical *expansions* when talking to a child. Mothers would often provide a gloss for their child's utterance which added elements that were not present:

CHILD: Go car.

MOTHER: Yes, daddy's going in his car.

In Brown's research project (p. 229), it was found that expansions appeared in nearly a third of mothers' interactions, in the early stages of learning. Their function seemed to be as a teaching aid for the child, in that the mothers were providing their children with a target that was slightly ahead of their performance. However, in Wells's project (p. 229), very few expansions were found. How is this discrepancy to be explained?

The main factor is thought to be the presence or absence of observers. In Brown's approach, there were always researchers present; in Wells's, there were no researchers present, and the mother was alone with the child most of the time. Wells made use of radio microphones and a sampling programme in which 90-second recordings were made automatically at 20-minute intervals throughout the day, so that the parent would be unaware when a recording was taking place. With these parents, the frequency of expansions increased only when another adult was present. This suggests that the main function of expansions is to act as a gloss for the benefit of an observer, and not, as was first thought, solely to provide the child with extra grammatical information.

Technological revolutions

The invention of the audio tape recorder led to the first revolution in child language research methodology. The invention of the video recorder may well prove to be a second. Each technique has its strengths and limitations.

The audio tape recorder is the more widely used means of obtaining child language data. Audio tapes and equipment cost less, and the technique is relatively unobtrusive. If radio microphones attached to the child's clothes are used, the actual recorder need not even be in the same room, and recordings of excellent quality can be made.

However, an audio recording gives no information about what a child is doing. Gestures and facial expressions, which are often used to supplement speech or show comprehension, are not available. It may not be possible to interpret sentences clearly: on an audio tape, *Put that over there* makes very little sense. It is possible to get round these problems to some extent, by having an observer present who makes notes on what is happening. But this is far inferior to a video record of the event, which can be viewed several times by different researchers.

With video, the tiniest

features of non-verbal behaviour, and the role of the accompanying context, can be transcribed and analysed. It is thus a frequently used tool in modern child language research – especially in studies of comprehension and parent-child interaction. But video studies are never straightforward: lighting, camera angles, sound recording, the intrusion of the camera, and other matters need to be carefully thought out if an informative picture is to be obtained.

'Fell down', says the child – a totally obscure utterance without the picture.



CHILDES

Modern methods of computational analysis and data processing could well revolutionize the study of language acquisition. One of the main problems facing the child language researcher is that the collection and transcription of data samples is extremely time-consuming. An hour of recorded conversational data can take 10 or more hours to transcribe, check, edit, and type. It has therefore been proposed that, once scholars have made their transcriptions, the data should be made available to the wider research community through the use of

an international computer network. This is the main aim of the Child Language Data Exchange System (CHILDES), which was established in 1984 by an international group of language acquisition researchers.

It is now possible to transcribe tape-recorded data directly into computer files, where the material can be edited, analysed, and duplicated. Files of data can thus be shared between researchers who have computer access to the central database, making a considerable saving of time and money. The process could also lead to

■ raising of standards of data analysis, because errors can be readily checked and corrected, and extra analytical observations incorporated.

However, a sharing of resources is possible only if researchers can agree on a set of policies and standard conventions for obtaining, transcribing, and storing child language data in computerized form. These are currently under discussion. It will take some years before all the methodological problems can be solved, but the outlook for child language research is extremely promising.

PRODUCTION, COMPREHENSION, IMITATION

'Acquiring a language' involves two distinct skills: the ability to produce speech in a spontaneous way; and the ability to understand the speech of others. The former is relatively easy to study: all we have to do is turn a tape recorder on, and analyse what comes out. Research into speech comprehension is far more difficult because we need to take into account not only what is spoken to the child, but the situation in which it is uttered, and the child's prior knowledge of the world. In one study, a 2-year-old child was observed to respond correctly when his mother said, at bedtime, 'Go and get your pyjamas out of the drawer in your bedroom.' But it is not at all clear, without a careful investigation, which parts of this sentence the child had understood – it might simply be that the word *pyjamas*, said at bedtime, and coupled with the knowledge of where pyjamas are kept, was enough to produce the appropriate action.

What is the relationship between production and comprehension when it comes to language learning? There are three possibilities. The traditional, commonsense view is that comprehension always precedes production: children need to understand a word or grammatical construction before they

use it. However, there is increasing evidence that this simple relationship does not always obtain. Production may precede comprehension, or the two processes may be so intimately connected that they develop in parallel. There is certainly a great deal of evidence to show that children produce a word or construction without having a full understanding of it. *Doggie*, says one young child, pointing to a cat. *He got hat on*, says another, and then later says *Take that hat on off* – as if *hat on* were a noun. This kind of thing happens frequently from around age 2 – and, indeed, it could be argued that our readiness to use linguistic forms we do not fully understand stays with us throughout life!

It has also been recognized that imitation is a distinct skill in language acquisition – many children spend a great deal of time imitating what their parents have just said. This is most noticeable when new sounds or vocabulary are being learned, but it has been shown that imitation may be important in the development of grammar too. Often, children imitate sentence patterns that they are unable to produce spontaneously, and then stop imitating these structures when they start to use them in their speech – suggesting that imitation is a kind of 'bridge' between comprehension and spontaneous production.

Elicited imitation

The technique of 'elicited imitation' can be used to find out what a child knows about language. The experimenter reads out a sentence to be repeated. If the child makes any changes, these can indicate aspects of the language which are still being learned or not yet acquired. One 2½-year-old child, 'Echo', gave the following imitations:

1. The owl eats candy and the owl runs fast.
Echo: Owl eat candy and he run fast.
2. The owl who eats candy runs fast.
Echo: Owl eat a candy and he run fast.

The first imitation suggests that Echo understands the meaning and structure of the coordinate sentence (p. 95). She uses the same strategy in the second case, which suggests that she cannot yet cope with the more difficult sentence containing a subordinate clause introduced by *who*, though she does follow its meaning. (After D. I. Slobin & C. A. Welsh, 1967.)

PLOTTING THE COURSE OF LANGUAGE DEVELOPMENT

A popular metaphor in child development is to talk of 'milestones' – the age at which a child takes a significant step forward in behaviour (such as sitting, crawling, standing). The metaphor does not work so well when it comes to language: too much happens too quickly. There is simultaneous development of sounds, grammar, meaning, and interaction skills; and significant progress can be made on several different fronts in a matter of days. It is thus no easy matter to quantify the amount of language learned by a child within a particular period (as we need to do in deciding what counts as 'normal' development, and in plotting departures from this norm (p. 279)).

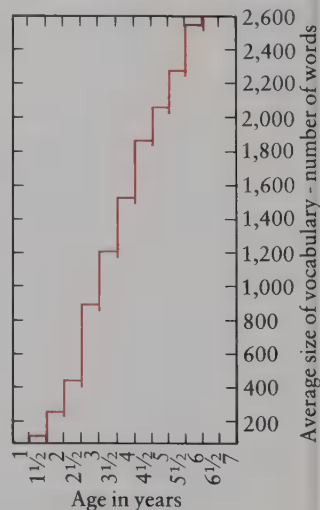
Several attempts have been made to find important single measures of development, within particular linguistic levels (§13) – notably the notions of sentence length and vocabulary size, both of which steadily increase as children grow older. Such indices can provide general indications of progress, but they have serious limitations. Two sentences may consist of exactly the same number of words, morphemes, or syllables, and yet be very different in terms of their syntactic complexity: *I see a cat and a dog and a cow* is much simpler than *I see a cat that is next to a dog*, though both are the same length. Similarly, two children may both have vocabularies of 100 words, yet differ in the range of words used and in their meanings:

one child may use *cold* to mean only 'cold weather', whereas the other may use it to apply to water, food, and grim facial expressions. In these circumstances, a single score, based on one developmental parameter, conceals more than it illuminates: it needs to be supplemented by a wider and more detailed series of measures that take into account the qualitative range of linguistic features used by the child.

After several years of acquisition research, in which many measures have been investigated, it is possible to isolate certain broad trends with some confidence, and these are the subject matter of §§39–43. It appears that most children do follow the same general path as they acquire sounds and grammatical structures, and several common trends are evident in the learning of vocabulary and pragmatics (§21) also. However, there seems to be considerable variation in rate of development, and there are many individual differences in the order of acquisition of specific features that have to be taken into account (p. 231). The study of these variations is a major emphasis of current child language research.

Vocabulary size

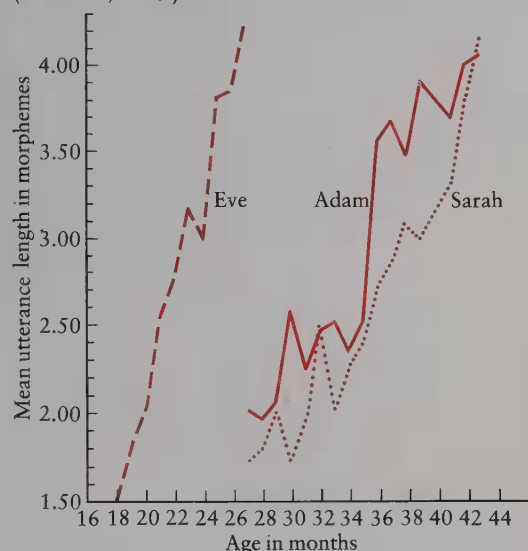
The average vocabulary size of ten samples of children between the ages of 1 and 6. (After M. E. Smith, 1926.) To interpret such totals, a great deal needs to be known about the method for defining 'words' used by the investigator (p. 104). Were *go*, *goes*, *going*, etc. counted as one word or several? Were words of radically different meaning (e.g. *bear* 'animal'/'carry') counted separately? Decisions of this kind have a major influence on the totals arrived at in a word count.



MLU

Measuring the mean length of utterance (MLU) has been one of the most widely practised indices of grammatical development in young children. The total number of utterances in a sample is divided by the total number of words (in some procedures) or morphemes (in others) (p. 90).

The best-known measure, which uses morphemes, was devised by Roger Brown (p. 229) in the 1960s. The diagram shows the way Brown's three subjects gradually increased their utterance length. Five stages of development are recognized, based on a division of the length continuum into intervals of 0.5 morphemes. There is a good correlation between MLU and age, but the relationship between MLU and the range of constructions found in a sample is less clear. Predicting the grammatical complexity of a speech sample from length alone is by no means straightforward, especially as length increases. (R. Brown, 1973.)



Language tests

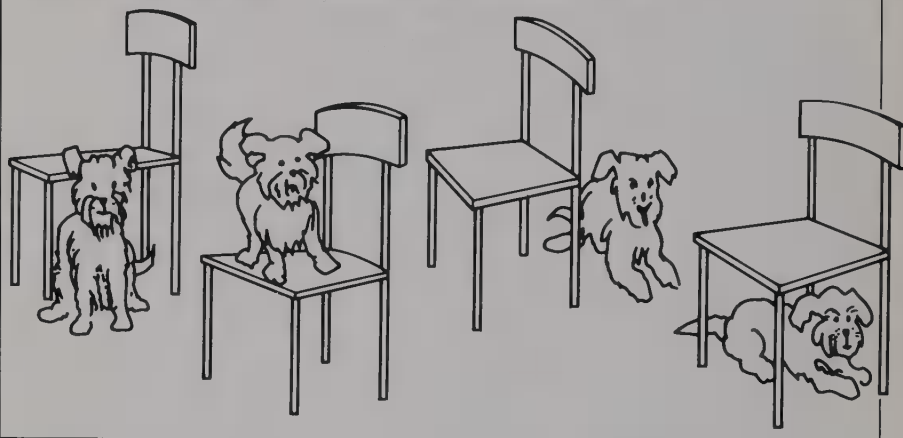
A language test takes a selection of linguistic features – for example, a set of consonants, grammatical constructions, or items of vocabulary – and establishes whether a child has knowledge of them, in either production or comprehension. The child's responses are scored, according to some predetermined criterion. As language ability progresses, higher scores are obtained.

Tests are widely used in the field of language handicap (§46), because they provide a convenient means of identifying children who require special teaching or therapy, and a way of monitoring the suc-

cess of intervention. But they are of limited value in fundamental research in child language, because they deal with only a fraction of the linguistic features being acquired. By their nature, tests have to be short and highly selective. They can give useful background information about a child's general level, but they cannot provide the detailed account of the emergence of linguistic skills that acquisition research requires.

A task from a language test is illustrated below. The *Screening Test of Spanish Grammar* is based on the language of the Mexican and Puerto Rican popu-

lations in the U.S. and is designed to identify Spanish-speaking children who do not demonstrate native syntactic proficiency commensurate with their age. In the comprehension part of the test, the examiner reads a sentence to the child, who has to point to the appropriate picture. The illustration shows four pictures used to test knowledge of a contrast involving two prepositions: *El perro está detrás de la silla* and *El perro está debajo de la silla* ('The dog is behind/underneath the chair'). The remaining two pictures are 'decoys'. (From A. S. Toronto, 1973.)



Profiles

An extract from a profile of grammatical development used in the study of language handicap and based on a synthesis of findings from the study of normal language acquisition. The abbreviations in this procedure, known as LARSP (Language Assessment, Remediation and Screening Procedure) refer to different grammatical constructions, e.g.

SVO = 'Subject + Verb + Object', PrN = 'Preposition + Noun' (§16).

The totals refer to the number of instances of a category used by a child in a sample of spontaneous speech.

Profiles permit a more detailed impression of the range of structures used than can be obtained from a test, and enable the analyst to plot emerging strengths and weaknesses in several areas of grammar simultaneously. In the present case, the child has begun to use constructions at Stage II (typically age 18 months–2 years), but there are several gaps, and he has not yet made much progress in Stage III. As the child in the sample had in fact reached the chronological age of 2 years 3 months, he would seem to be a somewhat slow developer, as far as the acquisition of grammar is concerned. (D. Crystal *et al.*, 1976.)

Stage I (0;9–1;6)	Minor		Responses 30		Vocatives		Other		Problems	
	Major		Comm.		Quest.		Statement		Other	
			'V'		'Q'		'N' 8		Other	
	Conn.		Clause		Phrase		Word			
Stage II (1;6–2;0)	VX		QX		SV 3		AX 7		DN 11	
			2		SO		VO 4		Adj N 3	
					SC 1		VC		NN	
Stage III (2;0–2;6)	X + S:NP		X + V:VP		X + C:NP		X + O:NP 2		X + A:AP 1	
	VXY		QXY		SVC		VCA		D Adj N	
	let XY		VS(X)		SVO 1		VOA		Adj Adj N	
Stage IV (2;6–3;0)	do XY				SVA		VO ₀ O ₁		Pr DN	
					Neg XY		Other		Pron ₀ 4	
									Other	
Stage V (3;0–3;6)	XY + S:NP		XY + V:VP		XY + C:NP		XY + O:NP		XY + A:AP	
	+ S		QVS		SVOA		AA XY		NP Pr NP	
	VXY +		QXY +		SVCA		Other		Pr D Adj N	
			VS(X+)		SVO ₀ O ₁				cX	
			tag		SVOC				XcX	
									2 Aux	
									Other	
	and		Coord.		Coord.		Coord.		1	
	c		Other		Other		Subord. A		1	
	s						S		C	
	Other								O	
									Comparative	
									Postmod. clause	
									1 +	
									Postmod. phrase	
									1 +	

Theories of language acquisition

IMITATION

Language acquisition has long been thought of as a process of imitation and reinforcement. Children learn to speak, in the popular view, by copying the utterances heard around them, and by having their responses strengthened by the repetitions, corrections, and other reactions that adults provide. In recent years, it has become clear that this principle will not explain all the facts of language development. Children do imitate a great deal, especially in learning sounds and vocabulary; but little of their grammatical ability can be explained in this way. Two kinds of evidence are commonly used in support of this criticism – one based on the kind of language children produce, the other on what they do not produce.

The first piece of evidence derives from the way children handle irregular grammatical patterns. When they encounter such irregular past-tense forms (p.90) as *went* and *took*, or such plural forms as *mice* and *sheep*, there is a stage when they replace these by forms based on the regular patterns of the language. They say such things as *wented*, *taked*, *mices*, *mouses*, and *sheeps*. Evidently, children assume that grammatical usage is regular, and try to work out for themselves what the forms ‘ought’ to be – a reasoning process known as *analogy* (p.330). They could not have learned these forms by a process of imitation. Adults do not go around saying such things as *wented* and *sheeps*!

The other kind of evidence is based on the way children seem unable to imitate adult grammatical constructions exactly, even when invited to do so (‘elicited imitation’, p.232). The best-known demonstration of this principle in action is the dialogue reported by the American psycholinguist, David McNeill (1933–), where a child proved unable to use a pattern, even though the parent presented the correct adult model several times:

CHILD: Nobody don’t like me.

MOTHER: No, say ‘Nobody likes me.’

CHILD: Nobody don’t like me.

(Eight repetitions of this dialogue.)

MOTHER: No, now listen carefully: say ‘Nobody likes me.’

CHILD: Oh! Nobody don’t likes me.

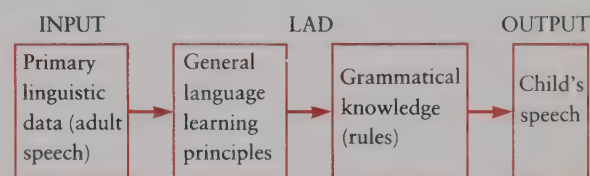
The child, at this point in its learning of grammar, was clearly not ready to use the ‘single negative’ pattern found in this dialect of English. Such examples suggest that language acquisition is more a matter of maturation than of imitation.

INNATENESS

The limitations of an imitation/reinforcement view of acquisition led in the 1960s to an alternative proposal, arising out of the generative account of

language (§65). It was argued that children must be born with an innate capacity for language development: the human brain is ‘ready’ for language, in the sense that when children are exposed to speech, certain general principles for discovering or structuring language automatically begin to operate. These principles constitute a child’s ‘language acquisition device’ (LAD).

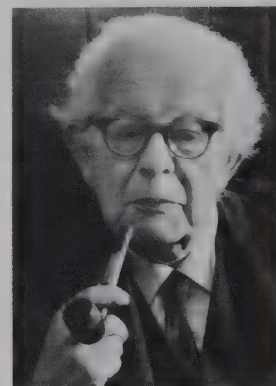
The child uses its LAD to make sense of the utterances heard around it, deriving from this ‘primary linguistic data’ hypotheses about the grammar of the language – what the sentences are, and how they are constructed. This knowledge is then used to produce sentences that, after a process of trial and error, correspond to those in adult speech: the child has learned a set of generalizations, or rules, governing the way in which sentences are formed. This sequence of events can be summarized in the following way:



There have been many differences of opinion over how best to characterize LAD. Some have argued that LAD provides children with a knowledge of linguistic universals (§14), such as the existence of word order and word classes; others, that it provides only general procedures for discovering how language is to be learned. But all of its supporters are agreed that some such notion is needed in order to explain the remarkable speed with which children learn to speak, and the considerable similarity in the way grammatical patterns are acquired across different children and languages. Adult speech, it is felt, cannot of itself provide a means of enabling children to work out the regularities of language for themselves, because it is too complex and disorganized (p.52). However, it has proved difficult to formulate the detailed properties of LAD in an uncontroversial manner, in the light of the changes in generative linguistic theory that have taken place in recent years; and meanwhile, alternative accounts of the acquisition process have evolved.

COGNITION

The main alternative account argues that language acquisition must be viewed within the context of a child’s intellectual development. Linguistic structures will emerge only if there is an already-established cognitive foundation – for example, before children can use structures of comparison (e.g. *This car is bigger than that*), they need first to have developed the conceptual ability to make relative judgments of size. Several early child language scholars maintained such a relationship exists, but the most influential account stems from the model



Jean Piaget (1896–1980)

of cognitive development proposed by the Genevan psychologist Jean Piaget (1896–1980).

Several controlled studies have been carried out investigating the link between the stages of cognitive development proposed by Piaget and the emergence of linguistic skills. The links have been most clearly shown for the earliest period of language learning (up to 18 months), relating to the development of what Piaget called ‘sensori-motor’ intelligence, in which children construct a mental picture of a world of objects that have independent existence. For example, during the later part of this period, children develop a sense of object permanence – they will begin to search for objects that they have seen hidden – and some scholars have argued that the ability to name classes of objects (i.e. to give them a comparably ‘permanent’ linguistic status) depends on the prior development of this cognitive ability. However, it is difficult to show precise correlations between specific cognitive behaviours and linguistic features at this early age. The issue is a highly controversial one, which increases in complexity as children become linguistically – and cognitively – more advanced.

INPUT

For many years, in the wake of the innateness hypothesis, the importance of the language used by adults (especially mothers) to children was minimized. But studies of ‘motherese’, as it came to be called in the 1970s, showed that maternal input is by no means as complex and fragmentary as proponents of innateness theory claimed it to be. Many parents do not talk to their children in the same way as they talk to other adults. Rather, they seem capable of adapting their language to give the child maximum opportunity to interact and learn. Several of these adaptations have been noted (after C. A. Ferguson, 1977).

- The utterances are considerably simplified, especially with respect to their grammar and meaning. Sentences are shorter: one study showed that the average length of maternal sentences to 2-year-olds was less than four words – half that found when the mothers talked to other adults. There is a more restricted range of sentence patterns, and a frequent use of sentence ‘frames’, such as *Where’s —?* or *That’s a —*. The meanings are predominantly ‘concrete’, relating to the situation in which mother and child are acting.

- There are several features whose purpose seems to be clarification. Extra information is provided that would be considered unnecessary when talking to other adults. Sentences are expanded and paraphrased and may be repeated several times. The speed of speaking is much slower than that used to other adults.

- There is also an expressive, or affective, element in motherese, shown by the use of special words or sounds. Diminutive or reduplicative words (e.g. *doggie*, *choo-choo*) are common. English makes

particular use of a *y/ie* ending, and similar forms have been noted in several other languages, such as Japanese *-ko*, Gilyak *-k/-q*, Berber *-f/-ftt*. Occasionally, totally different words will be used, e.g. *bunny* for ‘rabbit’. There may be special use of individual sounds, such as the use of rounded lips in English, or special palatal sounds in Latvian and Marathi.

Some of these features also seem to function as ways of holding the child’s attention, or of identifying particular words and sounds. This may well be the reason for the very common use of high, wide pitch range in maternal speech. Mothers also devote a great deal of time to obtaining feedback from their children, especially in the first three years. Their speech contains a very high frequency of question forms, and many utterances have a high rising intonation (*yes?*, *all right?*).

These modifications are evidently important ways of establishing and maintaining meaningful communication with the child, as they can be found in the earliest mother–child interactions (§39). It has even been suggested that these features are universal, but this claim is premature in the absence of empirical studies, and there is already some counter-evidence from other cultures – several of these features are lacking in Samoan and Quiché Mayan, for instance. However, the highly structured character of maternal input is not in doubt, and its possible influence on the course of language acquisition is now taken very seriously.

Unfortunately, it is difficult to show correlations between the features of motherese and the subsequent emergence of these features in child speech, and even more problematic to move from talk about correlations to talk about causes. Some studies, searching for such relationships, have found very few; others have found occasional correlations between specific structures, though often with an appreciable gap between the use of a feature by the mother and its subsequent use by the child; yet others argue that input structures are very closely tailored to the needs of the child (the ‘fine tuning’ hypothesis). The use of different research methodologies clouds the picture, but it is now plain that the nature and frequency of linguistic features in maternal input can no longer be neglected in devising theories of language acquisition.

CONCLUSIONS

It is not possible, in the present state of knowledge, to choose between these various approaches. The number of definite, general facts known about language acquisition is still very small. In particular, much more information is needed about the way children learn languages other than English. Doubtless imitative skills, a general language-learning-mechanism, cognitive awareness, and structured input all play their part in guiding the course of language acquisition. Unravelling the interdependence of these factors constitutes the main goal of future child language research.

Motherese – or otherese?

The term ‘motherese’ seems a natural one, given the important role of mothers in early child development. However, it would be more accurate to refer to ‘parentese’, as fathers are also able to adapt their speech when talking to children, and use very similar strategies. Motherese and ‘fatherese’ are not identical, however. Fathers tend to be more intense and demanding in their communication, using more direct questions and a wider range of vocabulary.

But even ‘parentese’ is too specific a notion. Some of the characteristics of motherese can be found in other adults too – and even in 4-year-olds, when they talk ‘down’ to younger children. Moreover, in some non-Western cultures (e.g. Western Samoa), the primary caregivers may not be the parents at all, and the developing child may receive most of its linguistic stimulation from siblings, other adult relatives, or neighbouring families. A more neutral term, such as ‘baby talk’, is thus preferred by some researchers – though its ambiguity (speech *by* children or *to* children?) limits its usefulness. ‘Care-taker speech’ is also widely used.

Very little study of the nature of cultural differences has taken place. In the Samoan case, for example, many of the features of Anglo-American motherese (such as the use of simplified structure, expansions, and diminutives) were found to be absent. The turn-taking pattern was also different, often taking the form: child talks to mother → mother talks to older sibling → sibling attends to child. Such differences have important implications for the development of any theory of language acquisition in which motherese plays a part. (After E. Ochs, 1982.)

39 The first year

For many parents, a child's first words, uttered at around 1 year of age, mark the first real evidence of language development – the child has 'started to talk'. But this is to ignore a great deal of early progress during the first year, without which no first word would emerge at all. This progress has to be made in three main areas: sound production, speech perception, and speech interaction.

Sound production

Between birth and 12 months, a vast change takes place in a baby's sound-producing abilities, and several stages of development have been proposed.

Stage I (0–8 weeks): Basic biological noises

Over the first few weeks of life, a baby's vocal sounds directly reflect its biological state and activities. States of hunger, pain, or discomfort that cause crying and fussing are known as *reflexive noises*. Breathing, eating, excreting, and other bodily actions concerned with survival cause a wide range of *vegetative noises*, such as sucking, swallowing, coughing, and burping. Infant reflexive cries have been studied in detail. The normal 'basic' cry consists of a series of 1-second pulses separated by brief pauses. The vocal folds (§22) vibrate strongly, and the pitch of the voice falls sharply with each pulse. The quality of the sound is similar to that of an [a] vowel.

It is not easy to attribute clearly different functions to cries at this age. Hunger and pain cries tend to merge into a single distress cry, though pain cries are often much tenser and have a different rhythm. Discomfort cries are usually much shorter ($\frac{1}{2}$ sec) and occur in brief sequences. Vegetative noises are even shorter ($\frac{1}{4}$ sec) and contain more consonant-like sounds.

There is nothing language-specific about these early sounds. However, they do have some features in common with later speech. An air-stream mechanism (§22) is being used to produce noise; there is rhythmical vocalization; the vocal folds are being used to produce pitch patterns: all of these are fundamental characteristics of later speech.

Stage II (8–20 weeks): Cooing and laughing

Between 6 and 8 weeks, the first cooing sounds are produced, generally when the baby is in a settled state. These sounds develop alongside crying, gradually becoming more frequent and more varied, as the child responds to the mother's smiles and speech. They are quieter, lower pitched, and more musical than crying, usually consisting of a short, vowel-like sound preceded by a consonant-

like sound made towards the back of the mouth. Many have a nasal quality.

Later in this period, cooing sounds are strung together – often 10 or more at a time. These strings are not pronounced in a rhythmical way; there are no clear intonational contours. However, some of the sequences (such as [ga] and [gu]) do begin to resemble the syllables of later speech. Then, at around 4 months, the first throaty chuckles and laughs emerge.

During the cooing stage, babies seem to be performing the first gross activities required for the production of speech. The tongue begins to move vertically and horizontally, and the vocal folds begin to be used in coordination with it. There is a great deal of lip movement and tongue thrusting, which it is thought may be a form of imitation.

Stage III (20–30 weeks): Vocal play

The sounds of vocal play are much steadier and longer than those of cooing. Most segments are over 1 second, and consist of consonant + vowel-like sequences that are frequently repeated. They are usually at a high pitch level, and involve wide glides from high to low. A considerable range of consonant and vowel qualities is apparent, including nasal and fricative sounds made in various parts of the mouth (§27). There are many individual differences in the order of emergence of these sounds, and several changes in the focus of the activity during the period – on some days uvular sounds may be the dominant sounds heard; on other days it may be labial sounds. In due course, the sounds combine into longer sequences, to produce the first babbled utterances.

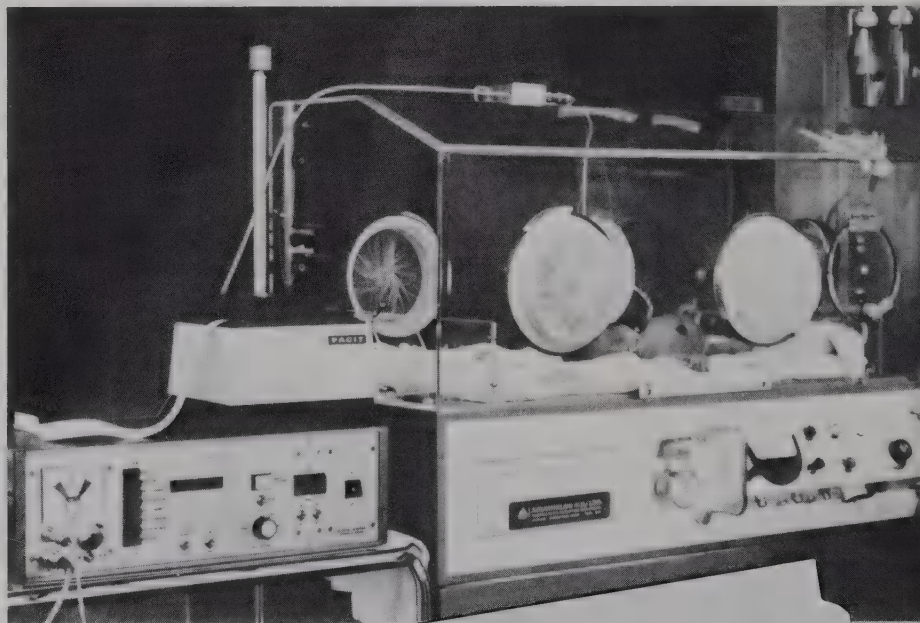
There seems to be a strong element of practice in the activities of this period, but anyone who has

Good talkers?

Frequent and varied vocal play and babbling is sometimes thought to be the sign of a good talker, or an indication of superior intelligence, memory, or personality. There is no evidence that any such correlations exist. There have been many quiet babies whose subsequent language development has been rapid; and, conversely, there are certain areas of mental subnormality (such as Down's syndrome) in which a good range of babbling can be heard. No-one has been able to discover a direct link between early vocalization and later intellectual or linguistic development (§7).

Cry analyser

This instrument was developed in Sweden in the 1970s as a means of automatically analysing infant cries. It continuously monitors cry activity, pitch, and duration, and the accompanying heart and respiration rates, printing out numerical data on a paper strip. It has mainly been used in paediatric wards for babies with post-natal complications.



observed it will recognize that it also provides a great deal of enjoyment for parent and child alike.

Stage IV (25–50 weeks): Babbling

Babbling is much less varied than the sounds of vocal play, in the early part of this period. A smaller set of sounds is used with greater frequency and stability, to produce the [bababa] and other sequences known as *reduplicated* babbling (because of the repeated use of the same consonant sound). About half-way through the period, this develops into *variegated* babbling, in which consonants and vowels change from one syllable to the next (e.g. [adu]). The rhythm of the utterance and the syllable length at this point are much closer to that found in speech. Babbled utterances seem to have no meaning, though some may resemble the words of later speech.

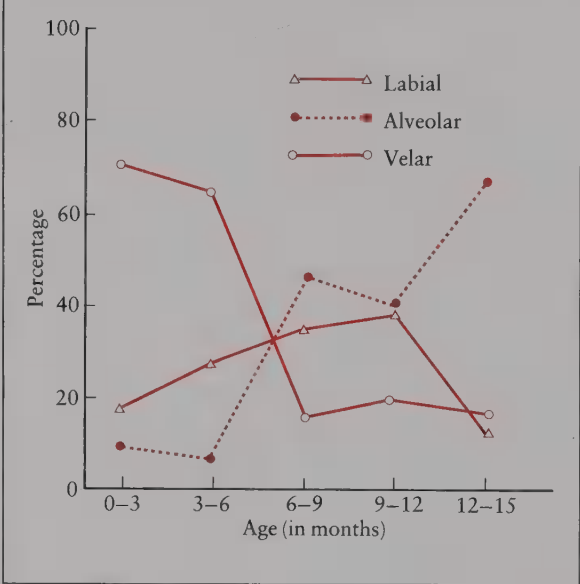
It used to be thought that there was no link between babbling and spoken language. The child was imagined to be trying out every possible sound in a random manner, and that babbling would stop before speech began. Recent studies have shown that this view does not hold. In many cases, babbling continues long after speech begins – sometimes as late as 18 months. Nor are the sounds of babbling a random selection: most of babbling consists of a small set of sounds very similar to those used in the early language to be spoken by the child. The brain seems to be controlling the development of babbling and early speech in a similar way, so that a set of well-practised sounds is available for use at the time when children become intellectually capable of using sound for the communication of meaning.

Stage V (9–18 months): Melodic utterance

Variations in melody, rhythm, and tone of voice (§29) become a major feature of child utterance towards the end of the first year. Parents begin to sense intentions behind these utterances, with their more well-defined shape, and often attribute meanings to them, such as questioning, calling, greeting, or wanting. Games and rituals may develop their own melodic contours. Individual syllables come to be used with a fixed melody, producing ‘proto-words’, where the sounds are clear, but it is not possible to be sure what they mean. These are the first real signs of language development, and children growing up in different language environments begin to sound increasingly unlike each other.

Early vocalization

Which consonant sounds (§27) do infants use most often in their early vocalizations? In the first six months, back (velar) consonants predominate. Then, between six and nine months, alveolar sounds become dominant. Labial sounds are never the most frequent. This pattern stabilizes at around nine months. Children seem to have the physical capability to produce the words of a language long before these sounds are used in speech. (After B. L. Smith & D. K. Oller, 1981.)



Babbling in different language environments

There is a considerable similarity in infant babbling patterns, whatever their language environment. The table below shows the occurrence of English or English-like consonant segments in the babbling of infants reared in 15 language environments. The consonants have been divided into two groups of 12: consonants which are heard frequently in English babbling (accounting in fact for about 95% of all consonants heard); and those which are heard infrequently. It can be seen that there is a very close correspondence between the different languages, though there is no identity. Only [m] and [b] turn up in all language environments.

The similarities are impressive. However, it should be noted that the numbers of children involved in these studies are very small – often only one child, and rarely more than five. The comparative picture may become more complex as the database increases. (After J. L. Locke, 1983.)

Environment	Age in months	Frequent English consonants											
		h	d	b	m	t	g	s	w	n	k	j	p
Afrikaans	11–12	*	*	*	*	*		*		*	*		*
Mayan	9	*	*	*	*	*				*			*
Luo	12	*	*	*	*		*			*		*	
Thai	10–11		*	*	*	*				*		*	*
Japanese	9–12		*	*	*	*	*		*		*	*	*
Hindi	9–10	*		*	*	*	*	*			*	*	*
Chinese	8–11	*		*	*	*	*			*	*	*	*
Slovenian	11		*	*	*	*	*		*	*			*
Dutch	11	*		*	*	*	*			*	*		*
Spanish	9	*	*	*	*	*		*	*	*			*
German	10–12		*	*	*	*				*	*	*	*
Arabic	6–10	*	*	*	*	*		*		*	*	*	*
Norwegian	0–12	*	*	*	*	*	*	*		*	*	*	*
Latvian	6–12	*	*	*	*	*	*		*	*	*	*	*
English	1–15	*	*	*	*	*	*	*	*	*	*	*	*

	Age in months	Infrequent English consonants											
		v	l	θ	z	f	ʃ	ð	ŋ	ʒ	r	ʔ	ʕ
Afrikaans	11–12		*					*			*		
Mayan	9												
Luo	12		*						*				
Thai	10–11												
Japanese	9–12	*											
Hindi	9–10												
Chinese	8–11								*				
Slovenian	11		*										
Dutch	11								*				
Spanish	9												
German	10–12										*		
Arabic	6–10	*				*							
Norwegian	0–12	*	*	*	*			*	*				
Latvian	6–12	*											
English	1–15	*	*			*							

Speech perception

Very young babies present an extraordinary range of auditory abilities. There have been several experiments in which different sounds are played to babies, and their responses monitored. For example, day-old babies have been played their mother's voice speaking normally, the same voice speaking abnormally (in a monotone), and a stranger's voice: only the first caused them to attend. Other studies have shown how babies turn their heads towards the source of a sound within the first few days of life, and prefer human voices to non-human sounds as early as 2 weeks. Abilities of this kind are so apparent that some researchers have concluded that auditory training must begin within the womb.

The question of when the babies learn to distinguish the sounds of speech is controversial. An auditory ability to discriminate certain pairs of consonants or vowels (e.g. [pa] vs [ba]) is present from around 4 weeks, and this ability to discriminate becomes increasingly sophisticated in subsequent months. An early finding was that infants seem able to perceive these distinctions in the same way as adults. Adults make a sharp, categorical distinction between such sounds as [pa] and [ba] in perception experiments (p. 147). When 1-month-old infants were presented with sets of sounds that also varied only in the degree of consonant voicing, they too made categorical distinctions (P. D. Eimas *et al.*, 1971). By careful monitoring of the babies' responses (see below), it was shown that presentations of two kinds of [pa] or two kinds of [ba] caused no reaction, whereas [pa] vs [ba] did.

On the basis of such findings, the investigators

A 1-month-old infant sucking on a special nipple while listening to a recording of different syllables. The child's normal sucking rate is first established, and then sequences of sounds are presented. As the child hears the first sound, the rate of sucking increases. During subsequent repetitions of the same sound, the sucking rate shows a gradual decrease. A new sound is then played to the child. If no distinction is perceived, the sucking rate will continue to decrease; but if a change is perceived, it will show a sudden increase.



hypothesized that children's perceptual apparatus is in some way 'programmed' to discriminate speech sounds – that they are born with special 'feature detectors' that respond to the acoustic properties of speech. A great deal of research has since focussed on this issue, in an attempt to determine whether the children are displaying a general auditory ability (which might be shared by certain other species – experiments on both chinchillas and rhesus monkeys have shown comparable responses), or whether it is a specific ability tuned to phonetic distinctive features. The amazingly early age at which infants begin to make auditory discriminations is now accepted, but the critical issue – how these basic perceptual capacities come to be affected by the infants' emerging experience of language – is not yet resolved.

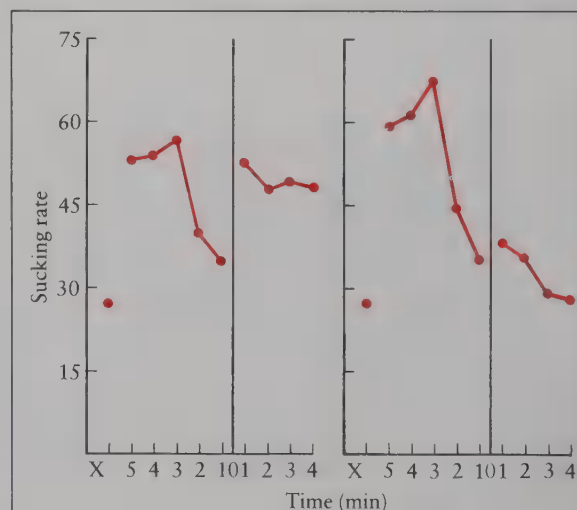
Speech comprehension

Between 2 and 4 months, babies begin to respond to the meaning of different tones of voice, such as angry, soothing, or playful voices. From around 6 months, different utterances begin to be related to their situations, e.g. *Bye-bye*, *Clap hands*, or pointing in response to questions. Some individual words may be recognized, such as names of family members, or basic responses (e.g. *No*). Most children understand several words by the end of the first year. In one study of eight children, six showed clear evidence of understanding up to 20 words by the end of the first year, and one child understood as many as 60 (H. Benedict, 1979). In all cases, this comprehension ability was at least a month ahead of the appearance of the children's first words.

Habituation experiments

A widely used technique in infant speech perception is to play sounds to the baby through a pair of headphones or a loudspeaker, and then to monitor the baby's responses, such as the speed of its heart-beat. In this approach, a sound is played several times to the child, and the heart-rate is monitored. There is an initial 'orienting response' and a period of heart-rate deceleration, as the child gets used to the stimulus. This effect is known as 'habituation'. A second sound is then played. If the child notices the difference, there will be a new orienting response.

There are many methodological problems in this kind of research, especially with very young babies. Moreover, there is still some way to go before the findings about the perception of isolated syllables can be related to the perception of these syllables in connected speech. But the habituation paradigm has shown how it is possible to make a beginning in answering the difficult question: when are linguistic contrasts first perceived?



What happens when the difference between a pair of auditory stimuli is (a) ignored and (b) perceived by a group of children. The line at 0 represents the point when the sound stimulus is changed. The different presentations are shown at 1-minute intervals. X shows the normal sucking rate before the stimuli are presented. In the first case, two kinds of [ba] or two kinds of [pa] produce hardly any change in sucking rate. In the second case, the change from [pa] to [ba] (or vice versa) is clearly shown. (After P. D. Eimas *et al.*, 1971.)

Speech interaction

From the moment a baby is born, a mother holds it in front of her, and talks to it – despite the fact that she knows it does not yet have any language! Mothers seem to have an instinct to promote communication as soon as possible, using the child’s earliest biological noises (p. 236) as stimuli. Cries, burps, sneezes, and other vocalizations are seized upon and interpreted, as the extract (see box, right) shows. The mother is very ready to ascribe intentions to the baby’s utterances and to build them into a conversation – something she does not do with its non-vocal activities, such as head movements or arm waving. The conversational pressure can be quite intense: in one study, over 100 questions, comments, and other utterances were used by a mother while attempting to elicit a burp from a 3-month-old: *Where is it?, Come on, come on, come on, You haven’t got any, I don’t believe you,* etc. (C. Snow, 1977).

It would seem that the foundations of conversation are being laid in these early interactions. The mother’s behaviour is not random. She uses a large number of questions, followed by pauses, as if to show the baby that a response is expected and to provide an opportunity for it to respond. She continually greets the baby, even after very short periods of separation. Moreover, she talks to the child at length only when the child is (in principle) in a position to reply. While the baby is feeding, for example, mothers tend to remain silent, taking up the conversation only when the baby ceases to suck or needs to be winded. This cyclical pattern of speech and silence anticipates the fundamental structure of older conversations.

There are many changes in conversational style during the first year. At around 5 weeks, the exchanges become more emotive, as smiling develops. The mother’s utterances change as the baby’s vocalizations grow. At around 2 months, the emergence of cooing elicits a softer voice. Some time later, the baby begins to laugh, and the

mother’s voice becomes more varied in response. As the child starts to take interest in the environment and looks around, the mother speaks more loudly, drawing attention to different objects. Her intonation becomes more exaggerated, and she often repeats her sentences. Simple face-to-face games are played (such as peekaboo), promoting a great deal of communication.

After 6 months, the baby’s more purposeful movements and explorations produce more extended commentaries by the mother. She no longer responds to every vocalization that is produced, but focusses special attention on those that are more structured in character – in particular, the first babbled utterances. Between 8 and 10 months, babies attempt to attract the attention of others by pointing. They begin to ‘follow’ adult conversations, looking first at one person, then at the other. By the time their first words appear, babies have learned a great deal, both from observation and from practice, about what a conversation is and how to participate within it.

One-sided conversations

Michael (3 months): (Loud crying.)
Mother: (Enters room) Oh my word, what a noise! What a noise! (Picks up baby.)
Michael: (sobs.)
Mother: Oh dear, dear, dear. Didn’t anybody come to see you? Let’s have a look at you. (Looks inside nappy.) No, you’re all right there, aren’t you.
Michael: (Spluttering noise.)
Mother: Well, what is it, then? Are you hungry, is that it? Is it a long time since dinner-time?
Michael: (Gurgles.)
Mother: (Nuzzles baby.) Oh yes it is, a long long time.
Michael: (Cooing noise.)
Mother: Yes, I know. Let’s go and get some lovely grub, then ...
(D. Crystal, 1986, p. 51.)

A conversational cycle at age 6 weeks

- 1. Greeting smiles. Mother says ‘Come on then.’
 - 2, 3. ‘Oh aaa. Come on.’ Baby coos.
 - 4, 5, 6. Baby coos ‘Aghoo.’ Mother says, ‘Come on. Hoo hoo.’
 - 7, 8, 9. As before, then with baby’s smile, ‘That’s right. Woo hoo.’
- (After C. Trevarthen, 1983.)



40 Phonological development

By the time children are a year old, they have learned a great deal about the way adults use sounds to express differences in meaning (§28), but their own ability to produce these sounds lags some way behind. Some 1-year-olds can recognize several dozen words, involving a wide range of vowels and consonants, but their own ability to pronounce these words may be restricted to just two or three consonants and a single vowel. One child at 13 months could use only [b], [d], and [a], but he used these sounds to express a variety of words – for example, [ba] was used for *baby*, *bath*, *cup*, and *Peter*. By 15 months, he had added [m], [p], and [u] to his repertoire, and was thus able to distinguish a much larger number of words. He also began to use some of these consonants at the ends of words as well as at the beginning; for example, [pu] was used for a nasty smell, and [ʌp] was used for *up*. By age 2, he was using over a dozen consonants and vowels, and was able to pronounce over 200 words in an intelligible (though often immature) manner.

It is not possible, at present, to make precise predictions as to the order in which children come to use new sounds. Some children have ‘favourite’ sounds, which they introduce into many words, whether the sound is in the adult version or not; others ‘avoid’ sounds – for example, persistently dropping certain consonants at the ends of words. There may also be a great deal of variation in the way target sounds are produced – one child pronounced *blanket* as [bwati], [bati], [baki], and [batit], within a few hours of each other. Another produced ten different forms of *pen* within a single half-hour!

Nonetheless, as a result of several studies involving large numbers of children, certain general trends can be shown. For example, consonant sounds are more likely to be first used correctly at the beginnings of words; final consonants emerge later (though there are exceptions, such as the early use of final [f] and [s] in English). A 1971 survey of 100 English children showed that, during the second year, [p], [b], [k], [n], [f], [d], [g], [m], and [h] were commonly used word-initially; but only the first five of these sounds were developing word-finally (D. Olmsted, 1971). This survey also showed that at least eight vowels or diphthongs were usually in use by the end of the second year: [ɪ], [i:], [a], [ʊ], [ɒ], [ɔ:], [ɑ:], and [aɪ]. By age 4, all the vowels and diphthongs were in use, and only a few consonants were still posing problems – [θ], [ð], [tʃ], and [ʒ], and certain uses of [l], [ŋ], [t], and [z].

It is also possible to see trends in the way children change the sounds of the language, when they

attempt to use them. These trends include:

- Fricative consonants (p. 157) tend to be replaced by stops, e.g. *see* is pronounced [ti:].
- Velar consonants (p. 155) tend to be replaced by alveolar consonants, e.g. *gone* is pronounced [dɒn].
- Consonant clusters are avoided, e.g. *sky* is pronounced [kai].
- Consonants at the ends of words are often omitted, e.g. *bat* is pronounced [ha].
- Unstressed syllables are often dropped, e.g. *banana* becomes [nana].
- As words become longer, sounds in one part of a word can alter the pronunciation of sounds in other parts. This tendency for sounds to ‘harmonize’ (p. 161) is found with both consonants and vowels. Consonant harmony is found in such pronunciations of *dog* as [gɒg] or [dɒd], with identical (or near-identical) consonants. Vowel harmony would be heard if window were pronounced for example as [wɔuwɔu] or [wada].
- There is a preference for [w] and [j] sounds to be used instead of *l* and *r*, e.g. *leg* as [jeg].

The ‘fis’ phenomenon

Several studies have reported intriguing conversations between a young child and an adult, showing that there may be a big difference between what children hear and what they can say. The phenomenon was first reported in the following way:

One of us, for instance, spoke to a child who called his inflated plastic fish a *fis*. In imitation of the child’s pronunciation, the observer said: ‘This is your *fis*?’ ‘No,’ said the child, ‘my *fis*.’ He continued to reject the adult’s imitation until he was told, ‘That is your fish.’ ‘Yes,’ he said, ‘my *fis*.’ (J. Berko & R. Brown, 1960, p. 531.)

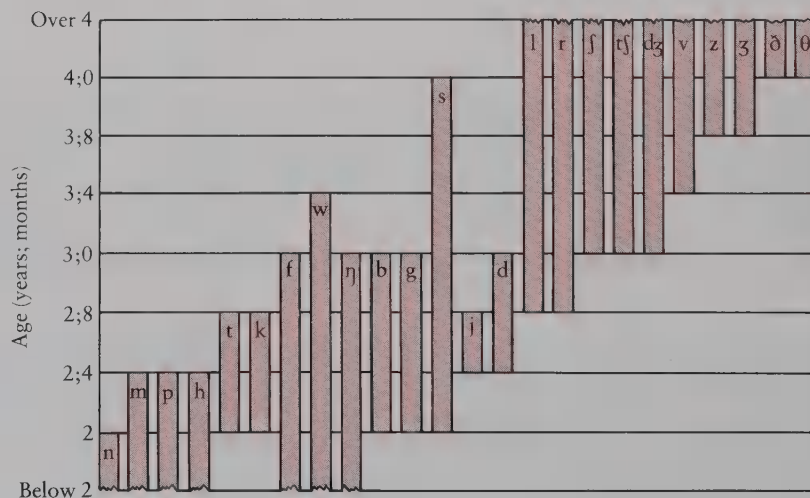
The effect has been referred to as the ‘*fis* phenomenon’ ever since. Such reports indicate that children know far more about adult phonology than their own pronunciation suggests.

The emergence of consonants

Most English consonants begin to be acquired between 2 and 4 years of age. This diagram shows the order of emergence as found in a study which elicited pronunciations of words from 20 children, using

photographs of familiar objects. The periods shown are averages, and the upper age-limit is based on a correct pronunciation by 90% of the children. The diagram also shows that some sounds were already

being produced correctly by the majority of the children at age 2; and others were still not being said correctly at age 4. (After E. M. Prather *et al.*, 1975.)



Reduplication

During the second year, an effect known as *reduplication* (p. 175) is an important feature of children's phonologies: the different syllables of a word are pronounced in the same way. In one child, *water* was pronounced [wowa], *bottle* as [bubu], and *window* as [mumu]. Even monosyllabic words can be reduplicated, as when *ball* becomes [bobo].

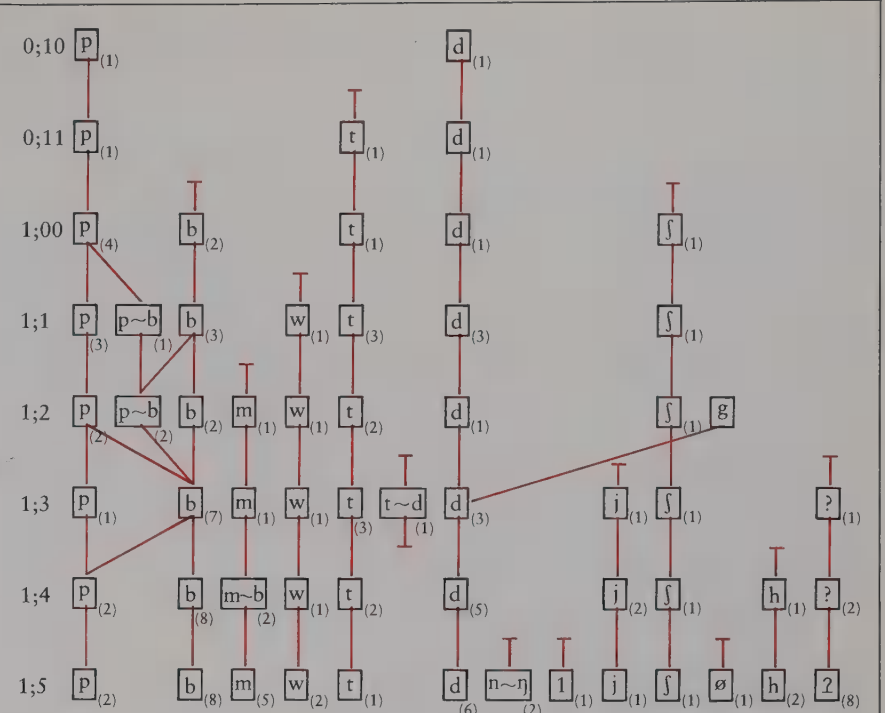
Children do not all reduplicate to the same extent. With some children, most words are affected, and the process can be observed for several months. In other cases, there may be very few words involved, and the effect may last only a few days. The difference can be seen in the following word-lists, taken from two children, A and B. A is a reduplicator: the list contains ten complete reduplications and five items where there is only a small change between the syllables. B uses just one reduplicated word (*kitten*). (After R. G. Schwartz *et al.*, 1980, p. 79.)

A:

Christmas	dʒɪdʒɪ
necklace	neke
hungry	hʌ:n
chip	tɪ
water	wɔwɔ
chicken	kɪkə
banana	mɪmɪ, mɪmɪ
thank you	dɛtɛ:
sister	sɪsɪ:
belly button	bɛbɛ
mouth	mamav
clock	kak
candy	keɪ
money	mɪmɪ
house	dɪdɪ

<i>Tigger</i>	tɪdɪ
<i>scissors</i>	dɪdɪ
<i>take</i>	keke
<i>Angie</i>	næno
B:	
<i>Snoopy</i>	supɪ, nupɪ
<i>necklace</i>	nekɪs
<i>hungry</i>	hʌŋkɪ
<i>chip</i>	tɪp
<i>water</i>	wɒt
<i>chicken</i>	tʃɪk
<i>drop</i>	dʌp
<i>sock</i>	fəp
<i>Francie</i>	fæˈtɪ
<i>hospital</i>	pɪt
<i>hair</i>	heɪr
<i>truck</i>	tʌk
<i>kitten</i>	kɪkɪ
<i>powder</i>	pav
<i>pencil</i>	pɛtə
<i>burger</i>	bɜːɡə
<i>outside</i>	ausaɪd
<i>boat</i>	bɒt
<i>Eleanor</i>	əno

The purpose of reduplication has been much discussed. It may be partly motivated simply by the need to play with sounds or to practise them. But it is more likely that the process helps children as they try to cope with the pronunciation of more complicated words. It has been argued that a word like *tiger*, with its changes of consonant and vowel, would be difficult for a 1½-year-old to learn at one go: reduplication would give the child a chance to master the pronunciation in stages, by first producing the word's syllable structure and stress, along with the most noticeable phonetic features. A more precise pronunciation would come later, after this phonetic outline had been learned.



Phone trees So many things happen at once in a developing phonological system that it is always difficult to follow what is going on. 'Phone trees' are an attempt to visualize the emerging relationships between different types of phonetic segment, or *phone* (§27) over a period of time. The trees illustrated (above) show the initial consonant system of a child, H, between 10 months (0;10) and 17 months (1;5), based on a series of recorded samples. Development of different classes of phones over

time is shown vertically, and the set of phones used by H at any one point is shown horizontally. The procedure grouped together all H's versions of a given word, as well as all H's words that began with the same phones. Each class of phones is summarized within a box: for example, [p]₍₄₎ means that H used 4 tokens beginning with [p] in a given session; [p~b]₍₂₎ means that there were 2 cases of variation between [p] and [b]. If successive samples contained the same word, the boxes are joined by a solid verti-

cal line; if a phone was being used in different words (e.g. *mama*, *milk*), they are linked by a dotted line. We can thus see how H's phonological inventory increases over time, as well as the variation affecting individual words. (From C. A. Ferguson & C. B. Farwell, 1975.)

Diagrams of this kind have proved to be very useful in the study of phonological acquisition, as they clearly show the difficulty of making simple generalizations about how individual phonemes are learned.

Intonation – early and late

Most children have begun to make some use of their language's intonation patterns (§ 29) before the end of the first year. Different tones of voice are used to express such meanings as questioning, demanding, calling, greeting, warning, recognition, and surprise. During the second year, as two-word sentences develop (p. 242), a wider range of attitudes is expressed, and prosody begins to signal differences in emphasis. At this point, it becomes possible to distinguish such general sentences as *Daddy gone* from the con-

trastive *Daddy gone* (i.e. not someone else). As the child's grammatical and social abilities develop, so new uses of intonation emerge. For example, the contrast between rising and falling tones differentiates the two functions of a tag question in English ('asking', as in *He's outside, isn't he?*, and 'telling', as in *He's outside, isn't he!*), and this is learned during the third year, along with the grammar. What is surprising is that the learning of intonation goes on for so long. Children seem to master the for-

mal patterns of intonation quite early on, but their awareness of the range of meanings that these patterns convey is still developing as they approach their teens. This was first shown in a study of the way British radio and TV announcers read out football results (e.g. *Everton 3, Liverpool 3*). By listening to the intonation of the first part of the result, it is possible for adults to predict whether the score is going to be a draw, a home win, or an away win (p. 56). When this task was given to children aged 7 to 11, it was found that the

youngest children were hardly able to do it, and even the oldest children did not reach the level of competence shown by the adults. In fact, only one child out of 28 got all the results right (A. Cruttenden, 1974). The implications of this experiment go well beyond the world of football, for the intonation patterns used are to be found in everyday speech also. It seems that aspects of the intonation system are not only the first phonological features to be learned, but also some of the last. Even teenagers have been shown to have difficulty

understanding the difference, signalled by intonation and pause, between such sentences as *she dressed*, and *fed the baby* (i.e. the person dressed herself, and then fed the baby) and *she dressed and fed the baby* (i.e. the baby is both dressed and fed). There can be few clearer examples of the differences that can exist between production and comprehension skills (p. 232).

41 Grammatical development

SINGLE-WORD UTTERANCES

The earliest stage of grammatical development hardly seems like grammar at all, since only single words are involved – utterances such as *Gone*, *More*, *Dada*, and *Bye-bye*. Sometimes longer-sounding utterances are heard (such as *Allgone* or *All-fall-down*), but these are deceptive: they have been learned as whole phrases, and children use them as if they were single units.

Most of the words used at this stage (about 60%) seem to have a naming function and will develop into nouns. About 20% express actions. Many of these will develop into verbs, though not all. When a child says *In!*, holding a brick and gesturing violently at a container, we have to interpret this as an action utterance, even though the word class (p. 91) is a preposition. Other word classes are also found at this stage (such as adjectives and adverbs), along with several words that it is difficult to assign to any word class (such as *Bye-bye*).

The 'one-word' stage is usually most noticeable between 12 and 18 months. But to talk about it solely in terms of 'words' is misleading. In many respects, these early utterances function as if they were sentences (and they have been given capital letters above, to represent this interpretation). For example, one child used the word *dada* in three different ways: as he heard someone approach outside, he said *Dada?*, with a rising intonation; as he saw that it was indeed daddy, he said *Dada*, with a triumphant, falling intonation; and then he said *Da-da!*, with an insistent, level, intonation, with his arms outstretched. At a later stage in development, these three functions would be called 'question', 'statement', and 'command'. At this stage, these utterances do not have a distinctive grammatical form, but the use of prosody and gesture conveys the force of these sentence types nonetheless. In such cases, many scholars are happy to talk about 'one-word sentences', or *holophrases*.

TWO-WORD SENTENCES

Most people think of 'real' grammar as beginning when children string two or more words together, which takes place around 18 months. This tends not to happen abruptly. There is usually a transitional period, in which words are brought together, but the sequence is not uttered as a single, rhythmical unit, as in *Daddy. Gone. Lengthy* sequences of such words can often be heard: one child said *Daddy. Garden. See. Daddy. Daddy. Garden* in quick succession. But soon two-word sentences emerge with great confidence – and increasing frequency.

Several studies have been made of the meanings

On wugs, and other things

Languages often make use of a system of word endings to express grammatical meanings (§§16, 50). English has around a dozen such endings (*-ing*, *-s*, *-ed*, etc.). When do children learn about these morphological aspects of grammar?

One of the best-known early studies in child language investigated this question (J. Berko, 1958). The experimenter elicited from the children a series of forms which required different grammatical endings, such as plurals and past tenses. The instructions were all of the type illustrated in the picture (right), which was the first item in the study. The experimenter would show the child the picture and read out the text, leaving the child to supply the missing

word in the sentence 'There are two—.' If the children said *wugs*, it was inferred that they had learned the plural ending. If they said *wug*, they had not.

It is important to use nonsense words in experiments of this kind, to guarantee a genuine response. If real words had been used (e.g. showing a picture of a cow, and asking for *cows*), a correct answer by a child would prove very little. The child might have learned the form *cows* by heart at some point, and might not really know that it was composed of *cow* + *-s*. Invented words get round this problem.

There have now been several studies of children's learning of English morphology. They show that some word endings (usually *-ing*

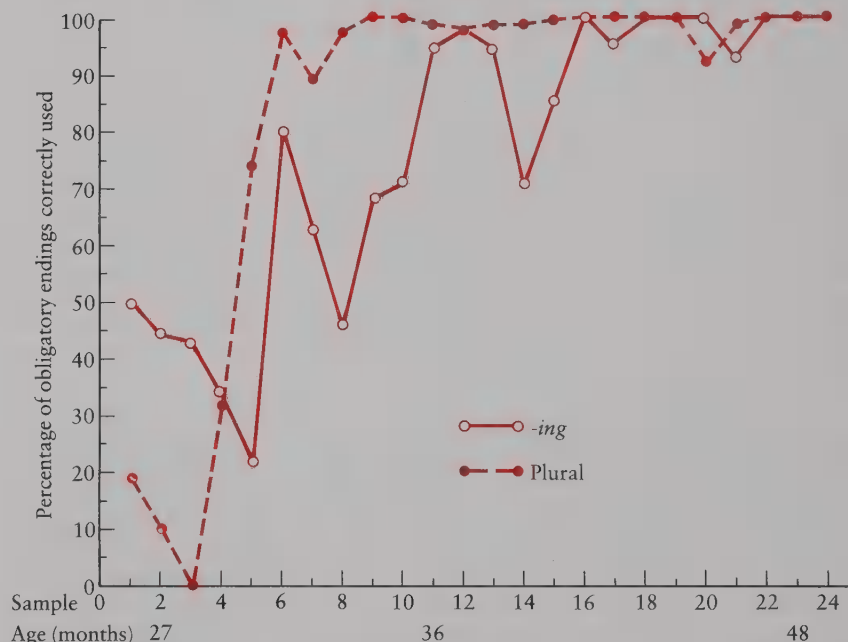


This is a wug



Now there is another one.
There are two of them.
There are two —

and plural) first appear at around 18 months, but take several months to be used correctly. Other endings appear at intervals over the subsequent two years, and show a similarly gradual pattern of development. Many irregular inflectional patterns (e.g. comparative forms such as *worse*) may not be correctly used until the age of 8 or 9.



One child's development of the *-ing* and plural inflections between age 27 and 48 months. The diagram shows the gradual nature of morphological acquisition. The plural ending takes only a short time to reach the 90% level of correct use, whereas the *-ing*

ending takes 16 months to get from a 50% level (at sample 1) to the 100% level (in sample 16). There are several dips in the child's performance, probably due to fluctuations in the number of instances that turned up in the various samples, but the gen-

eral trend is rising. The curves start to flatten out at around the 90% level, which has led several investigators to conclude that this is the point when 'acquisition' of a feature can be confidently asserted. (After R. Brown, 1973.)

expressed by these two-word sentences. They include such sequences as the following:

an Actor performs an Action	<i>Daddy kick.</i>
an Action affects an Object	<i>Shut door.</i>
an Object is given a Location	<i>There teddy.</i>
an Object or Person is Described	<i>She cold.</i>

These sentences could also be described in more traditional grammatical terms. *Daddy kick*, for example, has the clause structure (p.95) Subject + Verb; *She cold* could be analysed into Pronoun + Adjective word classes. However, not all sentences uttered by children at this stage are capable of a clear grammatical or semantic analysis. One child looked at a photograph of her father and said *Daddy Mummy*; another put a car in a garage and said *Car want*. We may hazard plausible meanings to such sequences, but definite interpretations are often out of the question.

SENTENCE STRUCTURE

At around 2 years of age, many children produce sentences that are three or four words in length (p. 233), and combine these words in several different ways to produce a variety of grammatical constructions. Typical sentences at this stage include *Man kick ball*, *Him got car*, *Where daddy going?*, and *Put that on there*. Questions and commands are being used as well as statements, and different clause patterns are now evident. By the end of the third year, clause structures of four or five elements can be heard, as in *You give me my car now*.

The ‘telegraphic’ character of early sentences has often been noted in many children – an impression derived from the omission of grammatical words (such as *the* and *is*) and word endings (such as *-ing*). By the end of the third year, this character has largely disappeared, and children’s sentences more closely resemble their adult counterparts.

Towards the age of 3, there is a major grammatical advance, with the appearance of sentences containing more than one clause. A large proportion of these sentences are coordinate clauses (p.95), linked mainly by *and* – a pattern which, once learned, produces utterances that go on and on:

Daddy have breaked the spade all up and – and – and it broken – and – he did hurt his hand on it and – and – and – it’s gone all sore and ...

Sentences involving subordination (p.95) are also increasingly found at this age, using such words as *’cos*, *so*, *if*, *after*, *what*, and *when*:

I let go ’cos it hurted me.
Tell me what it’s called.

A great deal of grammatical knowledge is required before these constructions are used correctly, and it is common to find errors and non-fluency as children attempt to handle longer sequences. For example, this child of 3 years, 9 months gets into trouble with his sequence of tenses, as he tries to express a complicated thought:

If Father Christmas come down the chimney, and he will have presents when he came down, can I stay up to see him?

The sorting out of grammatical errors is a particular feature of 4-year-old speech. Many of the irregularities of syntax and morphology are being mastered around this age, though it can take several years before such errors as the following are eliminated:

You bettern’t do that.
That’s more better.
Are there much toys in the cupboard?
It just got brokened.
Are we going on the bus home?

The study of errors is important, because they show children breaking fresh grammatical ground. They provide the main evidence of how children go about actively learning new constructions.

More advanced grammatical constructions continue to be acquired throughout the early school years. Around the age of 7, more sophisticated forms of sentence connection begin to emerge, using such words as *really*, *though*, *anyway*, and (at later ages) *for instance*, *actually*, and *of course*. Children begin to distinguish different underlying meanings for sentences that look the same (e.g. *Ask John what time it is* vs *Tell John what time it is*). And they consolidate their awareness of the way sentences may have the same meaning even though they look very different – for example, the relationship between active and passive sentences (*The girl chased the boy* ↔ *The boy was chased by the girl*), which is not thoroughly sorted out until the ninth year. A popular impression of grammatical learning is that it is complete by age 5; but recent studies have shown that the acquisition of several types of construction is still taking place as children approach 10 or 11.

Asking questions

One of the first topics to be studied by child language researchers was how children learn to ask questions. Three main stages have been proposed for English, and similar developments have been noted in several other languages:

- 1. The earliest stage makes use of intonation (§ 29), e.g. *Daddy there?*, spoken with a high rising tone, in effect asks ‘Is Daddy there?’
- 2. During the second year, children start to use question words. *What* and *where* are usually the first to be acquired, with *why*, *how*, and *who* coming later. These questions become

more complex as the third year approaches, e.g. *Where Daddy going?*, *What you doing in there?*

3. A major advance comes with the learning of the verb *to be*, and such auxiliary verbs as *have* and *do*. Children discover the apparently simple rule that turns statements into questions by changing the order of the Subject and Verb (e.g. *That is a car* → *Is that a car?*), and then learn that it is not so simple after all (e.g. it cannot be **Went he to town?*, but *Did he go to town?*). Sentences that use question words pose particular problems: *Where is daddy going?* has in fact two forms indicating its sta-

Saying no

Several studies have been made of the expression of negation by young children.

- 1. The first negative words emerge in the second year – usually *no* or *not* as a one-word sentence.
- 2. The negative words combine with other words to make two-word sentences: *No sit*, *Gone no*, *Not there*. Several different meanings can be expressed at this stage – in particular, non-existence, e.g. *No car* (while looking for a toy); rejection, e.g. *No drink* (while pushing a drink away); and denial, e.g. *Not mine* (pointing to someone else’s coat). (L. M. Bloom, 1970.)
- 3. During the third year, negative words come to be used within constructions, e.g. *You no do that*, *Mummy not got it*. At the same time, such verbs as *can’t* and *won’t* appear.
- 4. The negative words and endings come to be used more accurately: *not* replaces *no*, and *n’t* is used with more verbs, e.g. *You’ve not got one*, *She isn’t going*. ‘Double’ negatives for emphasis (§ 1) are a normal development, e.g. *Nobody don’t like to go in*.
- 5. A few advanced negative constructions are not acquired until the early school years, e.g. the use of *some* vs *any* (cf. *I’ve not got any* rather than **I’ve got any*), or the use of *hardly* and *scarcely*.

tus as a question – the word *where* and the inversion *is daddy*. Children often rely on the first alone, and for a while produce such sentences as *Where daddy is going?* (After R. Brown et al., 1968.)

The complexity of question formation can be seen from the following selection of errors, all made by 2-year-olds:

Whose is that is?
What are you did?
What did you bought?
Is it’s my car?
Don’t he wanted it?
Despite this complexity, most of these difficulties are overcome before the age of 3.

42 Semantic development

The learning of vocabulary (§17) is the most noticeable feature of the early months of language acquisition. From the point when a child's 'first word' is identified, there is a steady lexical growth in both comprehension and production. An indication of the scope and speed of progress can be obtained from a study of American 1-year-olds: the average time it took eight children to get from 10 to 50 words in production was 4.8 months – about 10 new words a month. In comprehension, the children understood an average of 22 new words each month (H. Benedict, 1979). By 18 months, it is thought that most children can speak about 50 words and understand about five times as many.

The content of early vocabulary

Young children talk about what is going on around them – the 'here and now' – and rapidly build a vocabulary in several semantic fields (p. 104).

- **People** mainly relatives and house visitors – *daddy, baba, grandma, man, postman*.

- **Actions** the way things move (*give, jump, kiss, gone*), and routine activities in the child's day (*bye-bye, hello*).

- **Food** occasions as well as products – *din-din, milk, juice, drink, apple*.

- **Body parts** usually facial words first (*mouth, nose*), then other areas (*toes, handie(s)*) and body functions (*wee-wee*).

- **Clothing** of all kinds – *nappy/diaper, shoes, coat*.

- **Animals** whether real, in pictures, or on TV – *doggie, cat, horse, lion*.

- **Vehicles** objects and their noises – *car, choo-choo, brmm*.

- **Toys and games** many possibilities – *ball, bricks, book, dolly, peep-bo*.

- **Household objects** all to do with daily routine – *cup, spoon, brush, clock, light*.

- **Locations** several general words – *there, look, in, up*.

- **Social words** response noises – *m, yes, no, ta*.

- **Describing words** early adjectives – *hot, pretty, big*.

- **Situational words** several 'pointing' words (deictics, p. 106) – *that, mine, them*.

The meaning of early words

Children do not learn a word with its meaning 'ready made'. They have to work out for themselves what it must mean, and in so doing they make errors. Three types of error occur often during the second and third year.

1. **Overextension** A word is 'extended' to apply to other objects that share a certain feature, such as a common property of shape, colour, or size. *Dog* might be applied to other animals, or *moon* to other round objects.

How much do children say in a day?

Using radio microphones and tape recorders, it is now possible to make large-scale surveys of children's lexical usage. Large portions of a child's day can be recorded – in some cases, covering everything the child says between waking up and bedtime.

The table below gives the age of several German children recorded in one study, along with the length of the recording, and the number of word tokens (§ 15) used in the recording. As the recording times are not the same, the right-hand column gives a standardized total, based on an assumed 12-hour day.

Age (years; months)	Time (mins.)	Tokens	12-hr total
1;5	202	3,881	13,800
1;8	241	3,907	11,700
2;1	213	5,978	20,200
3;6	189	9,891	37,700
5;4	152	6,464	30,600
8;7	193	6,630	24,700
9;2	311	10,524	24,400
9;6	869	25,401	21,000
9;7	804	28,142	25,200

These results far exceeded the expectations of the researchers. No-one had imagined that children as young as 2 could produce in excess of 20,000 words in a day, or that a 3½-year-old could produce nearly twice that number!

The number of different words (word types, § 15) used during a day was also much larger than had been expected. These ranged from a remarkable 1,860 (for the 1;5-year-old) to over 5,000 for an 11-year-old, with an average of 3,000 for the whole group. (After K. R. Wagner, 1985, p. 477.)

No corresponding survey has yet taken place for English. But as the children came from a variety of social backgrounds, and engaged in many kinds of activity during their day, it is likely that the figures will be fairly typical – in which case, traditional impressions of children's vocabulary growth (p. 232) will have to be radically revised, in an upward direction.

The first 50 words

These are the first 50 words used by two American children between 11 and 16 months. There are very few items in common, and major differences in order (e.g. *mommy* is Sarah's second word, but Daniel's forty-third).

Daniel	Sarah
1. light	1. baby
2. uh-oh	2. mommy
3. what's that	3. doggie
4. wow	4. juice
5. banana	5. bye-bye
6. kitty	6. daddy
7. baby	7. milk
8. moo	8. cracker
9. quack	9. done
10. cookie	10. ball
11. nice	11. shoe
12. rock (noun)	12. teddy
13. clock	13. book
14. sock	14. kitty
15. woof-woof	15. hi
16. daddy	16. Alex
17. bubble	17. no (-no)
18. hi	18. door
19. shoe	19. dolly
20. up	20. what's that?
21. bye-bye	21. cheese
22. bottle	22. oh wow
23. no	23. oh
24. rock (verb)	24. button
25. eye	25. eye
26. nose	26. apple
27. fire	27. nose
28. hot	28. bird
29. yogurt	29. alldone
30. pee-pee	30. orange
31. juice	31. bottle
32. ball	32. coat
33. whack	33. hot
34. frog	34. bib
35. hello	35. hat
36. yuk	36. more
37. apple	37. ear
38. Big Bird	38. night-night
39. walk	39. paper
40. Ernie	40. toast
41. horse	41. O'Toole
42. more	42. bath
43. mommy	43. down
44. bunny	44. duck
45. my	45. leaf
46. nut	46. cookie
47. orange	47. lake
48. block	48. car
49. night-night	49. rock (noun)
50. milk	50. box

(After C. Stoel-Gammon & J. A. Cooper, 1984, p. 264.)

Cups and glasses

Children can take several years to learn the meaning of a word, especially when the word is used along with others to refer to objects or ideas that are not easy to distinguish. Even everyday objects may prove difficult to differentiate and label in a consistent way – such as the distinction between ‘cups’ and ‘glasses’.

The uncertain boundary between these categories is well illustrated from the 25 drinking vessels drawn in the diagram below. For adults, some of these are clearly cups, some are clearly glasses, and some require a more complex kind of description. How long does it take children to become aware of these distinctions?

Children aged between 3½ and 12½ were shown this set of objects, and asked to carry out various tasks, such as naming, defining, and sorting. The youngest children used far fewer names to describe the objects, often overextending the word *cup* to apply to items which the 12-year-olds called *glass* (e.g. items 4 and 9 in the diagram). One 3-year-old went the other way, calling most things *glass*, and

keeping *cup* for the smallest items.

Both *glass* and *mug* came to be used regularly by the 6-year-olds, who also added such labels as *dish* and *vase*. A still wider range of labels was used by the older children (e.g. *eggholder*, *can*, *measure*). During this period, also, there was an increasing use made of words reflecting the perceptual properties of the objects – especially their size, shape, and material (e.g. *big*, *round*, *paper*). However, between 6 and 9, the children’s preferences showed a clear change: the older they became, the more they preferred to use attributes reflecting what they thought were the functional properties of the objects (e.g. *medicine cup*, *Martini glass*).

By age 9, some quite subtle distinctions were being made, with the names and definitions showing that the children were beginning to be aware that they were dealing with an area where boundaries are vague. This is most clearly shown from the definitions they gave, which contained qualifying words, such as *usually* or *could have*; for example ‘a cup holds things to drink, and sometimes has a handle . . .’, ‘a glass is like a cup only it could be taller, doesn’t have a handle, and could be plastic or glass’. It is age 12 before competence becomes close to that of an adult – nine years or more after the distinction is first introduced. (From E. S. Andersen, 1975.)



Four replies

Age 3	Age 6	Age 9	Age 12
1. cup	glass	glass	fruit cup
2. big cup	glass	glass	wine glass
3. little cup	glass	a measure	cup for liqueur
4. little cup	glass	glass	juice glass
5. big cup	dish	little tiny dish	fruit cup
6. big cup	glass	glass	glass
7. cup	glass	cup	glass
8. little cup	plastic cup	glass	medicine cup
9. big cup	plastic cup	glass	glass
10. cup	plastic cup	cup	outdoor cup
11. Ron McDonald cup	plastic cup	glass	Ron McDonald happy cup
12. little cup	plastic cup	cup	cup
13. cup	glass	glass	cup
14. big cup	cup	cup	coffee cup
15. coffee cup	plastic cup	cup	sipper cup
16. cup	cup	cup	coffee cup
17. paper cup	paper cup	cup	Dixie cup
18. big cup	cup	glass	glass
19. orange cup	metal cup	measure for wine	measuring cup
20. little cup	metal cup	cup	baby's metal cup
21. coffee cup	mug	coffee mug	coffee cup
22. coffee cup	glass cup	cup	beer mug
23. coffee cup	glass (mug)	cup	mug
24. cup	glass	cup	coffee cup
25. cup	cup	cup	coffee cup

After the age of 18 months, very little precise information is available. By age 2, spoken vocabulary probably exceeds 200 words. But after this, estimates become extremely vague. A dramatic increase in the size and diversity of the lexicon takes place during the third year, so much so that it has so far proved impossible to make accurate calculations (especially about vocabulary comprehension), or work out any norms of spoken lexical frequency. What happens at older ages is largely guesswork, and vocabulary totals cited for these children should therefore be viewed with great caution.

Other issues

The study of semantic development takes in far more than vocabulary (p. 107). Grammatical constructions also need to be studied from a semantic point of view – for example, the way in which children master the complex conditional meaning of *if* constructions, or the causal meaning of *because*, *so*, or *since*. That there are problems here can be readily shown from the errors children make:

The man's fallen off the ladder because he's broken his leg.

I had one fish left, because its name was Bill.

Children aged 8 or 9 may have mastered the grammar of such constructions very well, but still be having difficulty with the meanings they encode. Auxiliary verbs such as *ought*, *must*, and *should* provide another problem area, as do subtle prepositional forms (e.g. *despite*) and verb contrasts (e.g. *ask* vs *tell*, *say* vs *promise*). The ability to use figurative expressions, and to see double meanings in language, also develops largely after the age of 6.

One of the most significant developments of this later period is the child's emerging ability to integrate several features of semantic knowledge into a single defining statement. Young children cannot define: in response to such questions as ‘What's X?’, they give empty, ambiguous, or idiosyncratic replies. *What's a shoe?* asked an adult. *That*, replied one young child, pointing. *And a sock*, replied another. *Mummy got a shoe* replied a third. Gradually, however, definitions become more sophisticated. A particular feature is singled out (*A knife is sharp*) or its function is specified (*A knife is when you cut with it*). But it is not until around age 8 or 9 that statements with something resembling an adult definitional form begin to be produced (*A apple is a sort of fruit, and it's round and red, and we eat it*). (B. Litowitz, 1977.)

Semantic development continues throughout the school years – and, indeed, throughout adult life. Unlike phonology and grammar, it is not largely over when children enter their teens. There is always new vocabulary to be learned, and new worlds of meaning to explore.

43 Pragmatic development

The task of language acquisition requires that children learn much more than patterns of sound, grammar, and vocabulary. They must also learn to use these patterns appropriately in a rapidly increasing range of everyday social situations. This developing *pragmatic* awareness (§21) has attracted a great deal of study in recent years, particularly in relation to the way children learn strategies of conversational interaction. It is not yet possible to talk about definite stages of development; but the very early age at which these strategies emerge is now clearly established.

Conversational skills

Between the ages of 2 and 4; a remarkable development takes place in the ability of the child to participate in a conversation. At the earlier age, conversations are often very erratic and disjointed, with parents doing most of the 'work', and children using sequences of utterances, many of which are not obviously directed to any listener. The effect is a curious mixture of monologue and dialogue:

CHILD: Ball. Kick. Kick. Daddy kick.

MOTHER: That's right, you have to kick it, don't you.

CHILD: Mmm. Um. Um. Kick hard. Only kick hard.

Our play that. On floor. Our play that on floor. Now.

Our play that. On floor. Our play that on floor. No that. Now.

MOTHER: All right.

CHILD: Mummy, come on floor me.

MOTHER: Yes.

CHILD: You tip those out.

MOTHER: Mm. All right.

CHILD: That one broke.

(P. Fletcher, 1985, p. 64.)

The contrast with a 3-year-old's conversation is striking, with both parties very much involved with the detail of what each is saying:

CHILD: Hester be fast asleep, mummy.

MOTHER: She was tired.

CHILD: And why did her have two sweets, mummy?

MOTHER: Because you each had two, that's why.

She had the same as you. Ooh dear, now what?

CHILD: Daddy didn't give me two in the end.

MOTHER: Yes, he did.

CHILD: He didn't.

MOTHER: He did.

CHILD: Look he given one to – two to Hester, and two to us.

MOTHER: Yes, that's right.

CHILD: Why did he give?

MOTHER: 'Cos there were six sweets. That's two each.

(P. Fletcher, 1985, p. 91.)

By 3, it is plain that children have learned many aspects of conversational strategy. They are able

to initiate a dialogue – the various ways of obtaining and holding a listener's attention. They can handle several of the conventions of turn-taking. They know a great deal about how to respond appropriately – for example, by providing clarification when requested to do so.

These skills develop greatly between 3 and 5. In particular, there is a major development in child awareness of the social factors that govern a successful conversation – such as the correct use of forms of address and markers of politeness (e.g. *please*, *sorry*), and how to make requests in an indirect way. They also learn to anticipate points of potential breakdown (carry out conversational 'repairs', p. 116), such as by repeating utterances that are unclear, or asking for clarification. In particular, they develop their ability to cope with situations where they do not have things all their own way. In one study of two 4-year-old children playing together, there were 576 sequences in which one child (A) requested the other (B) to perform an action; in 122 cases, B refused to comply. It was therefore necessary for A to adopt various persuasive tactics in order to gain compliance:

A: Say yes.

B: No.

A: I'll be your best friend if you say yes.

... ..

A: Change lunch boxes.

B: No.

A: You'll have a bigger one, so you will.

(M. McTear, 1985, p. 109.)

Some of these exchanges can be very lengthy. In the same study, A's request for a pair of scissors was continued for over 60 turns before it was (reluctantly) complied with.

Studies of young children's conversations show that many adult interaction skills are already present well before school-age. There is still a great deal to learn, of course – for example, 5-year-olds do not make much use of such 'manipulating' devices as *you know* or *actually*, and they must learn the strategies associated with the more formal interactions that are part of educational learning and discussion (§44). But all of this will build on a foundation of conversational ability that in many children is already extremely sophisticated by the fifth year.

Talking backwards

From around age 7, children develop a large creative repertoire of interactive linguistic skills, as they learn to tell jokes and riddles, insult each other, maintain group identity, and make up language games (p. 59). One of the most remarkable of these abilities is talking backwards.

A study of two 9-year-olds who were able to talk backwards showed two quite distinct styles. One child (A) reversed the sounds of each word and ignored the spelling. The second (B) reversed the spellings, sounding the letters out. The pronunciations which resulted were very different. *Size*, for example, would come out as [zais], using A's method, but would come out as [ezis], using B's. Here is a selection of their reversed words:

	A	B
nine	nain	'enin
guy	arg	jag
boil	lɔrb	ljab
mouse	saum	'esum
continue	ujə'nɪtnak	'utənɪk
bomb	mab	bɔmab
castle	lɔ'sæk	'eltsæk
axe	skæ	ksæ
bone	nob	'enab
auto	o'ta	'otuwa
inhale	lɛ'nɪ	ɛlɔ'næ
elevate	'tevlɛ	,ɛtæ'levet

The sentence 'Please present an idea to the class' was translated by B as: [ɛsɛlp tənɛ'zɛp næ 'æɪdə 'ʔat 'ʔɛt 'ʔɛ'sɛlk]. The words are not always perfectly accurate reversals; but there is clearly a system of rules governing their production.

Once someone learns to talk backwards, the ability seems to stay. Interviews with 27 adults who had been backward talkers as children showed that the ability was still present. Some were only able to do it slowly, or on short words, but three retained an impressive facility, reversing not only the order of sounds in words, but the order of words in sentences as well – and often at speeds very similar to those found in forwards speech! (After N. Cowan & L. Leavitt, 1982, pp. 491, ff.)

TWINS

The language learning environment of twins is unique. During their early years, their linguistic experience differs greatly from that of single children. Singletons receive most of their language stimulation from adults or older children, whose utterances provide a more advanced learning 'target'. Twins, however, spend a great deal of time together, with each learning from a linguistic setting in which the other speaker is at the same developmental linguistic level. In such circumstances, it is hardly surprising to find many twins developing a private form of communication.

One study found a great deal of private language play in early-morning twin conversations. At 33 months, for example, there were dialogues in which each child responded to features of pronunciation it noticed in the other:

- A: zæki su
 B: (*laughing*) zæki su zæki su (*both laugh*) æ:
 A: api:
 B: olp olt olt
 A: opi: opi:
 B: api: api: (*laughing*) api api api
 A: ai ju
 B: (*laughing*) ai ju api (*repeated several times*)
 A: kaki (*repeated several times*)
 B: ai i: o:
 A: ai i: o o:

(E. O. Keenan, 1974, p. 171.)

To the outsider, this kind of dialogue might resemble a 'secret language', but it is no more than a form of phonetic play.

One of the most interesting features of twin language is the way in which they 'share' the response to an adult utterance:

- MOTHER: What can you see in the picture?
 TWIN A: A cat.
 TWIN B: And a dog.

Observers have been struck by the intuitive way in which one twin is able to respond very rapidly to what the other has just said, and how the first twin is able to anticipate when to stop. They very seldom talk at the same time. Even very short utterances can be split in two:

- MOTHER: What do you want me to read?
 TWIN A: Puss.
 TWIN B: In boots.

This kind of skill can only come from the frequent opportunities the twins have had to interact, in the early years. They know each other's rhythms, and each is able to predict a great deal of what the other is likely to say.

Perhaps because of this close dependence, twins are usually somewhat late in developing their individual language skills. When their language is formally assessed, during the third and fourth years, it is often found to be about 6 months behind the norm for singletons. On the other hand, there are certain aspects of their development that may be ahead of other children – notably, their ability to

keep a conversation going, and to interact with adults. By age 7 or 8, the delay seems to have disappeared.

Poto and Cabenga

GRACE: Cabenga, padem manibadu peeta.

VIRGINIA: Doan nee bada tengkmatt, Poto.

Reported extracts of this kind from a twin conversation achieved world-wide publicity in the late 1970s. They came from the Kennedy twins of San Diego, California, who at the age of 8 were still using their own private language. They called themselves by different names in this language: Grace became 'Poto' and Virginia became 'Cabenga' – names which were later used as the title of a film about their early years.

Their totally unintelligible speech for a while promoted the impression that the children were mentally retarded, but this proved not to be so. In due course, a detailed study of their language came to be made. This indicated that their speech was not as alien as its bizarre sound had led people to believe. It was basically a severely distorted form of English, with some features of German, several idiosyncratic grammatical characteristics, and a proportion of invented vocabulary. What made it so difficult to follow (and also to analyse!) was its extremely rapid speed of articulation and its staccato rhythm – features that later transferred to their English, when therapists began to work with them.

There are probably special reasons for the late retention of private speech in this case. The children, it seems, had very little opportunity to hear good models of English speech in their early years. They saw few other children in the area where they lived. Their parents were both working, and during the day they were cared for by their German grandmother who spoke no English. There was also an expectation that they might be retarded (because of a history of convulsions), which affected the style of the parents' interaction. Left to themselves, the twins would have had little alternative but to develop their own medium of communication.



Secret languages

Twins have often been observed to talk to each other in a way that is unintelligible to adults or other children. The phenomenon has been variously labelled 'cryptophasia', 'idioglossia', or 'autonomous speech'. Estimates of incidence are uncertain, but some have suggested that as many as 40% of twin pairs develop some form of private speech, especially in the second year.

There seems to be no basis for the view that a completely different 'language' is involved. The patterns heard can largely be explained with reference to the children's efforts to cope with the kind of language used around them, and to the kind of processes that take place in normal language acquisition. The twin situation promotes the continued use of immature and idiosyncratic patterns of sound, grammar, and vocabulary, and a personal style of interaction often characterized by abnormal intonation and rhythm.

These patterns become particularly noticeable when the children continue to use them past the normal period of 'baby talk'. In the most dramatic cases, private speech has lasted until age 5 or more, when it often attracts a great deal of publicity.

44 Language development in school

When children arrive in school, they experience a different linguistic world. They meet for the first time children from unfamiliar regional, social and ethnic backgrounds, whose linguistic norms differ greatly from their own. They encounter a social situation in which levels of formal and informal speech are carefully distinguished, and standards of correctness emphasized. The educational setting presents them with a variety of unfamiliar, subject-related styles of language. They have to learn a new range of linguistic skills – reading, writing, and spelling. And they find themselves having to talk about what they are doing, which requires that they learn a special technical vocabulary – a ‘language for talking about language’, or *metalinguage*.

In recent years, educationists have begun to recognize the complexity of the language demands being made on the young schoolchild, and to realize that progress in many areas of the curriculum is greatly dependent on a satisfactory foundation of linguistic skills. The traditional emphasis on *literacy*, the ability to read and write, has been supplemented by an emphasis on *oracy*, the ability to speak and listen. Teachers now pay increasing attention to a child’s preschool linguistic experience, seeing this as a foundation on which they can build. Special efforts are made to relate different kinds of linguistic learning: the task of writing is being brought closer to the child’s experience of reading; reading, in turn, is being brought into

contact with the ability to use spoken language; and oral skills are being supplemented by work on listening comprehension. Above all, teachers have begun to stress that children’s linguistic ability is a major factor influencing their success in the learning of other subject areas, such as science, mathematics, and history.

In the 1970s, this central, integrating role of language work promoted a host of new language schemes, materials, and approaches, and a philosophy which is best summarized in a phrase that has since become something of an educational slogan in Britain, following the UK government’s publication of the 1975 report on the teaching of English in schools, *A Language for Life* (‘The Bullock Report’): ‘language across the curriculum’. Since then, other aspects of the role of language have come to be better appreciated – not least, the need for a corresponding emphasis on children’s ‘vertical’ development, as they move between classes and schools and encounter different kinds of language experience in a variety of subject areas. From the children’s point of view, a great deal of language work must seem fragmentary and inconsistent, as long as no effort is made to ensure a coherent frame of reference that will accompany them as they move through the educational system. Research into the best means of achieving a coherent linguistic approach is thus a major aim of the slowly developing field of *educational linguistics*.

Imaginative speech and writing



Look at this strange animal on the blackboard (hard luck!). What sounds would it make when it is: happy? hungry? ...

This is a task taken from a course designed to foster children’s ability to use speech and writing in a more imaginative way, aimed at children aged from around 7 to 12 (R. James & R. G. Gregory, 1966). It introduces elements of art, music, and drama, and stresses the enjoyment that can be obtained from the use of language. The various exercises try to make children more aware of the different qualities of sounds made by things, animals, and people, and to stimulate their imagination to use language themselves in a more personal and creative way.

What sounds do you make when: you are given an ice cream? somebody treads on your toe? you are in a haunted house and a door opens? ...

Make the sound of a clock. Now, instead of the sound, make the word that comes from the sound ...

At more advanced stages, the children study the power of descriptive words and the

No talking!

The traditional emphasis in schools on the written language (§ 1) led language educationists in the 1970s to emphasize the important role of speech as part of children’s development and learning. It was pointed out that talk was often discouraged, and that in almost every setting, teachers did most of the talking – filling up 70% of classroom time, according to one study.

A great deal was learned from the analysis of tape recordings of teacher–pupil dialogue. One study was able to draw attention to a hitherto unrecognized problem in the styles of questioning used by teachers.

An example of the difficulty comes from a class on religious education, in which *T(eacher)* is asking two *P(pupils)* about life in New Testament Palestine.

T: How did they get the water from the well? ... Do you remember? ... Yes? *P1*: They ... ran the bucket down ... er ... and it was fastened on to this bit of string and it ... [some inaudibility] ... other end to the water.

T: You might do it that way. ... Where did they put the water ... John?

P2: In a big ... er ... pitcher. *T*: Good ... in a pitcher ... which they carried on their ...?

P2: Heads.

The first question is open-ended, and *P1* takes this to mean that an improvised answer would be appropriate. He does his best, but receives only the comment ‘You might do it that way’, spoken in a doubtful intonation. *P2*, perhaps noticing this, gives *T* a different kind of answer, the name of the object. This is evidently the answer *T* wants, and so *P2* gets the praise – even though we might think that *P1*’s response was not unworthy.

Having studied several cases of communicative difficulty of this kind, the author comments:

The teacher teaches within his frame of reference; the pupils learn in theirs, taking in his words, which ‘mean’ something different to them, and struggling to incorporate this meaning into their own frames of reference. The language which is an essential instrument to him is a barrier to them. (D. Barnes, 1969, pp. 29, 30.)

As a result of such studies, the spoken language of teachers and pupils became a major focus of interest in the 1970s.

STRUCTURE vs USE

There is considerable recognition these days of the need to develop a child's linguistic skills so that they will promote educational growth inside school as well as social and personal development outside school. However, there is much less agreement about the best way of achieving a competent and confident use of language in these domains. Since the 1950s, the controversy has focussed on the competing claims of two approaches to language teaching – one based on 'structure', the other based on 'use'.

Parsing

The traditional structural approach stresses the importance of getting children to analyse grammar in a conscious way, and to learn the appropriate terminology. The technique, as traditionally practised, is known by such names as 'parsing', 'clause analysis', or 'diagramming' (p.96). Sentences would be analysed into their constituent parts, the labels for the different parts of speech would be learned, and great stress would be laid on the mastery of formal rules (§§1, 62).

This is still the most widely practised approach to mother-tongue teaching in Europe, but during the 1960s it fell out of favour in most English-speaking countries. Parsing was felt to develop a mechanical, analytic set of skills that bore little relationship to children's everyday linguistic needs. Most children, it was argued, found such exercises dull and irrelevant, unrelated to the problems and practices of living English.

Language in use

In place of parsing, there developed various approaches to the study of language in use. Pupils and their teachers would collect samples of real linguistic situations, both spoken and written, and discuss the distinctive features of the language. Typical situations, used by one leading project of the 1970s for work with older secondary school children were: advertising, news reporting, operating instructions, being tactful, using technical terms, and projecting an image. Pupils would use tape recordings, collections of written material, role play, and other techniques that provided involvement and realism. By choosing situations that would be meaningful and motivating, educationists hoped that pupils would explore the nature of their experience when using or responding to language, and thus arrive at a fresh understanding of its meaning for them. In this way, it was felt that they would develop their awareness of what language is and how it is used, and by degrees extend their own competence in handling it. Similar ideas were introduced at junior levels using more elementary functional notions, such as asking questions, giving instructions, and providing explanations.

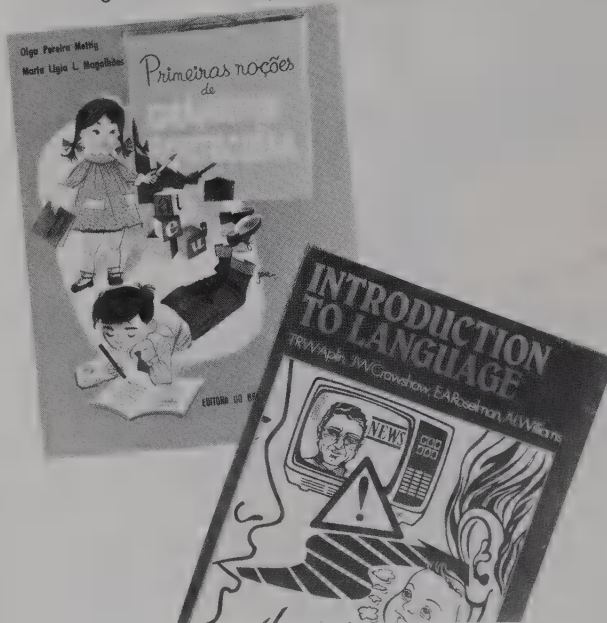
The 'language in use' approach is still widely practised, but it too has limitations. As teachers and pupils became more involved in language ac-

tivities, the need to have available a more systematic way of analysing and talking about the language became increasingly apparent. However, the approach made no provision for a standard descriptive apparatus. Criticism therefore came from teachers who felt such an apparatus was necessary, in order to facilitate the understanding of texts, and to make comparisons between them. Other critics argued, with varying levels of cogency and emotion, that a return to 'older standards' was prerequisite for progress.

Current trends

The situation in the middle 1980s is unclear. At one extreme there are those who advocate a wholesale return to the principles and practices of traditional parsing. At the other, there are those who avoid anything that smacks of grammatical terminology. Fortunately, several fruitful intermediate positions seem also to be emerging. There is, for example, a healthy movement arguing for a general approach based on 'awareness of language', aimed particularly at the middle years of schooling. It aims to stimulate the child's curiosity about language, and to integrate the various elements of language training in school – both 'horizontally', in relation to the different language elements across the curriculum (English, foreign languages, minority languages, etc.), and 'vertically', as the child moves up through the school. Structural and functional elements are involved, and much of the appeal of the approach lies in the way in which pupils are invited to discover the importance of *both* these aspects of language work for themselves.

Contrasting covers of two school books reflect the change in attitude towards language teaching in recent years. The first is a grammar book intended for use in Brazilian primary schools: the children are shown happily holding a grammar book, and writing out a list of parts-of-speech labels. The second is a language awareness text for use with young senior-school pupils: it shows some of the varied topics, from smoke signals to television, that form its content.



Jack and Jill

Steep huge slanted
Stamp stamp! CLIMB

Ah Well!
Stumble stumble
Clon OUCH!
Ooo-o crown

Trot Trot Trot
quick quick quick
Ah soothing
Cotton vinegar
Brown paper
Aw JILL! BED

An 11-year-old's 'poem',
based on some of the work
in the James & Gregory
course

sound effects conveyed by
names:

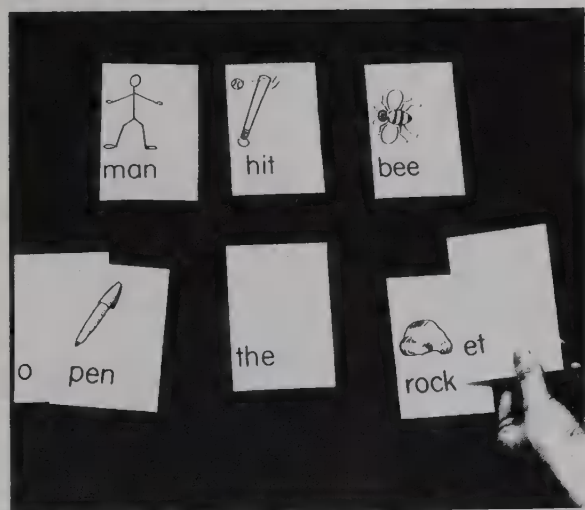
What taste and what size
would you give to sweets
with these names? Cholly,
Teenies, Wumps, Choocce,
Jelloc, Quangles?

They study the stress patterns of phrases and sentences in prose and poetry; they begin to experiment with language, in the form of nonsense verse; and they look at how the effects are produced in a range of descriptive and atmospheric poetry. Here, this kind of approach links up with the traditional focus on written literature. But it is hoped that by grounding the study of literary language in the early experience of speech and sound, children will develop a more sensitive and creative approach to language work, not only in their imaginative reading and writing but also in their everyday speaking and listening.

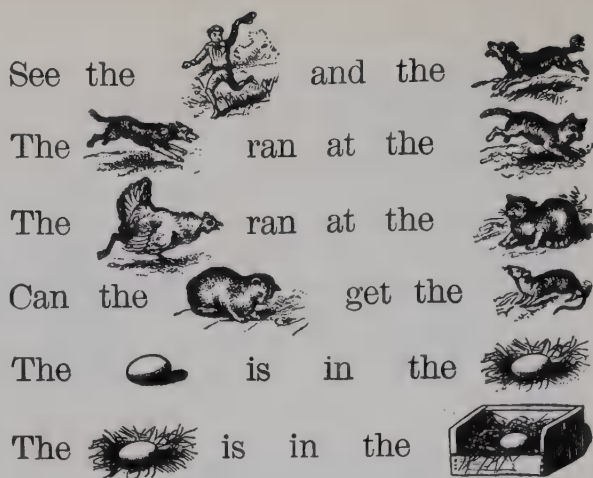
Learning to read

Literacy has long been considered the main evidence of a child's educational progress. As a result, more attention has been paid to the nature of the task facing children as they learn to read than to any other area of the curriculum. Hundreds of reading schemes and philosophies have been devised in the past 200 years, and many have achieved a degree of success. However, it is usually an open question whether success is due to the properties of an approach or to the enthusiasm with which it is promoted by its adherents. Systematic research into the teaching of reading is relatively recent, and although a currently fashionable field, there have as yet been few definitive findings into the nature of the child's reading process (discussed in §34) and the effectiveness of different teaching methods.

Many positions are advocated. Some recommend the initial use of a particular scheme or method to all children; others argue that there is no 'right way', and that a range of approaches should be available to suit the needs of individual children. For some, reading is essentially the skill of decoding written symbols; for others, it is a means of discovering the meaning 'behind' the symbols. In this deeper view, reading plays a fundamental role in promoting children's critical and imaginative thinking, and thus their intellectual and emotional development. A similar concern motivates the view that the teaching of reading should not be restricted to the classroom. In particular, several recent studies have indicated that regular parental reading aloud to children, accompanied by informal discussion of what is being read, may be the single most important factor in promoting reading ability.



Syllabic teaching cards are part of a set designed to introduce children to reading through the use of syllables (as opposed to phonemes or whole words). The particular programme is known as the 'syllabary curriculum'. At the stage shown, pictures are being used to motivate a sequence of words in a sentence. Later stages involve techniques for the identification of sounds and the blending of syllables. (From P. Rozin & L. R. Gleitman, 1974.)



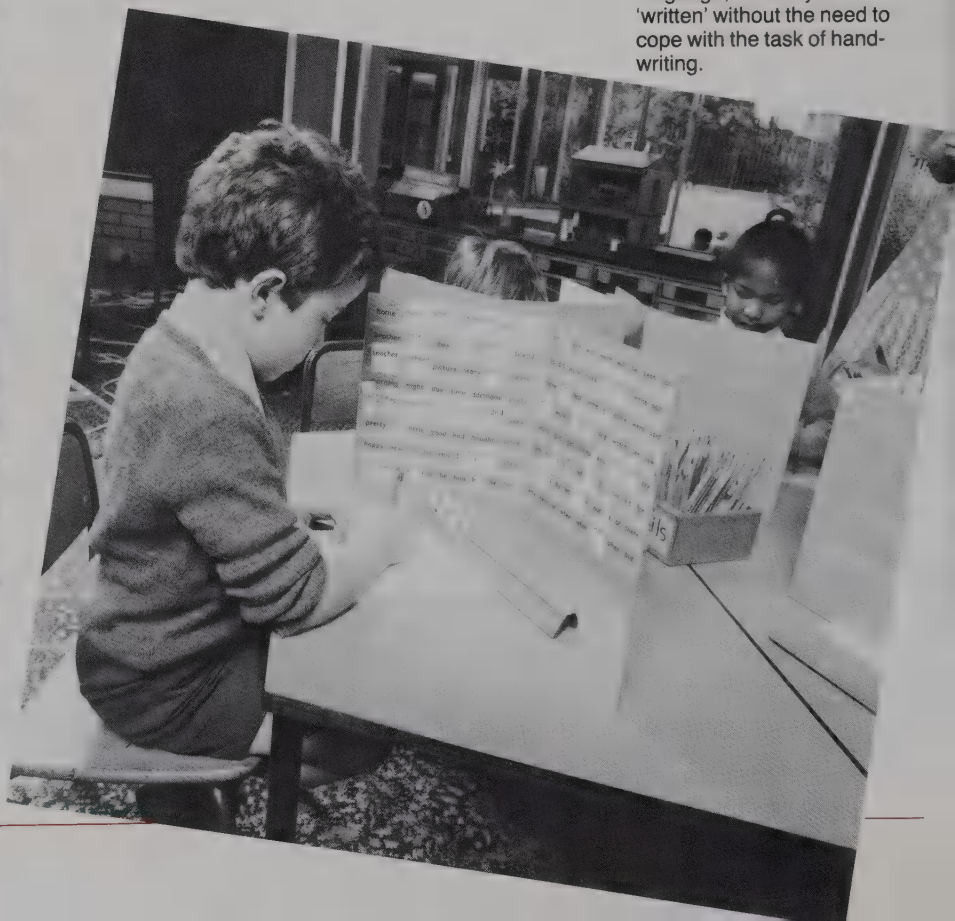
Part of a page from Barnes's *New National First Reader*, 1883). The book gives children practice in recognizing words in whole sentences. Pictures have replaced certain key words to help reduce the reading load and to provide cues to meaning.

Active reading

There are two contemporary preoccupations. First, there is a focus on the need to motivate children to read by providing materials and activities that are interesting. It is pointed out that the content of traditional reading-scheme books is singularly uninspiring: children often view such reading as a dull, decoding task, and choose very different kinds of books when they read by themselves for enjoyment. Today, this contrast is less apparent, with new schemes placing a greater emphasis on story-telling and more appealing visual design. The world of the child's own experience is also increasingly represented, through the use of familiar social situations and everyday visual language contexts, such as road signs, shop names, and vehicle labels (e.g. *taxi*, *police*).

Secondly, there is an emphasis on training the cognitive skills that children need in order to read

Breakthrough The active approach to reading is nowhere better illustrated than in the use of the word cards and sentence maker provided by the scheme *Breakthrough to Literacy* (D. Mackay *et al.*, 1970). Words are taken from a holder and placed on a sentence frame, to make sentences of a child's own choosing. The sentences can build on the children's personal experiences; they use words that reflect their spoken language; and they can be 'written' without the need to cope with the task of hand-writing.



efficiently. Research has shown the relevance of such abilities as classifying, sequencing, and pattern matching; and new 'pre-reading' materials therefore provide practice in these areas, along with opportunities to draw, cut out, colour in, and so on. It is also evident that many children find their first encounter with the world of print confusing, so that a great deal of attention is now being paid to ways of providing an opportunity to think about what is involved in reading and writing (e.g. how are books made? what is writing for?), and a meta-language for talking about these activities (e.g. *page, line, beginning, space*).

Much of this work involves an *active* approach to reading. When children encounter a word they cannot read, emphasis is now often laid on helping them to work out for themselves what it must be, by using such techniques as reading on to the end of the sentence, reading back to the sentence beginning, and checking any illustrations. In this approach, the intention is to make them rely less on the mechanical task of decoding letters, and to capitalize more on their linguistic experience and awareness of context so that they can *guess* what a word might be. Reading, according to the American researcher, Frank Smith (1928–) is a 'psycholinguistic guessing game'. This is not to say that accuracy in word decoding is unimportant. Rather, it is stressed that 'getting the words right' is a gradual process – as indeed it is in spoken language acquisition (§38).

In recent years, attention has also been drawn to the many different kinds of activity that are found under the heading of 'fluent reading'. At one extreme, there is the careful, complete, and vocal technique known as 'reading aloud'; at the other, there is the rapid, selective, and silent technique known as 'scanning' or 'skimming' – something widely practised by time-pressed adults as they work quickly through a report or read the morning newspaper. In between there are many other activities, such as critical reading (e.g. underlining sections of text, or adding marginal notes), proof-reading (checking one's own or someone else's text for errors), and reading for learning (if you suddenly discovered that as soon as you had read this page you would be asked questions on it, your reading strategy would alter immediately). Current thinking about reading draws attention to the importance of all these real-world skills.

Some approaches to reading

It is not possible to make a neat classification of reading schemes into types, because many are based on a mixture of principles. However, some general comparisons can be made, as is illustrated below for three kinds of approach.

	<i>Characteristics</i>	<i>Advantages</i>	<i>Disadvantages</i>
'Basal reading' programmes	Widely used in the U.S.; large-scale system of preparatory texts, graded readers, work books, tests, and other materials.	Comprehensive; graded; carefully planned; children get to know the characters, setting, etc.	Expensive; can be used inflexibly; does not promote an exploratory use of language outside the scheme.
Language experience programmes	Integrates work in listening, speaking, reading and writing, using a variety of materials and activities relating to the child's own world.	Caters for individual differences; promotes creativity, confidence, and meaningful activities.	Little grading of structure; difficult to evaluate progress; little motivation to read outside the child's immediate world.
Individualized programmes	Children select their own reading based on interests and ability, and read at their own pace; each child has its own programme, using checklists and charts, and discusses reading with the teacher.	Maintains interest; fosters independence and confidence; is flexible; makes no public distinction between good and bad readers.	Difficult to organize book availability, record-keeping, discussion time with teacher; no systematic development of skills.

Alphabet decoding

Several techniques have been proposed that try to facilitate the task of decoding the phonic basis of the writing system. Some, such as *Unifon* or *i.t.a.* (p. 217), introduce new symbols. Some make use of colours

to highlight certain sound-letter combinations. Diacritics may also be added to letters, as in the following illustration of a system from the 1960s. (Silent letters are marked with a slash; long vowels have a bar

over; digraphs have a bar under; schwa (see Appendix I) is marked with a dot; and an asterisk is used for exceptions.)

Once upon a tim^{*}é à hen
liv^{*}ed on a f^{*}arm. Th^{*}é hen ...

'Phonics' vs 'whole word'

Since the early 19th century, the relative merits of phonic and whole-word approaches have dominated educational debate about the teaching of reading. Schemes have been devised based largely on one principle or the other, and there have been several 'mixed' schemes, which attempt to integrate the strengths of each. In recent years, the debate has taken on a new dimension, in the light of the evidence accumulated by experimental psychology about the nature of the reading process (§34).

● *Phonic* approaches are based on the principle of identifying the regular sound-letter relationships in a writing system, and teaching the child to use

these to construct or decode words. Phonic schemes have attracted a great deal of support, mainly because of the way they give children a rationale for 'sounding out' new words. On the other hand, they have also been severely criticized. The child's phonetic awareness is often not up to the task of phonic decoding. The task of blending isolated sounds into whole words is not easy: to get from *c* [kə] + *a* [a] + *t* [tə] to *cat* [kat], an actual change of pronunciation is involved, as the phonetic transcription shows. And first books have severe restrictions on their permitted vocabulary, which often results in artificial or bizarre sentences (e.g. *Pat and Dad ran*).

■ *Whole-word* or *look-and-say* approaches are based on the principle of recognizing individual words as wholes, without breaking them down into constituent letters or sounds. The main aim is to avoid the use of strings of meaningless phonic syllables, and to permit access to longer and more meaningful sentences, through the use of frequently occurring words (*the, go, saw, little, my, etc.*) – and even much longer words, such as *aeroplane* and *doctor*. Whole-word approaches have been criticized for their lack of clear grading principles, and for the way words are often arbitrarily selected, unrelated to the child's experience.

Line breaks

There is much that is not known about the factors that promote and hinder the process of reading in the young child. Even basic typographical questions remain unresolved, such as the optimum size of type or the distance between lines in the first texts. One such question relates to the necessity of line division. Is a child's reading ability affected by the way in which lines of text end? A completely arbitrary set of line breaks is bound to cause some difficulty – hyphenation, for example, would hardly be a help to young readers! But would their performance be facilitated if lines were made to end according to certain linguistic principles – for example, following a major semantic or syntactic boundary?

In a study of adult recall, it was found that the first of the following two sen-

tences was much easier to learn than the second:

The very old man was always sitting down on one of the big chairs.

The very old man was always sitting down on one of the big chairs.

The first set of line breaks occurs at major grammatical boundaries in the sentence, whereas the second set does not. Would this kind of factor affect the reading ability of young children?

To obtain some evidence on this point, a recent study printed a story in several different ways, so that the line breaks were altered. A sample is given below: it shows the placement of *and* changed on three occasions, and *the* changed once. A text using justified right-hand margin setting (p. 183) was also prepared

as a control. Groups of children read the stories aloud, and their performance was measured in terms of non-fluency, reading errors, and comprehension.

The results, although limited to given constructions, were clear. Breaks within grammatical phrases caused many more problems than breaks between phrases. Also, *and* at the beginning of a line caused more trouble than when it appeared at the end of the previous line.

The small sample size makes these findings tentative, but they support the conclusion that line breaks are a possible hazard in early reading – a matter which should be borne in mind when designing texts for young readers or for those with a reading handicap (p. 272). (From B. Raban, 1981.)

Mr. West lived in a house with a monkey.

One day, the monkey got up first.

He got up before Mr. West and before the sun.

He opened the window. The monkey had a look down the street.

There was no one about.

"Mr. West is in bed and he is sleeping," he said.

"I'm going down the street and into the park

Mr. West can't stop me."

Mr. West lived in a house with a monkey.

One day, the monkey got up first.

He got up before Mr. West and before the sun.

He opened the window. The monkey had a look down the street.

There was no one about.

"Mr. West is in bed and he is sleeping," he said.

"I'm going down the street and into the park.

Mr. West can't stop me."

Readability formulae

Over 50 procedures have been devised that claim to be able to compute how difficult a text is to read. The 'Fog Index' (1952), for example, is arrived at in four steps:

1. Select several 100-word samples from a text.

2. Calculate the average sentence length by dividing the number of words by the number of sentences. (Include only complete sentences.)

3. Obtain the percentage of long words in the entire sample: count the number

of words containing three or more syllables and divide this total by the number of 100-word samples.

4. Add the results of 2 and 3, and multiply the total by 0.4. The product is the (American) grade level for which the text is appropriate, in terms of difficulty.

Several such formulae have been proposed, of varying levels of complexity. Most assume that difficulty can be measured simply in terms of the length of words and/or sentences. However, there

is no neat correlation between sentence length and difficulty (p. 233); and not all long words are difficult to read. Factors such as the complexity of sentence construction and the nature of word meaning are far more important, but these the procedures usually ignore. Readability formulae have thus attracted a great deal of criticism, but in the absence of more sophisticated measures, they continue to attract widespread use, as a reasonably convenient way of predicting (though not explaining) reading difficulty.

Ready to read?

m	R	this	33
---	---	------	----

(a) Circle each word.

F	ELEPHANT	to	b
---	----------	----	---

(b) Circle each capital letter.

22	The plant grows.	blow snow flow	grows
----	------------------	----------------------	-------

(c) Circle each thing that is a sentence.

Sandy, Bruce and James ran home.

(d) Circle each full stop.

A series of tasks from one section of the LARR Test (*Linguistic Awareness in Reading Readiness*, 1983), which investigates young children's awareness of the features and functions of written language. The main aim is to see whether children have grasped the concepts that are required in order to recognize and talk about literacy skills. There is an important connection between children's awareness of the technical 'metalinguage' of literacy and their subsequent performance in reading and writing.

That there are 'errors' in this domain is readily illustrated from the replies some children give when asked about the form and function of language.

■ 'Tell me a long word', an investigator asks some 3-year-olds. 'Train,' replies one. 'Giraffe,' replies another. Both are thinking of the length of the objects.

■ 'Show me who's reading,' says an investigator, pointing to a set of pictures in which different people are reading, writing, drawing, and looking at photographs. The child points to the photographs.

Other kinds of difficulties are known: many children have problems in naming letters, or saying whether sequences of sounds are the 'same', or correlating short words in speech. There is little doubt that children need to have developed control over several metalinguistic notions before they are 'ready' to read and write.

However, the notion of 'readiness' has been somewhat controversial in recent years, and must be interpreted with caution. There is no single criterion for saying that a child is 'ready' to read. Several psychological factors are involved, such as concept development, memory, attention, intelligence, and left-right orientation. There should be several linguistic skills present, such as good sound discrimination, the ability to follow instructions, a developing spoken language, as well as an ability to talk about language. Reading seems to presuppose a great deal.

But the exact requirements are by no means clear – as is shown by parents who have successfully taught their baby to read (usually through the use of words on cards, which are simultaneously shown and spoken for regular periods each day) – in some cases, starting as early as the first year. In such cases, the idea of a 'natural' stage of reading readiness becomes obscure.

(J. Downing *et al.*, 1983, Manual, pp. 12–13)

Learning to write

A MOTOR SKILL

For many people, learning to write is primarily a matter of acquiring the motor skill of forming and sequencing letters in a fluent, automatic manner, and positioning them clearly on a page. But this involves far more than the correct formation of letter shapes: letter sizes, word spaces, spaces between lines, margins, and other matters of layout also need to be consistent, if a writing style is to be acceptable. These skills do not always come easily, and it is therefore necessary to determine the factors that promote or hinder the development of efficient handwriting. There have been few scientific studies, so that claims about the 'best' kind of handwriting to teach, and the 'best' way to teach it, tend to be impressionistic, subjective, and controversial.

Of the many issues raised, most attention has been paid to the question of 'writing posture' – the optimum position of the body for writing. It includes a consideration of such factors as hand position, finger grip, the angle of the body towards the paper, and the height of the writer's chair. Too low a chair, for example, can cause a twisted hand position, which inhibits finger movement, and thus prevents the formation of a free cursive (p. 186) style. In addition, simple management strategies need to be taught – such as the need to move the writing paper upwards as one nears the bottom of a page (rather than to move oneself, which is what some children do). The type of writing implement and the kind of paper need to be considered – a child may be unwilling to write with a certain kind of pen, or find it difficult. The question of when to introduce lined paper needs careful thought: lines help the child to control the direction and size of script, but they also constrain the spontaneity of a natural writing style. There may also be difficulty in transferring letter shapes from one visual plane (e.g. on a blackboard) to another (the page). And there may be problems of coordination between eye and hand movements, especially if there has been little experience of scribbling and drawing. It is easy to see why it can take children three years or more to develop a reasonably smooth, automatic writing technique.

Holding a pencil

The normal 'tripod' grip (top), widely recommended for everyday use, contrasted with a less efficient grip (bottom). Children often use even tighter grips – holding the pencil in a clenched fist, for example. This usually results in too much pressure on the paper, and an erratic writing style. It is also unnecessarily tiring.



Poor handwriting?

One of the most widespread misconceptions is that poor handwriting in older children or adults indicates a careless or otherwise inadequate personality, or perhaps low intelligence (p. 189). The view has no basis in fact. Poor writing may be little more than the reflex of a busy or rushed life-style. It may even relate to high intelligence, where the writer is having difficulty keeping up with his thoughts.

Even in young children, it would not do to dismiss a piece of work simply because it looked messy. First impressions of the extract (right) cannot be good, but in fact it is part of an extremely impressive linguistic performance – a 34-page epic narrative in eight chapters, full of events and characters, written by Patrick, aged 5½. (From D. Mackay & J. Simo, 1976.)

CHAPTER SEVEN – IT WAS NOT.
ROY TOLD MARBELAR TO STOP
THE AIRCRAFT A MINUTE SO THAT
HE CUDE GET HIS GUN, TO PLAY
WITH IN THE PLANE

CHAPTER SEVEN
IT WAS NOT.
ROY TOLD
MARBELAR
TO STOP
THE
AIRCRAFT
A MINUTE
SO THAT
HE CUDE
GET HIS
GUN.
TO PLAY
WITH
IN THE
PLANE

A month's progress

Although it takes a long time to control all the features of handwriting, monthly samples of a child's work will show several signs of progress. It is not difficult to see which of these two samples, taken a month apart from a 5-year-old girl, is the more advanced.

(a) Several letter shapes are made well, but there is a great deal of size variation (e, u, t), some contrasts are not clearly formed (g, u, c), word and line spaces are erratic, and the lines are not straight.

(b) Letters are of a more consistent size, and are better formed (there has

been a notable advance in g); word spaces are well used. Lines are steadier, but there is still need for improvement in the use of line spaces, and in the relative positions of letters on the line (e.g. in going, the second g is written on a level with the n, instead of descending below it).

(From D. Mackay & J. Simo, 1976.)

(a) mummy went to the clinic
instead of to school this
morning.

mummy went to the clinic instead of to school this morning.

(b) we are having a new car this
afternoon and my grandma is
going to have a ride in it.

we are having a new car this afternoon and my grandma is going to have a ride in it.

A FUNCTIONAL SKILL

There is far more to writing than the automatic exercise of a motor skill – a point that has been emphasized in recent years, as researchers have begun to study the development of writing in relation to children's emerging cognitive, social, and linguistic abilities, and to the demands being made upon them by the curriculum. The unique role of written language as a means of enabling children to formulate their thoughts to themselves, and to reflect on what they mean, is now widely recognized. Writing is seen as an integral part of the process of learning, and not simply as an ancillary function – something to be used as a way of checking that learning has actually taken place (as in the traditional subject essay). This view requires a more sophisticated account of the nature of the writing process than has traditionally been available – in particular, it requires an appreciation that writing is used for a wide range of purposes and a variety of audiences (p. 212).

Why write?

The purpose of writing should never be taken for granted. One 5-year-old, returning from a nature ramble with his class, was asked by his teacher to 'write about it'. 'Why?' he replied. 'It's easier to tell you!' Adults tend to forget that the 'obvious' reasons for a community's use of writing (§31), may be quite obscure to the young child.

When the point is investigated, it quickly becomes apparent that writing is used for an indefinitely large number of purposes – to express feelings, tell stories, report events, complete forms, keep records, and much more (§4). Children have to learn about these purposes, and how the functional differences affect the nature of the language that is used. Several simple classifications of writing styles have been made, as a means of describing the nature and development of children's writing in school, and in order to give guidelines to teachers anxious to develop a balanced writing curriculum. One approach distinguishes three main styles: an 'expressive' style, close in style and content to the everyday use of speech, which focusses on the writer's personal feelings; a 'transactional' style, which focusses on reasoned, logical statement; and a 'poetic' style, which presents the reader with an imaginative experience. When this system is used to analyse the nature of traditional writing of older schoolchildren, it emerges that most of this writing is transactional, with expressive writing hardly being used at all. (After N. Martin *et al.*, 1976.)

Who is the child writing for?

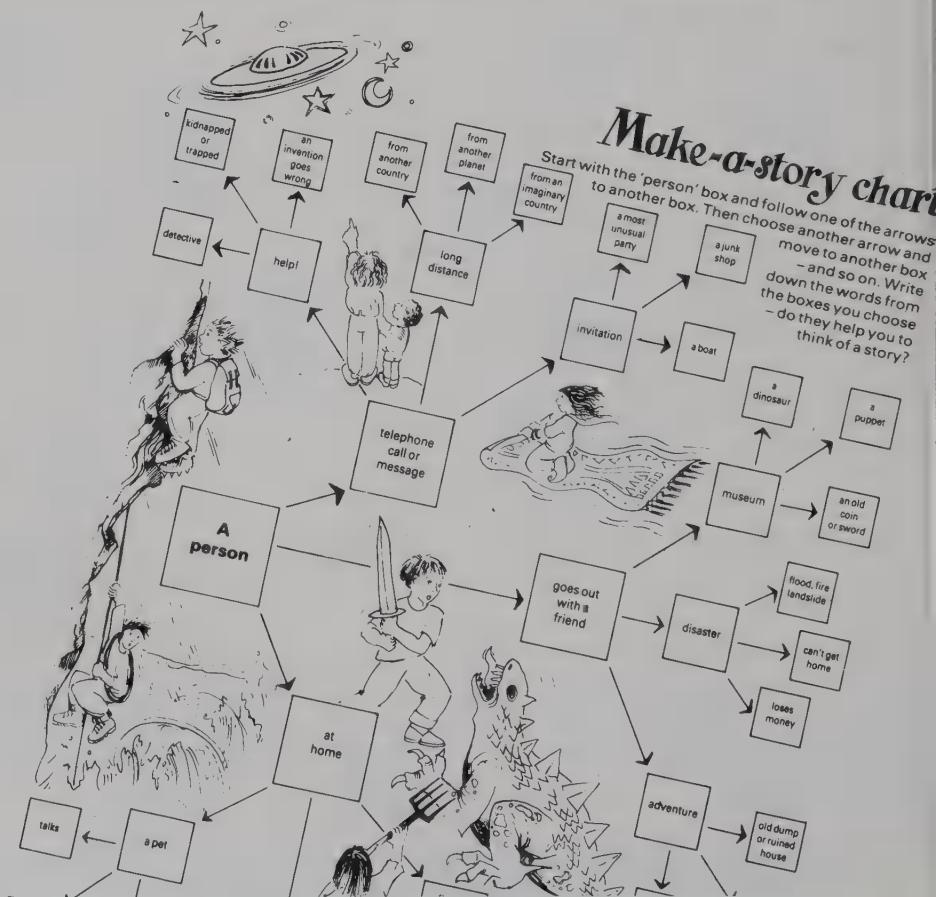
The style and content of written language is much affected by the nature of the recipient (§31), and an important goal in working with children is thus to develop their 'sense of audience'. Several possible kinds of audience for child writing have been identified.

- Children may address themselves, as in diaries, notes, and first drafts.
- They may address their peers, as in writing an account of an event for their class, or writing a letter to a friend.
- They may address a trusted adult, using a very personal style of writing.
- They may address their teacher, seen as a partner in dialogue, in the expectation that they will receive help.
- They may address examiners, whether in routine class assessments or in formal examinations.
- They may address an unknown audience, as when they have to produce work for a public occasion, or write a letter of application for a job.

In the Martin, *et al.* study, it was found that half of all school writing had the examiner in mind – writing seemed to be used more as a means of testing than as a means of learning. In many settings, it was not being seen as *part* of the learning process, but as something that happened *after* learning was supposed to have taken place. Most of the other audience experiences were conspicuous by their absence. The research stressed the importance of giving children the opportunity of writing for a wide range of audiences, in view of the demands that would be placed upon them once they had left school, and pointed to the need to develop a balanced writing curriculum.

Writing blocks

All children (and adults) experience writing blocks at some time or other. Blocks arise for a variety of reasons: the writer may be unhappy about embarking on the writing task, be unsure how to express something, or simply not know what to say – the 'mind has gone blank'. In such cases, children need to be helped over the block. The 'Make-a-story' chart illustrates one way of helping children who are having difficulty with the development of a story. (From H. Cowie & H. Hanrott, 1984.)



New approaches

Based upon such findings, several ways of fostering children's ability and enjoyment of writing have been suggested. New writing programmes encourage teachers to provide a variety of real audiences and functions for their pupils' work, so that children can see that their writing has a genuine purpose, and that it is not being done solely to be 'marked'. In addition to essays and experimental reports, there are now increasing opportunities to write in other styles for other audiences – such as magazine articles, or letters to the press. Many teachers have begun to keep a 'chart' of different kinds of writing produced by their pupils. And more attention is now paid to discussing samples of writing with the children, both in groups and individually. It has long been appreciated that writing arises out of talk, in the early years; perhaps the most important aspect of current thinking is the realization that the reverse process is just as important – to give children the opportunity to talk about what they write.

A LINGUISTIC SKILL

In addition to motor ability and functional awareness, young writers need to develop the ability to use the structures of language in an appropriate and mature manner. This ability takes several years to emerge. There have been few detailed longitudinal (p. 229) studies, so that analyses in terms of developmental stages tend to be very general or anecdotal; but a number of initial distinctions have been proposed. One scheme recognizes four stages of development (after B. M. Kroll, 1981):

1 A *preparatory* stage, when basic motor skills develop, and the principles of the spelling system are acquired.

2 A *consolidation* stage, usually from around the seventh year, when children begin to use the writing system to express what they can already say in speech. Writing at this stage closely reflects the patterns of the spoken language. There may be many colloquialisms, strings of clauses linked by *and*, unfinished sentences, and other features of the child's conversational experience.

3 A *differentiation* stage, from around the ninth year, in which writing begins to diverge from speech, and develops its own patterns and organization. Errors are common at first, as children learn new standards, and experiment with new structures found in their reading. Their written work becomes fuller and more diverse, as they encounter the need to produce different kinds of writing for different audiences and situations.

It is at this point that children most need guidance about the structures and functions of written language. In particular, they must learn that writing aids thinking in ways that speech cannot perform. Writing is a medium where there is time to reflect, to re-think, to use language as a way of shaping thought (§§31, 34). They therefore need to see the importance of drafting, revising,

The nightmare

Sp It came running to me but it seemed as though it was moving
 Sp away. It was coming closer and closer. It was riding a unicorn. It was laughing. It came closer still. It came riding and as it came near it was the headless horseman. The lightning struck, the thunder crashed. It was riding around the moon and he was hitting the unicorn with a whip. the unicorn was kicking and the headless horse was whipping and laughing. The clock struck midnight. The unicorn stopped kicking. the headless horseman stopped laughing. He began to wobble.

7/10 You must try to remember to start sentences with capital letters. But you have written a very scary piece. Well done.

<p>Marking conventions Recognizing the importance of writing has many consequences for the organization and practice of teaching. It is by no means easy to provide children with a range of audiences and purposes in the institutionalized setting of a school. Links need to be made with the outside community (e.g. local government, press, or employers). But creating such links is a slow and time-consuming process. More important, new ways of responding to children's work need to be found, in order to recognize</p>	<p>the strengths of different kinds of writing, and to provide the best kind of feedback. One of the problems of traditional marking practice is illustrated in this example of a story written by a young secondary-school boy. The 20 corrections give a general impression of failure, yet the mark given is 70% and the main comment is 'well done'. Whichever way the writer interprets the marking, there is a problem: if he notes the good mark, he must assume that the errors cannot be very important; if he notes the</p>	<p>errors, he must assume that the teacher is giving false praise. In recent years there has been a great deal of discussion in educational circles about the need to develop more balanced and comprehensive kinds of assessment, in which interaction with the pupil plays a major part. But many theoretical and practical problems have to be faced before alternative philosophies and strategies of marking can be successfully implemented – not least, the constraints on the teacher's time. (From P. Gannon, 1985.)</p>
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and editing as essential ways of obtaining the best expression. From this point of view, such activities as crossing out have to be seen not simply as 'mistakes', to be criticized on grounds of haste or carelessness, but as an indispensable step in the search for the best expression of what children are trying to say.

4 The *integration* phase is found when writers have such a good command of language that they can vary their stylistic choices at will and develop a personal 'voice' – something which is rare before the middle teenage years, and which, in a sense, continues to develop throughout adult life.



the	♀ young, new	♥↑ happy	♥↓ sad	∩ ear
this	♂→ quick	♥↗ funny	♥↑↓ upset	◎ eye

PART VIII

Language, brain, and handicap

It has often been remarked that we come to appreciate the unique complexity and function of language only when it starts to go wrong. This happens daily in many small ways, when we detect ambiguity, express ourselves incoherently, or speak at cross-purposes. Less commonly, it happens in a dramatic and devastating manner, in the form of language handicap. Those who find it difficult or impossible to communicate, on account of some physical, psychological, or other disability, face a frustrating, isolated, and uncertain future, in which their handicap is often not recognized, and community support services may be inaccessible or absent. Drawing attention to the existence and extent of language handicap is thus an important role for any encyclopedia of language.

Most language handicaps involve a consideration of areas of the brain that may be impaired. Little is in fact known about the way the brain controls and processes language, and this provides the focus for a great deal of contemporary research, which is reviewed in the first section of this Part. We begin with a general account of brain structure and function, and look in particular at the main ideas about hemispheric dominance and localiza-

tion of function that have influenced thinking about language in the past 100 years. We then consider recent developments in the neurology of language, and refer to some of the fruitful ways in which we can make deductions about brain function from the study of human speech behaviour.

The section on language handicap opens with a general review of issues relating to incidence, causation, and classification, and then looks at each major category of handicap individually. We begin with deafness, paying particular attention to recent technological advances in this field. This is followed by a discussion of the various handicaps of spoken and written language that can accompany damage to the language-processing areas of the brain – aphasia, dyslexia, and dysgraphia. The next sections consider the main kinds of ‘output’ problems – disorders of voice quality, articulation, and fluency – and the notion of language ‘delay’. Part VIII then concludes with an examination of alternative communication systems and the rapidly developing field of communication aids, which involve the latest advances in information technology.

A physically handicapped child using a head pointer with a communication board.

45 Language and the brain

The human brain consists of several anatomically distinct regions. The largest part is the *cerebrum*, which is divided into two great lobes of similar size – the left and right *cerebral hemispheres*. The hemispheres are connected to the spinal cord by the *brain stem*, which consists of the *mid-brain*, the *pons*, and the *medulla oblongata*. At the back of the pons is the *cerebellum*, which is responsible for the maintenance of body posture and the smooth coordination of all movements.

Most research has focussed on the structure and function of the cerebrum, especially on its surface layer of grey matter (nerve cells), the cerebral *cortex*, which is the area primarily involved in the control of voluntary movement and intellectual functions, and in the decoding of information from the senses. Beneath the cortex is a body of white matter (fibre tracts), which transmits signals between the different parts of each hemisphere, and between the cortex and the brain stem. A notable feature is that the surface of the cortex is not smooth, but has folded in on itself, to produce a series of *convolutions*, or *gyri*, which are separated by *fissures*, or *sulci*.

The figure below shows the main anatomical features. Seen from above (a), the main feature is the *median longitudinal fissure* separating the hemispheres. It does not extend the whole way through the cerebrum: lower down, the hemispheres are joined by a thick bundle of nerve fibres, the *corpus callosum*. This is the means whereby information can be transmitted from one hemisphere to the other. Seen from the side (b), the main features are the *central sulcus* (the *fissure of Rolando*) and the *lateral sulcus* (the *Sylvian fissure*), which are used as criteria for dividing the brain into its four main lobes: *frontal*, *temporal*, *parietal*, and *occipital*.

One other important anatomical fact needs to be borne in mind when discussing brain functions: each hemisphere controls movement in and receives sensory input from the *opposite* side of the body. Many nerve fibres from the two hemispheres cross each other as they descend through the brain stem, so that the left hemisphere controls the movement of the right side of the body, and vice versa. That is why brain damage to one hemisphere is usually correlated with bodily effects (such as paralysis) on the opposite side. In the case of the ears, signals from each ear go to *both* hemispheres, but most information is transmitted to the opposite side – a fact that has led to an important technique for investigating brain function (p. 259). In the case of the eyes, the situation is yet more complex: the left half of the visual field of *each* eye transmits

information to the right hemisphere, and vice-versa. Such sophisticated 'wiring', it has been suggested, enables us to make many more qualitative judgments about sounds and images (e.g. about their distance and location) than might otherwise be possible.

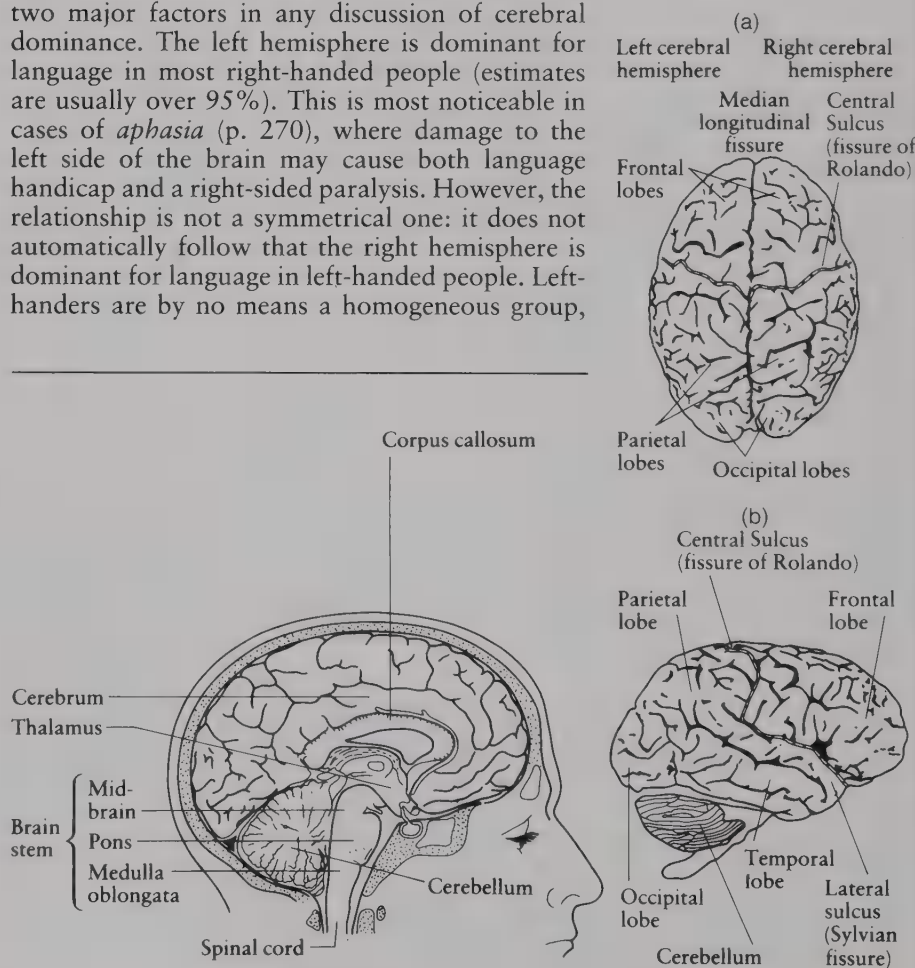
DOMINANCE

The functional relationship between the brain's two hemispheres has for over a century been a major focus of research in neuropsychology and clinical neurology. For some time, it was thought that one hemisphere (the left, in most people) was superior to the other in the control of most activities. Today, it is recognized that each has its own role, being more involved in the performance of some activities and less involved in others. A hemisphere is thus said to be the 'dominant' or 'leading' one for certain mental functions. The development of these functions within one or the other hemisphere is known as 'lateralization'.

Language and handedness have long been the two major factors in any discussion of cerebral dominance. The left hemisphere is dominant for language in most right-handed people (estimates are usually over 95%). This is most noticeable in cases of *aphasia* (p. 270), where damage to the left side of the brain may cause both language handicap and a right-sided paralysis. However, the relationship is not a symmetrical one: it does not automatically follow that the right hemisphere is dominant for language in left-handed people. Left-handers are by no means a homogeneous group,

Below left: A section through the brain, showing the main anatomical areas

Below: The brain seen from (top) above and (bottom) the side, showing the cerebral hemispheres and the four main lobes



Finding out about dominance

Brain abnormalities

■ The traditional approach, used since the first systematic work on aphasia (p. 270) in the mid-19th century, is to identify the location of a specific area of brain damage (a 'lesion'), and see whether behaviour has been affected in any predictable way.

■ It is sometimes necessary to remove the whole cortical area of a diseased hemisphere (hemispherectomy). The effects on behaviour can then be observed.

● It is possible to observe what happens to behaviour while one hemisphere is temporarily anaesthetized. The usual technique, often used before brain surgery, is to inject sodium-amyltal into one of the carotid arteries

(the 'Wada' technique); this paralyzes a hemisphere for 2–3 minutes, during which time some of the patient's language or other abilities can be tested.

■ A great deal of information has been obtained from the results of surgery which may be carried out in cases of severe epilepsy. The hemispheres are separated at the corpus callosum ('commisurotomy'). This enables the role of each side of the brain to be studied independently – the 'split brain' experiments.

These studies have shown that there are no major changes in intellect, personality, or everyday behaviour following the operation, but deficits are found in the ability of the two hemispheres to integrate

their activities. The effect on language use is particularly dramatic. For example, when an object is presented to the right visual half-field, (right-handed) patients can talk about it: the visual information is relayed to the left hemisphere, where speech processing takes place. However, if the same object is presented to the left visual half-field, patients will be unable to talk about it, even though they have seen it: the visual information has gone to the right hemisphere, where no speech processing takes place.

Monitoring

● An established approach (electroencephalography (EEG)) uses electrodes placed on the surface of the scalp to monitor continuous cortical electrical activity – in particular, the amount of 'alpha' rhythm in the brain waves, which is reduced when an area of the brain is in active use.

■ A related technique (the 'averaged evoked response') uses electrodes to monitor the activity in an area of the brain in response to repeated presentations of a stimulus.

■ Techniques are also now available to monitor neuronal activity by observing

changes in metabolic rate within a hemisphere. In particular, increases in cortical blood flow can be measured through radioactive tracers.

There are also ways of showing different kinds of chemical action and temperature changes (p. 260).

■ An area of the normal brain can be electrically stimulated, to see what effect this has on behaviour. This approach has mainly been used to establish areas of motor and sensory control (p. 260).

Experiments

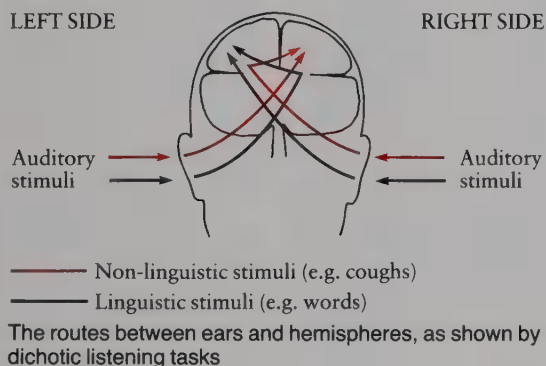
The role of each hemisphere in processing a stimulus can be inferred from the different time it takes a person to react when stimuli are presented to each side of the body. In a 'dichotic listening' task, for example, different stimuli are simultaneously presented to each ear, and the subject has to report what is heard. When the signals to one ear prove to be more accurately or rapidly reported, it is concluded that the opposite hemisphere is more involved in their processing. In this way, for instance, a general right-ear advantage has been shown for linguistic signals, and a left-ear advantage for nonverbal signals,

such as music and environmental sounds.

Problems

These approaches present many problems of principle and method. Although the imaging techniques now used in clinical neurology are a great step forward, they still convey very limited information about brain function. It is not always possible to be precise about the location of a lesion, which in any case is not usually a neatly defined area. Moreover, there is always a problem in generalizing from the performance of a diseased brain to that of a normal brain.

Studies using healthy brains also pose difficulties. There are problems with reaction-time experiments, where it is necessary to match competing stimuli in a very accurate way, and to control variations in subjects' responses (due to such factors as shifting attention). Also, the detailed data provided by monitoring devices (such as EEG) can as yet be given only a very general interpretation. However, technical progress, and associated computational analysis, suggest a promising future in this area.



and in over 60% of cases the left hemisphere is either dominant for language or very much involved ('mixed' dominance). A pattern of mixed dominance throughout the body (for example, a person may be right-handed, left-footed, and right-eyed) further complicates the investigation.

The specialized intellectual functions of each hemisphere, and their neurophysiological bases, are only partly understood. There are important anatomical asymmetries between the hemispheres (for example, there are differences in the length and orientation of the Sylvian fissure, and there is often a larger left temporal plane (part of the temporal lobe)); but it is unclear how these relate to functional specializations. However, on the basis of various kinds of experimental and clinical evidence, several generalizations have been made. With right-handed people, the left hemisphere is found to be dominant in such activities as analytical tasks, categorization, calculation, logical organization, information sequencing, complex motor functions, and language. The right is said to be dominant for the perception and matching of global patterns, part-whole relationships, spatial

orientation, creative sensibility, musical patterns, and emotional expression or recognition.

These identifications must be made cautiously, avoiding an oversimplified contrast – such as is found when people talk about the left hemisphere as the 'analytic' or 'intellectual' part of the brain, and the right as the 'creative' or 'emotional' part. It is now known, for example, that the right hemisphere can handle certain nonverbal tasks that require intellectual capacity (such as spatial judgment), and that there is a limited capability for auditory analysis and comprehension. Moreover, it must not be forgotten that there are several activities that usually involve *both* hemispheres (such as face recognition, and the factors involved in attention and fatigue) – a fact that is currently attracting a great deal of research as scholars focus on the brain's integrating (rather than the lateralized) abilities. As with the studies of localization (p. 260), therefore, statements about the relationship between anatomical form and intellectual function, given our present state of knowledge, must remain extremely tentative.

LOCALIZATION

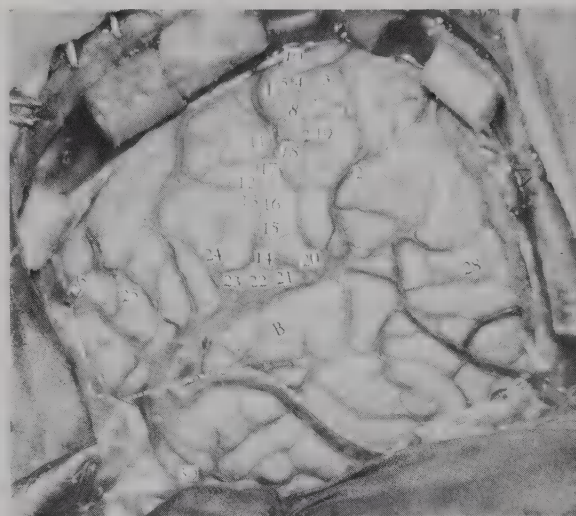
The idea that a single area of the brain can be related to a single behavioural ability, such as vision or speech, is known as the theory of cerebral 'localization'. Support for the theory came from the work of such neurologists as Paul Pierre Broca (1824–80) and Carl Wernicke (1848–1905), who had found that damage to specific areas of the brain correlated with the loss of certain kinds of linguistic ability in their patients (aphasia, p. 270). Damage to 'Broca's area' resulted in a reduced ability to speak, though comprehension remained relatively unimpaired. Damage to 'Wernicke's area' resulted in a reduced ability to comprehend speech, though the ability to speak was relatively unaffected.

From the outset, the theory was hotly contested by those who felt that other areas of the brain were involved in language processing. Several kinds of evidence were felt to go against a strict localizationist theory. Patients were found with apparently similar lesions, yet with very different linguistic abilities; and, conversely, similar linguistic difficulties could apparently result from lesions in widely different areas. There are now cases on record of patients whose Broca's and Wernicke's areas were unaffected by lesions, but whose linguistic ability was nonetheless seriously impaired; and conversely, there are cases of patients who have even had Broca's area surgically removed in both hemispheres, and who were still able to speak.

New techniques of neuroimaging (p. 259) have brought to light many such counter-examples to the localization hypothesis. When we add to this the facts that other symptoms (especially of a psychological kind) can result from so-called 'linguistic' lesions, and that it has so far been impossible to define specific brain areas in a precise way, we can readily understand such comments as that made by the British neurologist, John Hughlings Jackson (1835–1911): 'to locate the damage which destroys speech, and to locate speech, are two different things'. There may be many points within the neuronal network that, if damaged, could have the same effect on a person's linguistic processing ability. It does not much matter whether a telephone fault exists in the hand-set, along the line, or in the telephone exchange: the resulting deathly silence in the receiver is the same.

There is now little doubt that several other areas of the brain apart from the cortex are involved in linguistic processing. Neurolinguists and neuropsychologists postulate several kinds of subcortical connection, as well as connections between the hemispheres. The areas marginal to the classically located ones are of particular interest, in this respect; but research is also focussing on other parts of the brain, such as other parts of the frontal lobes, and the thalamus (p. 258). However, this direction of research does not support a theory of opposite extremes – that there is no localization at all in the brain, and that every region is equally involved in all activities (a theory of 'equipotentiality'). Des-

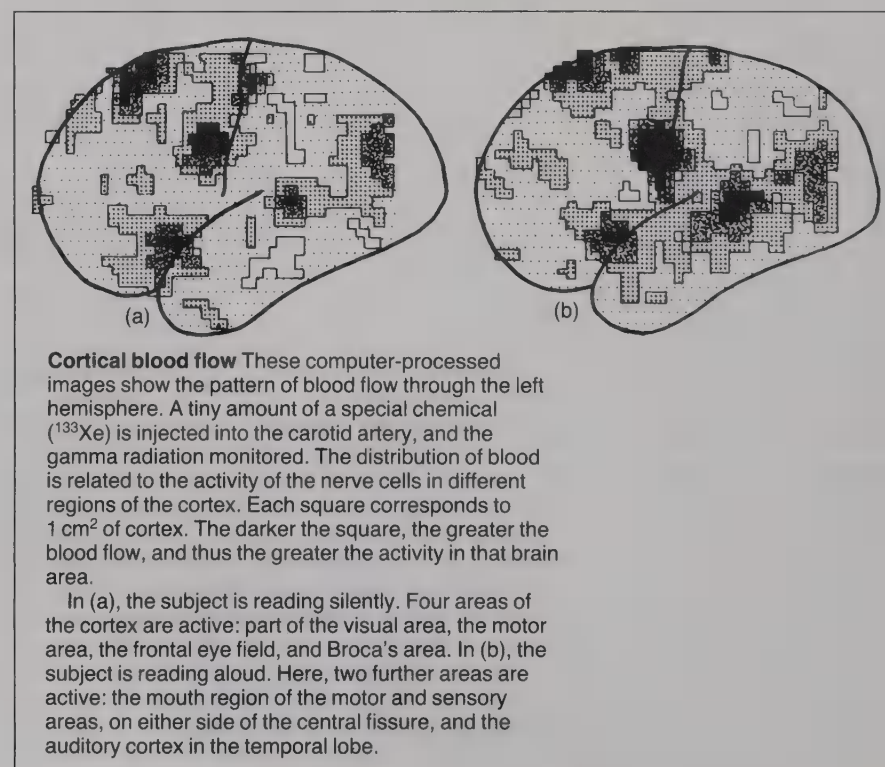
pite the many exceptions, in the vast majority of cases where linguistic symptoms have been the result of brain damage, the lesion is in or around the areas originally identified by Broca and Wernicke. It seems that there may well be primary areas after all, but these have to be seen in the context of the brain as a whole, with other areas making a contribution to language skills. Determining the relationships between these areas is now a major goal of neurolinguistic research.



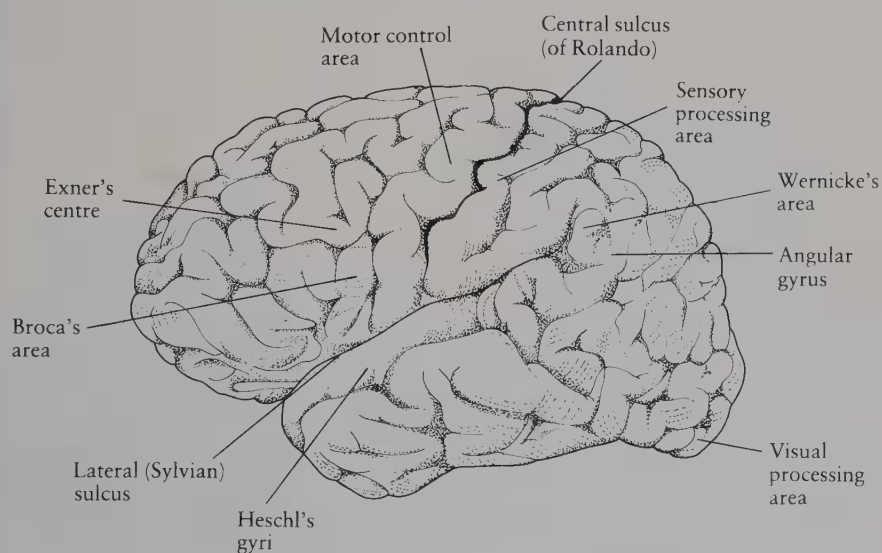
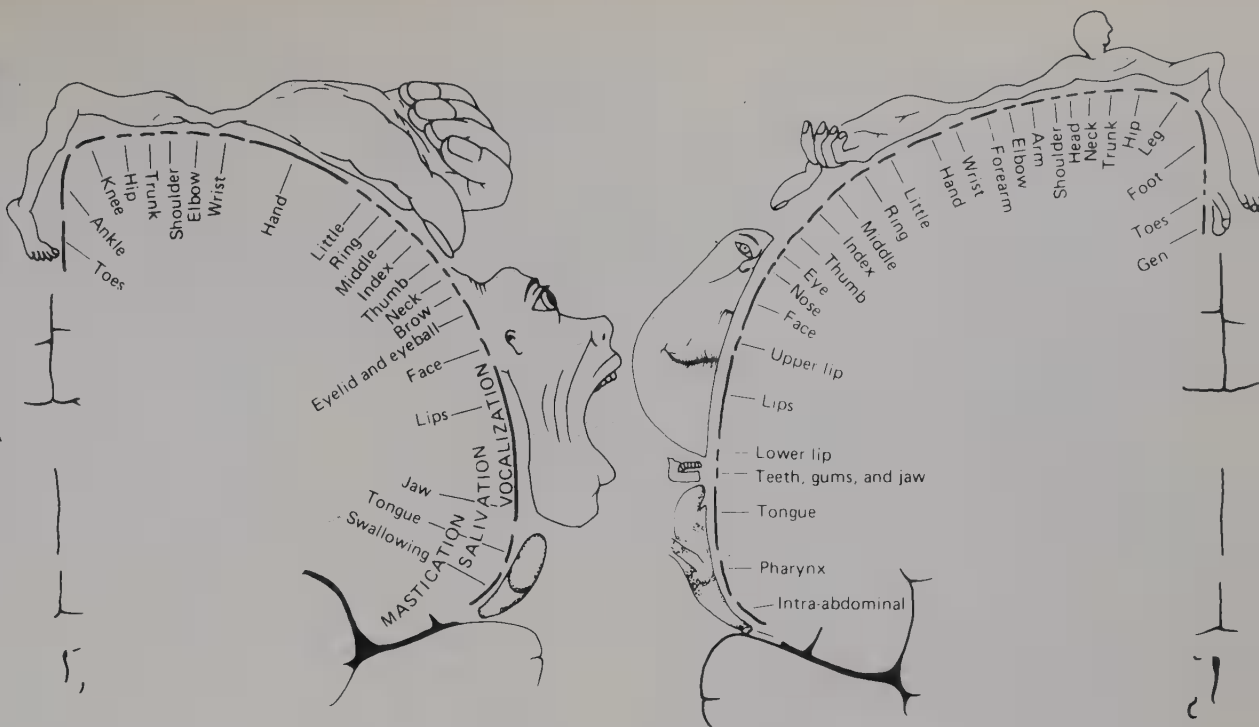
Mapping the cortex

The task of mapping the areas of the cortex involved in body activities was undertaken by a team of neurosurgeons in Montreal during the 1950s. Relationships were discovered by electrically stimulating different parts of the exposed brain in epileptic patients, in order to find out which areas were involved in seizures before proceeding to surgery. The brain contains no pain receptors, so the patients were not anaesthetized and could thus report their mental and physical sensations (such as a tingling sensation or a memory of some event). Muscle contractions at various points in the body could also be observed, as could sudden involuntary vocalizations and inabilities to speak.

The photograph shows the left hemisphere of a patient's brain with the places marked where responses were obtained. Most of the effects on language were disruptive. Stimulation of points 23 and 24 halted the patient's ability to articulate or caused speech to be slurred. Symptoms similar to aphasia resulted when points 26, 27, and 28 were stimulated. (From W. G. Penfield & L. Roberts, 1959.)



The homunculi Many of the results of this research were summarized in the shape of two 'homunculi' – a human form, drawn against the shape of the outer surface of the brain, in which the size of the parts of the body is made proportional to the extent of the brain area involved in their control. The large area of the brain devoted to the motor control of the vocal organs and the hand is clearly seen in the drawing of the 'motor homunculus' (right). A similar drawing was made to show the areas which receive input from the senses – the 'sensory homunculus' (far right). Once again, the large area devoted to the hands and vocal tract should be noted. (From W. G. Penfield & L. Roberts, 1959.)



Language areas

The areas which have been proposed for the processing of speaking, listening, reading, writing, and signing are mainly located at or around the Sylvian and Rolandic fissures (p. 258). Several specific areas have been identified.

- The front part of the parietal lobe, along the fissure of Rolando, is primarily involved in the processing of sensation, and may be connected with the speech and auditory areas at a deeper level.

- The area in front of the fissure of Rolando is mainly involved in motor functioning, and is thus relevant to the study of speaking and writing.

- An area in the upper back part of the temporal lobe, extending upwards into the parietal lobe, plays a major part in the comprehension of speech. This is 'Wernicke's area'.

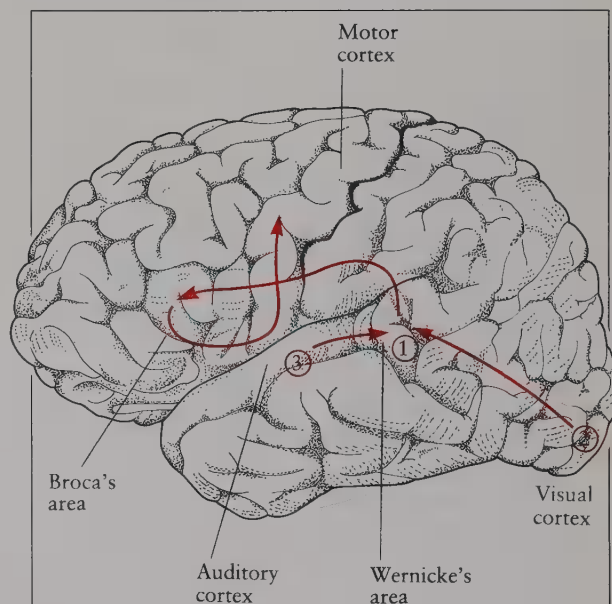
- In the upper part of the temporal lobe is the main area involved in auditory reception, known as 'Heschl's gyri', after the Austrian pathologist R. L. Heschl (1824–81).

- The lower back part of the frontal lobe is primarily involved in the encoding of speech. This is 'Broca's area'.

- Another area towards the back of the frontal lobe may be involved in the motor control of writing. It is known as 'Exner's centre', after the German neurologist Sigmund Exner (1846–1926).

- Part of the left parietal region, close to Wernicke's area, is involved with the control of manual signing.

- The area at the back of the occipital lobe is used mainly for the processing of visual input.



Neurolinguistic processing

Some of the neural pathways that are considered to be involved in the processing of spoken language.

1. **Speech production** The basic structure of the utterance is thought to be generated in Wernicke's area and is sent to Broca's area for encoding. The motor programme is then passed on to the adjacent motor area, which governs the articulatory organs.

2. **Reading aloud** The written form is first received by the visual cortex, then transmitted via the angular gyrus to Wernicke's area, where it is thought to be associated with an auditory representation. The utterance structure is then sent on to Broca's area, as in (1).

3. **Speech comprehension** The signals arrive in the auditory cortex from the ear (§25), and are transferred to the adjacent Wernicke's area, where they are interpreted.

NEUROPSYCHOLOGICAL MODELS OF LANGUAGE

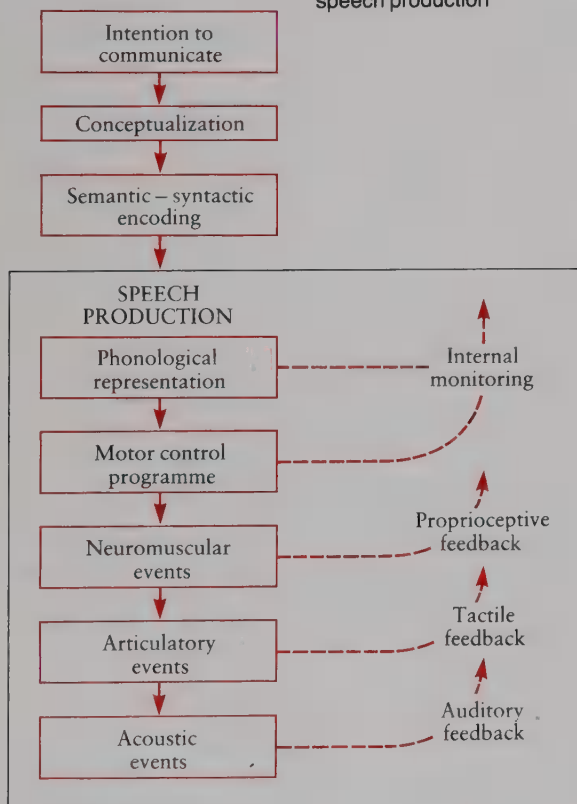
In real life, a snatch of dialogue (*How are you?*, *Fine, thanks*) takes place so quickly that it is easy to 'forget' the complexity of the neurological planning and execution involved in the process. Any model of the production and comprehension of language – whether spoken, written, or signed – involves several steps, each of which must have some kind of neural representation. Neuropsychological models of language attempt to delineate what these steps are and how they interrelate.

In speech production, for example, an initial intention to communicate is followed (or perhaps accompanied) by some kind of conceptualization of the message. There has also to be a point at which this conceptualization is encoded into the semantic and syntactic structure of the language used by the speaker (though it is not clear how far this stage can be separated from the preceding one). If the structure is to be spoken, it must first be given some sort of phonological representation (e.g. as syllables, phonemes, or distinctive features, §28). A motor-control programme must then be used, to coordinate the multiplicity of signals that have to be sent to the appropriate muscles controlling the different parts of the vocal tract (§27). While this activity takes place, it is being constantly self-monitored: feedback is being received from the ear, from the sense of touch, and from the internal sensations generated by the movement of parts of

the body ('proprioceptive' feedback). Other kinds of internal monitoring, at 'higher' levels, may also take place. An analogous sequence of events would be involved if the structure were to be written or signed.

The nature of neurolinguistic programmes has attracted a great deal of research in recent years, especially in relation to speech production (§22). It is evident, for example, that the brain does not issue motor commands one segment at a time. A word such as *soup* is not neurologically transmitted as three separate steps – [s] + [u] + [p]. The articulation of [s] is lip-rounded, under the influence of the following vowel, which shows that the brain must be 'scanning ahead' while issuing commands for particular segments (coarticulation, p. 156). When we consider the whole range of factors that affect the timing of speech events (such as breathing rate, the movement and coordination of the articulators, the onset of vocal-fold vibration, the location of stress, and the placement and duration of pauses), it is evident that a highly sophisticated control system must be employed, otherwise speech would degenerate into an erratic, disorganized set of noises. It is now recognized that many areas of the brain are involved: in particular, the cerebellum and thalamus are known to assist the cortex in exercising this control (p. 258). But it is not yet possible to construct a detailed model of neurolinguistic operation that takes all speech-production variables into account.

A psycholinguistic model of speech production



SLIPS OF THE TONGUE – OR BRAIN?

Tongue slips – involuntary departures from the speaker's intended production of a sequence of language units – are very common. Sounds, syllables, morphemes (p. 90), words, and sometimes larger units of grammar can be affected. Often, the deviant performance is immediately detected by the speaker (though not always consciously) and corrected.

Several large collections of tongue-slip data have now been made (see facing page, top right), and the errors analysed from a variety of viewpoints. Sigmund Freud, for example, saw tongue slips as symptoms of unconscious forces or mental conflict within an individual, which needed psychoanalytic interpretation. They have also been seen as providing insights into the mechanisms of language change and evolution (§54). But most recent research has studied these errors to see what light they throw on how the brain or mind works.

The main linguistic finding is that tongue slips are not random, but are largely explicable by reference to certain basic constraints. For example, the two words involved in a tongue slip (the word containing the slip and the word that influences it) are often found within the same syntactic constituent or intonation/rhythm unit (§§16, 29). Moreover, the influencing word is often the most strongly stressed within the tone unit. And most



William Archibald Spooner (1844–1930) Spooner, an Anglican clergyman and Warden of New College Oxford, had a nervous manner that led him to produce many slips of the tongue – typically, involving reversals which led to unintentional comic effects. Several of the 'spoonerisms' attributed to him are famous, such as 'queer old dean' (for 'dear old queen').

tongue slips involve the symmetrical substitution within a syllable of one sound by another: for example, an initial segment in the influencing word replaces the initial segment in the slipped word.

Combining such constraints, it is possible to make predictions about the form tongue slips are likely to take when they occur. Given the intended sentence 'The car missed the *bike* / but hit the *wall*' (where / marks an intonation/rhythm boundary, and the strongly stressed words are italicized), the likely slips are going to include *bar* for *car* or *wit* for *hit*. Most unlikely would be *har* for *car* (showing the influence of a less prominent word in the second tone unit) or *lit* for *hit* (showing a final consonant replacing an initial one).

Tongue slips tell us a great deal about the neuropsychological processes that underlie speech. The different kinds of errors provide indirect evidence for some of the stages recognized by models of speech production, and suggest the kinds of linguistic unit that these models need to take into account. For example, if slips tend to occur inside rather than between intonation units, it suggests that this unit has a neuropsychological reality within which the events of articulation are serially organized and integrated.

Tongue slips classified

An enormous variety of tongue slips occurs in everyday speech. Here are examples of some of the most frequent categories found in a corpus of over 12,000 spontaneous slips (after V. A. Fromkin, 1973). The words affected are given in the second column. (For phonetics terminology, see § 27.)

Initial consonant anticipated
a reading list → leading
it's a real mystery → meal
Initial consonant perseveration

black boxes → bloxes
gave the boy → goy
Consonant reversals
well made → mell wade
baked a cake → caked a
bake

Final consonants
with a brush → wish
king, queen → king, quing

Consonant deletion
below the glottis → gottis
tumbled → tubbled

Consonant addition
optimal number → moptimal
kitchen sink → kinchen
Consonant movement
pinch hit → pitch hint
bacon and eggs → acon and
begs

Consonant clusters
heater switch → sweeter
hitch
damage claim → clamage
dame

Consonant clusters divided
stick in the mud → smuck . . .
tid

fish grotto → frish gotto

Vowels

fill the pool → fool the pill
Bev and Bill → Biv and Bell

Vowel + r

foolish argument → farlish
fight very hard → fart . . . hide

Single features

spell mother → smell bother
bang the nail → mang the
mail

Errors within words

relevance → revelance
whisper → whipsper

Stress changes

similarly → similarity
paying for it → pay foring it
Word reversals
a tank of gas → a gas of tank
a job for his wife → a wife for
his job

Telescopic errors

Nixon witness → nitness
parking permit → parking pit
Derivational affixes (p. 90)

often → oftenly
flashing light → flasher

Blends

person/people → perple
draft/breeze → dreeze

Word substitution

I don't sleep very well in a
single bed → . . . speak very
well . . .

chamber music → chamber
maid

Other grammatical errors

It looks as if → I look . . .
the day when I was born →
the day where . . .

A critical period for language?

The notion of a 'critical period' was first used by ethologists studying the origin of species-specific behaviour. It was found that with certain species (e.g. rats, goslings) there were periods in which a particular kind of stimulus had to be present if the baby was to develop normal behaviour.

The question was therefore raised whether there were critical periods in human maturation also. The American psycholinguist Eric Lenneberg (1921–75) argued that such a period existed in the case of language acquisition. The development of language was said to be the result of brain maturation: the hemispheres were equipotential at birth, with language gradually becoming lateralized in the left hemisphere (p. 260). The process began at around the age of 2 and ended at puberty, when the brain was fully developed, and lateralization was complete. At this point, there was no longer any neural 'plasticity' which would enable the right hemisphere to take over the language function if the left hemisphere was damaged.

The argument in favour of a critical period was based largely on claims about the

patterns of recovery in brain-damaged adults and children. If adults with left-hemisphere damage failed to recover language within a few months, it was argued, they would never do so. Children, however, showed an ability to recover over a longer period – and could make a complete recovery if they were very young at the time of the damage. In such cases, even total removal of the left hemisphere did not preclude the reacquisition of language.

Controversial evidence

The critical-period hypothesis has been controversial. The pathological evidence is mixed, because comparisons of adult and child cases are extremely difficult to make, and paths of recovery have not been studied in a detailed linguistic way. It may be that aspects of child recovery are helped by the involvement of the right hemisphere; but there are also cases of left-hemisphere damage producing severe and long-lasting aphasia in children.

The evidence of normal language acquisition (Part VII) is also mixed. Aspects of phonological and grammatical acquisition do continue until around puberty; how-

ever, most of these skills are well established before the age of 5, and some linguistic skills (in semantics and pragmatics) are still developing in teenage children and young adults.

The neuropsychological evidence generally fails to support the Lenneberg hypothesis, showing lateralization to be established long before puberty – some studies suggest this may even be as early as the third year. Cerebral anatomical asymmetries have been found at birth, and several functional asymmetries have been noted in infants (e.g. a preference for rightward turning and right-hand grasping). Certain dichotic listening advantages (p. 259) are also present from a very early age, including some related to speech perception.

On the other hand, lateralization plainly takes some years before it is firmly established, and this overlaps the main period of language acquisition in a way that is not yet understood. The relationship between lateralization and language is thus an extremely complex one, and presents a continuing research challenge in developmental neuropsychology and neurolinguistics.

Genie

The tragic case of 'Genie' bears directly on the critical period hypothesis. Genie was discovered in 1970, at the age of 13½, having been brought up in conditions of inhuman neglect and extreme isolation. She was severely disturbed and underdeveloped, and had been unable to learn language. In the course of her treatment and rehabilitation, great efforts were made to teach her to speak. She had received next to no linguistic stimulation between the ages of 2 and puberty, so the evidence of her language-learning ability would bear directly on the Lenneberg hypothesis.

Analysis of the way Genie developed her linguistic skills showed several abnormalities, such as a marked gap between production and comprehension, variability in using rules, stereotyped speech, gaps in the acquisition of syntactic skills, and a generally retarded rate of development. After various psycholinguistic tests, it was concluded that Genie was using her right hemisphere for language (as well as for several other activities), and that this might have been the result of her beginning the task of language learning after the critical period of left-hemisphere involvement. The case was thus thought to support Lenneberg's hypothesis, but only in a weak form. Genie was evidently able to acquire some language from exposure after puberty (she made great progress in vocabulary, for example), but she did not do so in a normal way. (For other 'lost' children, see §49.) (After S. Curtiss, 1977.)

46 Language handicap

Language handicap refers to any systematic deficiency in the way people speak, listen, read, write, or sign that interferes with their ability to communicate with their peers. At one extreme, the handicap may be quite mild, such as a minor impediment of pronunciation; at the other, there may be an almost total breakdown of all modes of communication, as in severe forms of brain damage. In every case, we see language to some degree ceasing to function in a natural, spontaneous, and unselfconscious way, and drawing attention to itself, thus becoming a barrier rather than a means to communication.

Because handicap exists in a continuum from mild to severe, it is very difficult to obtain accurate estimates of its prevalence (the number of cases in a population at any one time) or incidence (the number of new cases within a particular period). A British government survey of the 1970s indicated that about 1/2% of the population were sufficiently seriously handicapped as to require the services of a speech therapist (see below), but accepted that this figure was vague and probably far too low. If other categories of the population are included, such as less seriously impaired people, or those who have an abnormal degree of difficulty with reading, writing, or spelling, the figure must approach 2–3%. And if a functional notion of handicap is used, to include the language problems faced by immigrants and other minority groups, the total increases dramatically to perhaps as many as 5% of the population. What is plain is that, however the problem is identified, several million people in the world suffer from an inability to communicate that limits their personal development, their social relationships, and their effective contribution to society. The main aim of research in this area is thus to understand the physical and linguistic basis of language handicap, and to devise therapeutic ways of alleviating the condition so that a handicapped person can achieve as full a life as possible.

THE CAUSES OF LANGUAGE HANDICAP

In about 40% of cases, a language handicap can be related to a clear physical cause. For example, many children are born with brain damage that causes a degree of mental or physical handicap, and linguistic skills are usually seriously impaired as a consequence. Deafness can have a crippling impact on the normal development of spoken language. Parts of the brain can be destroyed by illness, strokes, accidents, or acts of violence, to produce the many forms of aphasia (p. 270). Various kinds of abnormal growth may affect the functioning of the vocal folds, or may lead to the larynx having to be surgically removed. In such cases as these,

there is no doubt that the cause of the linguistic handicap lies in a person's abnormal physical condition.

However, in the majority of cases, it is not possible to find a clear organic cause, given the present state of medical knowledge. Thousands of children have a delayed language development, and in most of them there is nothing in their medical history that can account for the problem. There are many thousands of stutterers whose handicap, likewise, cannot be explained in any simple physical way. And a large number of people develop problems in the use of their voice that have no physical explanation. In such instances, we can search for 'functional' causes in a person's psychological, social, or linguistic background. A particular life-style, for example, may be the ultimate cause of a poor voice quality. A child's weak memory may explain a case of language delay. But in very many cases, even these dimensions of enquiry result in no clear cause being discovered.

Assessment of language handicap must also allow for the fact that many conditions have multiple causes. For example, the level of language achievement reached by a deaf child cannot be explained solely with reference to the child's degree of hearing loss: many other factors contribute – such as the child's personality and family background, and the kind and amount of exposure to spoken or signed language. Or again, an adult's voice disorder might begin as hoarseness arising out of a straightforward disease, such as laryngitis; but anxiety over

Terminological handicap

The field of language handicap is bedevilled by terminological difficulties. The problem of labelling individual handicaps will emerge at various places in this section; but even the most general of notions attracts a diversity of labels. Thus the heading to this section, 'handicap', might have used *disorder*, *disability*, *defect*, *disfunction*, or *impairment*. There is little to choose between such terms in a general account.

The professionals whose job it is to diagnose, assess, and treat language handicaps also vary in name from country to country, and even within countries. In the U.S., they are usually known as 'speech pathologists', though 'language pathologist' is also quite widespread. In Britain, the general term is 'speech therapist'. In Europe, the same tasks are carried out by 'orthophonists' (e.g. in France), 'logopaedists' (e.g. in Germany), and 'phoniatrists' (e.g. in Czechoslovakia). All attempts to standardize the name of the profession have so far failed.

The range of professional skills and qualifications found under these headings also varies – reflecting the fact that courses of study can range from just a few months to over four years. Some countries make a sharp distinction between those who specialize in language problems and those who look after more general kinds of learning handicap. Some make a distinction between problems of speech and those of hearing. Some have different kinds of specialists to deal with adults and children.

But one thing all countries share: a lack of financial resources being devoted to the study and treatment of what is probably the most neglected of all human handicaps.

Need for speech therapy

	Total population	% needing speech therapy	Numbers needing speech therapy
Adults			
Geriatric patients	40,000	9	3,600
Hospitalized stroke patients	16,000	33	5,000
Others (e.g. stutterers, voice disorders)	30,000	100	30,000
Children			
Preschool	2 million	3	60,000
Ordinary school	9 million	2	180,000
Educationally sub-normal (moderate)	60,000	20	12,000
Educationally sub-normal (severe)	35,000	50	17,500
Physically handicapped	12,000	25	3,000
		TOTAL	311,100

Estimates of numbers needing speech therapy in Britain in the early 1970s. (Department of Education and Science, 1972.)

the continued use of the voice (if the person is a singer, for example) might promote the development of excessive strain while talking, with the result that the hoarseness continues long after the disease has disappeared. Similar combinations of organic and functional causative factors underlie most if not all language handicaps.

THE CLASSIFICATION OF LANGUAGE HANDICAPS

Studies of language handicap traditionally make use of a number of basic two-way distinctions as a means of imposing an initial organization on this complex field. Some of these distinctions provide a useful introductory perspective, but they must be used with great caution if their inevitable simplification is not to mislead. The common classification of handicaps into 'organic' and 'functional' types (p. 264), for example, is well motivated in many cases, but ultimately breaks down when we encounter handicaps in which both elements play an important defining role. And a similar problem faces anyone wishing to make use of the most widely used primary classification of language handicap: production vs reception.

This way of looking at communicative breakdown, ultimately derived from information theory, is referred to in several different ways, such as motor/sensory, encoding/decoding, or executive/evaluative. A basic distinction is being drawn between handicaps of language production and handicaps of language reception. *Production* refers to the whole sequence of neurological, physiological, and anatomical steps required to encode a linguistic message and make it ready for transmission (p. 262). Any disruption to the normal chain of events would thus result in 'expressive' handicaps: a clear example would be a neurological complaint that led to slurred speech. *Reception* refers to the sequence of anatomical, physiological, and neurological steps required to decode such a message as it is being received. Disruptions here would result in 'receptive' handicaps: the clearest case is deafness.

Language vs speech

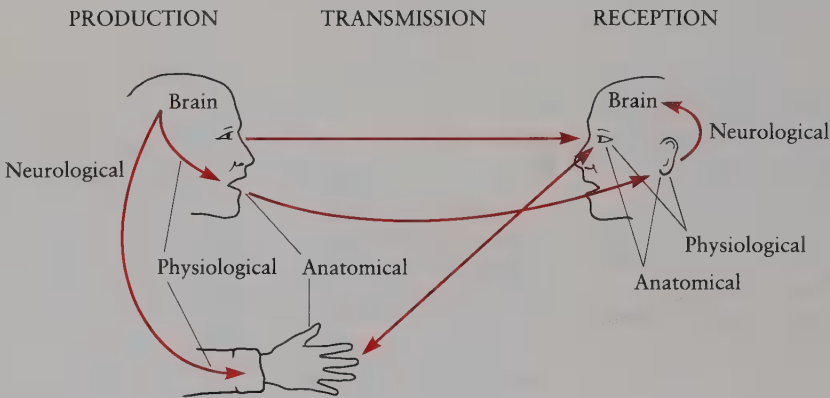
The term 'language', as used in this section, is a cover term for all modes of linguistic communication – whether by speech, hearing, reading, writing, or signing. (This, indeed, is its use throughout the encyclopedia.) In the traditional study of handicap, however, it is used in a more restricted way. A distinction is drawn between handicaps of 'language' and handicaps of 'speech'. The former refer only to the 'symbolic' aspects of communication, i.e. those concerned with the formulation and structuring of meaning – in modern terms, pri-

marily handicaps of grammar and semantics (Part III). The latter refer to the 'non-symbolic' aspects, that is, those concerned only with the use of sounds seen as a set of meaningless phonetic entities – as found in problems of voice quality, fluency, and articulation (Part IV). Although this distinction is still widely used, it has begun to attract criticism in recent years. The term 'speech' is ambiguous, as it is often used in the sense of 'spoken language', which includes grammar and meaning (§ 31). Also, the focus on speech neglects the importance of other forms of com-

There are however many kinds of handicap where problems of production and reception are simultaneously encountered. For example, aphasia (p. 270) is often classified into 'expressive' vs 'receptive' types, whereas it is usual to find both kinds of difficulty within the same patient, in varying proportions. Clinically, it is more accurate to talk of a patient being 'predominantly' expressive or receptive. And even the apparently 'straightforward' handicaps raise problems for the distinction. Deafness is patently a receptive handicap, but it often manifests itself in a highly disordered language production (p. 267). Cleft palate and stuttering are patently production handicaps, but in both cases problems of reception can be found: a significant proportion of cleft palate children have an additional hearing loss (p. 277); and stutterers may be so involved in the problems of fluency control that their ability to listen and comprehend may deteriorate. In all these cases, the simultaneous involvement of problems of production and reception warrants a more complex kind of analysis than the traditional binary account provides. Such handicaps are in fact more properly called 'syndromes', with several different elements contributing to their identification.

The communication chain

This is a widely used model for studying language handicap. Different steps within the processes of production and reception can be identified, and used to plot the primary 'location' of deficits, as when handicaps are said to be neurological ('central' vs 'peripheral'), physiological (e.g. muscular), or anatomical (e.g. cleft palate). However, the model does not show the importance of the various kinds of feedback (§§20,25), nor the psychological, social, and other factors that can determine the seriousness of a language handicap.



municative handicap, such as those due to hearing and the visual modalities. Above all, the distinction leaves unclear the status of phonology (§ 28), which is concerned with both semantic and phonetic properties of language. For example, it is not obvious whether children who have failed to master the phonological system of their language should be classified as displaying a 'speech disorder' or a 'language disorder'. Alternative systems of classification are therefore required to solve the problems presented by the language/speech division.

Spoken language	Written language	Sign language
Phonetic handicaps (§27)	Graphetic handicaps (§32)	'Cheretic' handicaps (§36)
Phonological handicaps (§28)	Graphological handicaps (§33)	'Cherological' handicaps (§36)
Grammatical handicaps		
Semantic handicaps		
A linguistic classification of communication handicaps, using the model of structural levels (§13). Pragmatic handicaps are not shown. The terminology for signing handicaps is not an established usage.		

Deafness

About 1 in 1,000 children have a hearing loss that is present at birth, or acquired soon after, caused by pathology of the inner ear and its relationship to the auditory nerve (§25). Maternal rubella (German measles), meningitis, and several other diseases are known to be causative factors. Many more children have a hearing loss that they acquire in the preschool or early school period, because of pathology of the middle ear. Several middle-ear problems get better without intervention; but others recur, become chronic, and do not respond well to treatment. In such chronic cases, and in all cases of inner-ear deafness, there can be serious consequences for the development of speech comprehension and production.

Many adults – perhaps as many as a third of the population over 60 years of age – have an acquired hearing loss, which can noticeably affect their ability to comprehend and speak (the latter, because they are unable to use hearing to monitor what they are saying). Regular exposure to loud noise (at work, in discos, etc.) is a common cause. However, because language has been acquired before the onset of the deafness, these disorders are usually less serious.

The high incidence of the handicap is often not appreciated. In 1975, it was estimated that there were 170,000 children (under 16) and 2,360,000 adults suffering from some degree of hearing loss in Britain. In the USA, the figure is thought to be over 16 million. Depending on the criterion of deafness used, estimates vary from 2% to 10% of the population. As many as 15 people in every 1,000 have a hearing loss in one ear.

TYPES OF DEAFNESS

There is no single, simple phenomenon of 'deafness' but a wide range of kinds and degree of hearing impairment. The loss may affect only one ear (*unilateral*) or both ears (*bilateral*). At one extreme, there may be a slight inability to hear a few low-intensity frequencies (§23), which interferes only occasionally with normal communication; at the other extreme, a person may have no detectable response to any frequency, no matter how intense the sound. The latter is uncommon: most deaf people have some degree of 'residual' hearing. But a residual ability to hear amplified sound up to 500 Hz, for example, is of very limited value: at this level, people receive only about 10% of the information conveyed by the speech waveform.

The main classification of hearing loss is based on where the interference lies in the auditory pathway. *Conductive* deafness arises when there is interference with the transmission of sound to the inner ear, as when the middle ear becomes inflamed (*otitis media*) or the ear drum or ossicles are affected by disease or trauma. *Sensorineural* deafness arises when the source of interference lies within the inner ear, or along the auditory nerve to the

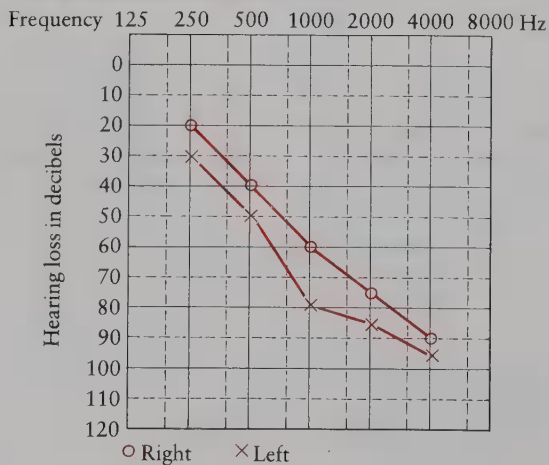
brain. A case of sensorineural deafness is illustrated in the audiogram below of a child who was unable to respond to high frequency sounds such as [s] ('high tone' deafness).

Other forms of hearing impairment have been identified, such as *tinnitus* – a range of noises in the ear (ringing, hissing, pulsating, etc.) that can occur in acute, debilitating form. Around 2 million people have this problem, to some degree, in the USA. There is also the major problem of 'fluctuating' hearing loss, commonly related to persistent middle-ear infections, which can seriously affect young children's ability and motivation to attend to speech sounds, especially in noisy environments, and thus promote language delay and learning problems in school. There is also the little-understood *central* (or *cortical*) deafness, where there is loss of hearing sensitivity due to damage of the auditory nerve in the brain stem or in the hearing centres of the cortex. In this last case, of course, there is a problem of diagnosis, as if a person fails to respond, despite normal peripheral hearing, other factors (such as aphasia or mental handicap) may be involved.

The audiogram

This is the most widely used measure of hearing impairment. The horizontal dimension of the chart shows a range of sound frequencies up to 8,000 Hz; the vertical dimension shows a range of intensities of hearing loss up to 120 decibels. A person's ability to hear pure tones, presented at different frequencies and intensities, is plotted on the audiogram, and the curve compared with the normal minimal audibility curve (shown here as a straight line at 0). The sensitivity of each ear is separately measured using headphones, and marked by different symbols (○ is here used for the right ear, and × for the left).

The audiogram below shows the responses of a 12½-year-old girl with a high-frequency loss in both ears, the loss being more severe in the left ear. A sample of her free writing is given on p. 267.



Who's who

Otologists are doctors who have specialized in diseases of the ear.

Audiologists are clinicians who assess the nature and degree of hearing loss and conservation, and who advise on the rehabilitation of people with hearing impairment.

Audiometric tests

Pure-tone audiometry

A specially calibrated machine generates pure tones (§23) at different frequencies and intensities. The tones are presented to one ear at a time through headphones (in an *air-conduction* test) or through the bones behind the ear (in a *bone-conduction* test). Any response to a sound is noted, and plotted as an audiogram.

The results of pure tone audiometry do not always correlate clearly with a person's ability to hear the complex tones of speech. Two people can have the same audiogram, yet display very different linguistic skills. It is therefore important to supplement such findings with the results of alternative tests, using speech stimuli.

Speech audiometry

The ability to respond to the sounds of speech is often assessed impressionistically, with the audiologist speaking at different levels and distances from the listener. A more precise estimate can be achieved by recording a series of words or sentences which have been carefully constructed so as to represent the different kinds of speech sound, and playing these to the listener at known intensities under various conditions. The kind and level of background noise, the characteristics of the room, and even the position of the listener's head can affect the response.

ORALISM vs MANUALISM

The issue of whether deaf children should be taught to sign (§35) has been hotly debated for over a century. There is strong opposition between those educators who support the primary role of signing ('manualists') and those who support the exclusive teaching of speech ('oralists'). There are also many who support a combined approach, in which speech and some kind of signing system are used simultaneously ('total communication') – an approach that has become particularly influential in recent years. The arguments are complex, and often emotional, because they raise questions of the identity of deaf people and the quality of their lives.

The main argument against manualism is that it is setting deaf people apart from all but their own small community, labelling them as 'deaf' and 'different', and making it difficult to communicate with the hearing world. The main argument against oralism is that its methods are often unsuccessful, with the deaf person becoming just as isolated, being left with speech that is limited and difficult to understand.

In support of manualism, it is argued that signing enables a deaf person to enjoy a wide range of communicative experience in the social and creative life of the deaf community. In support of oralism is the evidence that some methods have proved to be very successful, especially if a natural speaking environment is part of a child's early upbringing.

However, there are schools of thought within both approaches, which themselves give rise to fierce argument. In relation to oral approaches, there is controversy over the kind of oral language to teach the child – whether it should be natural conversation or a simplified input. Several 'structured' approaches are available under the latter heading. In relation to manual approaches, some educators think that a 'pure' sign language, uninfluenced by speech, should be learned first, with other varieties coming later. Others think that this approach is sensible only for the small number of deaf children born to deaf parents. In cases where the parents have normal hearing, they argue, spoken language will be in use, and so a signing system related to speech might as well be used from the outset.

These controversies have been around, in some form, for over a century, promoted largely by the lack of objective data about the way deaf children learn. It is likely that, as research findings accumulate, some of these issues will be resolved. But there is little sign of this at present.

DEAF SIGNING – A NEW PERSPECTIVE

A deaf or hearing child born to deaf parents learns sign language as a 'mother tongue', producing a level of manual awareness and sophistication that is different from the deaf children of hearing parents or from hearing people who have learned to

sign. Studies have begun to show stages of development in the way these 'native signers' learn to sign that can be related to the stages of language acquisition found in hearing children (Part VII). This change of perspective is quite crucial: for these children, signing is not a handicap but a natural means of expression quite comparable to the expressive potential of spoken language. For them, learning to speak is the handicapping condition.

Contemporary society is gradually coming to give signing the recognition it requires, and deaf signers the opportunities they deserve – but it is an extremely slow process. In this encyclopedia, the linguistic status of signing is symbolized by treating it as a major section (Part VI), even though research has not yet advanced to a stage permitting a detailed treatment comparable to the sections on speaking and writing. In social, educational, and political life, too, progress is being made, with the image of the deaf signer as a handicapped person who displays bizarre behaviour slowly being eroded. In the USA, in particular, there is a strong movement to obtain recognition for the needs of the deaf, such as by providing interpreters in university classes, local government meetings, and television programmes.

Deaf – and dumb?

This widely used phrase is extremely misleading, and should be banned. It does not follow that, if someone is deaf, they will be unable to speak. Many deaf people achieve excellent levels of oral ability. Everything depends on such factors as family background, age of onset of deafness, and the kind of language education programme followed.

Written language

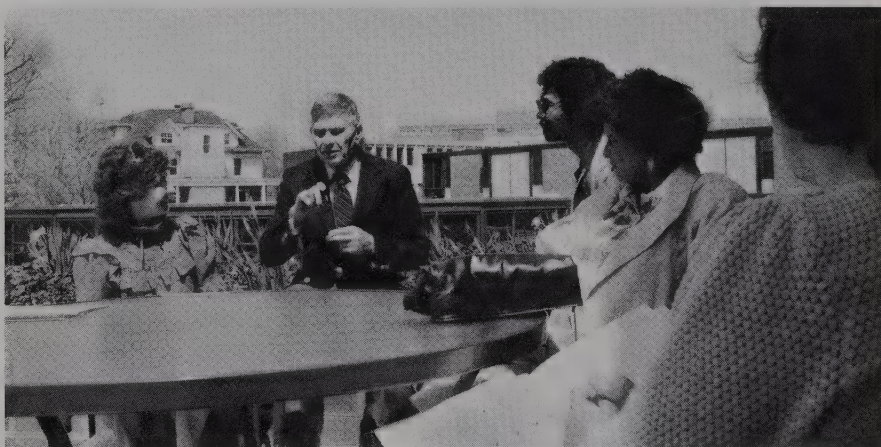
The following two samples of the free writing of deaf children have been chosen to illustrate the linguistic difficulties which can develop in deaf children's writing. The first (A) is from the 12½-year-old whose audiogram is given on p. 266. The story shows a very limited range of grammatical ability, with stereotyped sentence openings. The second (B) was written by a 16½-year-old boy with a loss of 90 dB in both ears

at low frequencies, and no response at all at higher frequencies. The highly deviant syntax results in a very low level of intelligibility.

A
There is a guinea pig. The guinea pig name is Funny. The guinea pig got black and white. The guinea pig got pink nose. The guinea pig is standing. The guinea pig is waiting the food. The

guinea pig got pink ears. The guinea pig got four leg.

B
The Star Wars was the two spaceship a fighting opened door was coming the Men and Storm trooper guns carry on to Artoo Detoo and threepio at go the space. The Earth was not grass and tree but to the sand, R2D2 and C3PO at going look for R2D2 walk the sand people carry away Artoo Detoo sleep.



Gallaudet College, Washington, U.S.

A unique college of higher education in the English-speaking world, Gallaudet provides courses for the adult deaf.

TECHNOLOGICAL ADVANCES

There has been a considerable advance in the design of communication aids for the deaf in recent years, following progress in acoustics and instrumental phonetic research (§§23–4). Several approaches have been investigated in relation to the main sensory modalities. There have been experiments with vibro-tactile aids, for example, which represent speech frequencies by means of spatial vibration patterns applied to the fingers – a kind of audible braille (p. 280). But most technological aids fall into the two main categories of *auditory* ('hearing aids') and *visual*.

Hearing aids

It is thought that over 95% of babies born deaf have some degree of residual hearing, and therefore the earlier some kind of auditory training can be established, the better. A basic way of providing early help is to amplify sound to the child's ears through the use of a hearing aid. Similarly, hearing aids can be of great value with adults where hearing is deteriorating because of the natural process of aging (§6), as well as with those who have acquired a degree of hearing loss through disease or trauma. Hearing aids are therefore worn by many people: for example, it is estimated that nearly 2 million are currently in use in the USA.

However, hearing aids have their limitations – a fact that needs to be borne in mind when one faces the contemporary proliferation of firms offering a bewildering variety of aids. Hearing aids amplify, but do not necessarily clarify, speech. All sound in the environment of the aid is amplified – including background noise. Also, raising a listener's sensitivity may lead to discomfort with certain speech sounds and background noises – [s], for example, can become unpleasantly harsh. It is of course possible to reduce the output of an aid, but this can lead to the speech sounds becoming distorted. For such reasons, many hearing-impaired people have been known to reject their aids after a limited period of use: one recent report suggested that as many as a half of all hearing aids purchased end up not being worn.

The problem is most marked when someone has a high-frequency hearing loss, which may remove many consonants and environmental noises (such as running water or a telephone bell). Here, it is essential to find an aid that selectively amplifies the frequencies that are most affected. However, if the loss is very severe, this approach will not help. An alternative is to use a type of aid that converts the high-frequency information in the sound wave into low frequencies that fall within the range of residual hearing – a procedure that is often beneficial, though the speech can end up very distorted in the process. Several other techniques have been devised in an attempt to cope with the many individual variations that exist.

Specialized audiological advice is essential in choosing a hearing aid. It is not easy to evaluate

all the alternatives, and arrive at the one that is best suited to an individual's hearing problem and life-style. Nor is choosing an aid a once-and-for-all decision: technical advances are being made all the time, so that it is easy for a type of aid to become out of date. Also important is the need to maintain the aid so that it performs at peak efficiency – something that may seem obvious, but that is often disregarded, especially by old people.

Visual aids

The idea of a device that would make all the sounds of speech immediately visible to the deaf is over a century old, but only limited progress has been made towards this goal. Modern approaches to the task use techniques of acoustic analysis, and invoke the powerful display possibilities made available through computational electronics. Most of these approaches are at an early experimental stage, reflecting the state of the art in speech analysis and synthesis (§26), and commercial application is still a long way off; but the potential value of the research can be seen even in the basic displays that can currently be produced.

Most visual pattern displays aim to improve speech production as well as speech reception. To achieve this, the approaches present a speech target visually and store it on a display screen. The deaf person then attempts to pronounce the speech in such a way that the pattern produced matches the one already on the screen. The main advantage of this technique is that there is no delay in providing feedback about the success of the pronunciation. However, very little research has yet taken place into the relative efficiency of the various devices now available in promoting intelligible speech in young children.

Visual display devices that are routinely used in speech training programmes include the laryngograph (p. 141), which is used mainly for work on intonation, and several systems that train individual speech elements, such as fricatives and nasals, or distinctive features of sound, such as voicing (p. 128). Many are based on spectrographic displays (p. 136) or make use of some simpler form of spectral analysis.

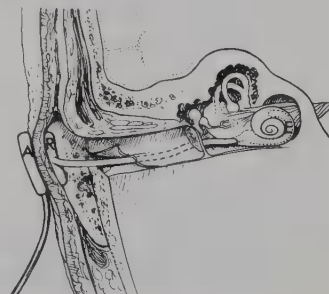
Several other visual methods have been devised to assist the deaf, including the use of a palantypist (p. 207) to provide a simultaneous transcript of a conversation, and the provision of specially prepared subtitles for television programmes using the teletext service offered by some major networks (p. 193).

Auditory implants

In some cases of almost total deafness, the damage seems to be located in the hair cells of the cochlea, with the auditory nerve to the brain remaining intact. In such cases, it proves possible to provide a sensation of hearing by direct electrical stimulation of the nerve endings, using tiny wires that are surgically implanted in or near the cochlea, and that pick up signals transmitted via a device placed in the outer ear.

Several kinds of implant have been devised. The basic type sends a single electrical impulse to the nerve fibres – based on either an amplified speech waveform or some kind of modified waveform (as in the case of hearing aids). More complex systems make use of a series of wires, each of which is capable of acting as an independent information channel carrying just one aspect of the speech signal (e.g. a formant, §23). These can be linked to the auditory nerve or directly into the cochlea ('cochlear implants' – see diagram below).

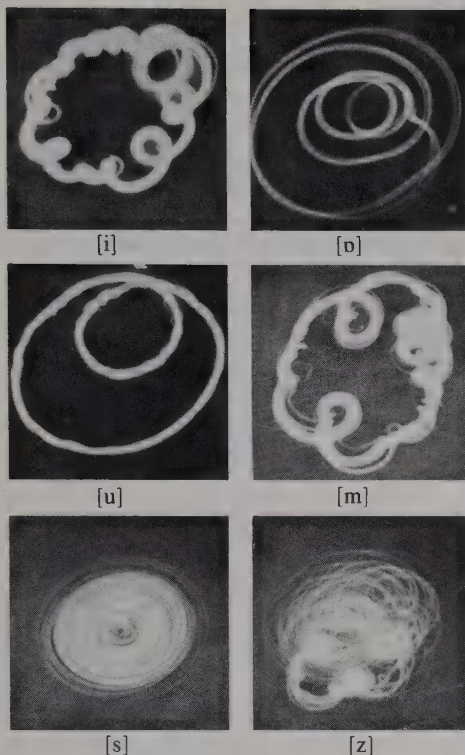
It is too soon to say how successful these implants can be. The basic sensations of sound that are produced using current techniques are apparently a long way from the sounds of normal speech, and the deaf person has to learn to decode these sensations. But on the principle that any auditory information is better than none, a great deal of interest is currently being shown in the development of the approach. It is however an operation that is used only on people who are permanently and profoundly deaf, as it is a complete substitute for normal hearing.



The audio signal is fed to an antenna coil (A) in the outer ear; it is picked up by the receiving coil (R) and sent to the electrode (E) in the cochlea. (From M. M. Merzenich, 1975.)

Speech sound patterns

Six speech sound patterns, as produced on the Voice Visualizer (from W. Pronovost *et al.*, 1968).



Subtitles for the deaf

The invention of teletext as an additional service on the television signal allowed the broadcasting authorities in Britain (BBC and IBA) to introduce regular subtitling services from 1980 onwards. The aim is to help viewers who are deaf or hard of hearing to watch, at their own choice, subtitles that convey a soundtrack in written form. The viewer with a teletext receiver calls up the appropriate page number, and the subtitles automatically appear on the screen. By 1987, each authority was providing up to 25 hours of teletext subtitling each week.

A sophisticated code has been developed so that the subtitles can best convey the information and feeling of the soundtrack. Speakers are identified either by the use of coloured text, or by placing the subtitle next to the per-

son talking. Conventions have also been established to communicate any accent or tone of voice which the subtitler feels is germane to a viewer's grasp of the programme. Similarly, sound effects and music are described when relevant.

To allow viewers adequate time to read the subtitles and follow the pictures, the verbal soundtrack must be quite heavily edited. Most television programmes are pre-recorded on videotape or film before transmission. A subtitler, working from a video cassette of the programme, and sometimes helped by a script, writes the subtitles onto a computer disk. This disk is then played into the television transmission system in synchrony with the programme.

Different techniques must be used with live pro-

grammes, such as news bulletins, sports coverage, or broadcasts of public events. In both Europe and the USA, systems have been developed using stenography or palantyping (p. 207). The output from the operator's machine is recognized by a computer containing a large phonetic dictionary, and this generates a written version as a subtitle. This system was first used to subtitle President Reagan's inaugural speech in 1981. However, in its early experimental days it was not error-free, and the BBC has recently developed an alternative system, combining a number of different techniques, which depends on a closer relationship between the subtitling and the methods of television production. This system is called RECAP.

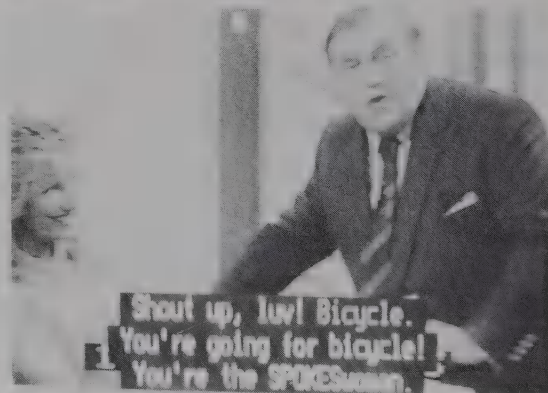


Speech traces

In this experimental speech training system, features of place and type of articulation, and voicing, are shown as different kinds of traces varying in height, width, and colour, moving from left to right with time. The colour of the original is here shown using shading. (After G. J. Bristow & F. Fallside, 1979.)



A subtitled exchange in the BBC word game 'Blankety Blank'. The word 'Bicycle' in the first line is spoken by the competitor, and subtitled in green. The remaining text, spoken by the host, is in yellow.



Aphasia

When an area of the brain involved in language processing is damaged (p. 261), the language disorder that results is known as *aphasia* or (especially in Britain) *dysphasia*. This terminological choice arises from a literal interpretation of the two prefixes: *a-phasisia* suggests a 'total' lack of language; *dys-phasisia* implies a 'partial' lack. However, the distinction has no clinical significance: all aphasic people have some residual language ability, even if this is only a minimal level of comprehension. It therefore makes no difference which prefix is used (as long as usage is consistent): we are dealing with a continuum of disability from very mild to very severe. The *a-* prefix is now more widespread, especially in the USA, and it has come to be used in the name of the research field, *aphasiology*.

A more important question relates to the nature of the behaviour affected. Aphasia is usually defined as a handicap of *language* comprehension and/or production caused by *specific* brain damage. It therefore clearly excludes language handicaps associated with other conditions, such as peripheral deafness (where there is no brain damage, p. 266) or senile dementia (where there is a more general deterioration of mental faculties). But it is more difficult to exclude handicaps that involve other aspects of symbolic expression and the associated cognitive skills – as when aphasic people display problems with understanding gestures, the symbolism of colours (as in traffic lights), performing arithmetical operations, remembering, or paying attention. Should these difficulties be considered as part of the disorder or separate from it? The focus of aphasic handicap is undoubtedly on problems of expression and comprehension in grammar and semantics, whether in speaking, listening, reading, writing, or signing; but these problems relate closely to difficulties of a pragmatic, cognitive, or perceptual kind, and a sharp boundary line cannot always be drawn.

CAUSES OF APHASIA

The brain is totally dependent on the oxygen conveyed by its blood supply; brain cells will die if deprived of oxygen for more than a few minutes. There are many *cerebro-vascular accidents* (CVAs, commonly known as 'strokes') that can cause this to happen, and these account for about 85% of all cases of aphasia. In adult western people, arteries can become 'furred up' with fatty cholesterol deposits, associated with such factors as smoking, diet, and lack of exercise: the deposits cause narrowing and obstruction of the arteries, and this may cause a stroke. Another possibility is for the arteries to become blocked by foreign matter that has entered the blood stream. Or they may haemorrhage in various ways. Whatever the reason, if these events take place in the areas of the brain that deal with language processes (something that happens in about a third of all strokes), the result

is likely to be aphasia. The other causes of aphasia include certain kinds of cerebral tumour, brain disease, and traumatic damage (head injuries due to traffic accidents, falls, acts of violence, etc.). About a quarter of all penetrating head injuries lead to aphasia. Altogether, the annual incidence of the handicap is about 0.6% of the population (1 in 200), with males more at risk.

About a quarter of all patients recover within three months. The rate of recovery then decreases, with full recovery increasingly unlikely after six months. A further 25% of patients are still severely affected after a year, with little subsequent improvement expected. The different communication modalities usually recover at different rates: generally, comprehension improves more rapidly than production. However, the process of recovery is little understood. It may be that cells close by the damaged area regain some of their function after a while, or perhaps other parts of the brain (such as the right hemisphere) may come to be used.

The effects of aphasia

Samuel Johnson

From a letter written on 19 June 1783 three days after a stroke robbed him of speech:

I went to bed, and in a short time waked and sate up as has long been my custom, when I felt a confusion and indistinctness in my head which lasted, I supposed about half a minute: I was alarmed and prayed God, that however he might afflict my body, he would spare my understanding. This prayer, that I might try the integrity of my faculties I made in Latin verse. The lines were not very good, but I know them not to be very good. I made them easily, and concluded myself to be unimpaired in my faculties.

Soon after, I perceived that I had suffered a paralytic stroke, and that my Speech was taken from me. I had no pain and so little dejection in that dreadful state that I wondered at my own apathy...

In order to rouse the vocal organs I took two drams. Wine has been celebrated for the production of eloquence; I put myself into violent motion, and, I think, repeated it. But all was vain...

Walter Scott

From his diary, 5 January 1826:

Much alarmed. I had walked till 12 with Skene and Colonel Russell, and then sat down to my work. To my horror and surprise I could neither write nor spell, but put down one word for another, and wrote nonsense. I was much overpowered at the same time and could not conceive the reason. On waking my head was clearer... (W. E. K. Anderson, 1972, p. 55.)

(22 April 1830)
Anne would tell you of an awkward sort of fit I had on Monday last; it lasted about five minutes, during which I lost the power of articulation, or rather of speaking what I wished to say. I revived but submitted to be bled. (S. G. Lockhart, 1900, p. 262.)

A recent account

Douglas Ritchie wrote a diary of his recovery from stroke in 1960. One year after the stroke he felt like this:

My speech? I might have had two or three stray words but I could not tell. In the Centre I rarely spoke to anyone. I had nothing to

say and I was embarrassed because I could not say anything. I read all the spare time I had. In the ambulance, where I used to spend upwards of two hours daily with four and five people week after week and where I was less embarrassed, I used sometimes to try different words. One week I was optimistic and the next there was nothing...

My writing was more depressing. I had only written 'Good luck, Cliff' or a message like 'cigarretes' (spelt wrong – this might have aroused my suspicions, but it did not), and for the rest made the excuse that I did not write with my left hand. But it was my mother's birthday in May and I felt that I should write her a letter. I no sooner had the paper in front of me when every single word galloped out of sight. I was left staring at the blank sheet. Nearly half an hour passed; panic grew; this was nothing to do with my left hand. At length my wife came in and she dictated slowly, letter by letter, 'many happy returns...'. I managed to forget my panic for a time. (D. Ritchie, 1960, pp. 96–7.)

TYPES OF APHASIA

There have been many different classifications of aphasia, reflecting the difficulty aphasiologists find in grouping patients together so that their medical and their behavioural symptoms coincide. A classification based on the site of the lesion(s) will make neurological sense, but may not result in a neat description in linguistic or psychological terms. Correspondingly, a behavioural classification usually cuts across some of the traditionally recognized neurological distinctions. There also may be some change in the aphasic symptoms, as the recovery period progresses. A few major categories have sufficient homogeneity, both medically and behaviourally, to stand the test of time, and these continue to be cited as 'classical' aphasic syndromes. These patients, however, may well be outnumbered by the many cases where the aphasic symptoms are 'mixed', to some degree, and where a classical diagnosis is unclear.

Broca's aphasia The lesion is classically located in and around Broca's area, typically extending some way back along the Sylvian fissure (p. 260). The nature of the symptoms has led to its also being called *expressive* or *motor* aphasia. The language is usually characterized as markedly non-fluent – slow, laboured, hesitant, often one syllable at a time, with great difficulty in articulation, and disturbed suprasegmental features (§29). Sentences are short and reduced to a 'telegrammatic' style, with little use of the normal processes of grammatical construction (§16). Individual words are often repeated. Comprehension of everyday language is near-normal.

Wernicke's aphasia The lesion is classically located in Wernicke's area (p. 260), though there is some variability. The nature of the symptoms has led to its also being called *receptive* or *sensory* aphasia. The language is characterized as fluent, often excessively so, with no articulatory difficulty, though there may be several erratic pauses. There is usually a severe disturbance of comprehension, though this is obscured by a normal intonation. The speech illustrates many stereotyped patterns, circumlocutions, unintelligible sequences (known as 'jargon'), errors in choosing words and phonemes (§28), and problems in retrieving words from memory.

Global aphasia The symptoms are those of severe Broca's and Wernicke's aphasia combined. There is an almost total reduction of all aspects of spoken and written language. The patient's expressive abilities are minimal, and in most cases do not much improve over time. Comprehension of spoken language, initially very poor, shows limited recovery. The disorder is sometimes known as 'irreversible aphasia syndrome'.

Expressive aphasia

Several of the symptoms of Broca's aphasia can be seen from this French patient's description of the evolution of his disease (abnormal drops in pitch are marked by /):

Euh, hémiparésie, euh, fulgurant, euh, Hôpital Pasteur, Nice, Nice. Euh, Docteur Dupont. Euh, euh, examens/ enfin, examen, euh, enfin, un coma euh, un petit peu. Euh, un mois/ un mois, euh, pavillon F-3

/dy/ euh, Docteur Durand. Les reins. Euh, kinésithérapeute. Marche euh, euh, très bien, enfin, un peu, un peu. Euh, premier novembre, médica/ Le/ Giscard/ Docteur Giscard euh, rééducation. Euh, euh, oui, euh, kiné/ non, huit heures, kiné, euh, un quart d'heure ... (Uh, hemiplegia, uh, fulgurant, uh, Pasteur Hospital, Nice, Nice. Uh, Doctor Dupont, uh, uh, examinations/

finally, examinations, uh, finally, a coma uh, a little bit. Uh, a month/ a month, uh, pavillon F-3 /dy/ uh, Doctor Durand. My kidneys. Uh, physiotherapist. Walk uh, uh, very well, finally, a little, a little. Uh, November first, medica/ The/ Giscard/ Doctor Giscard uh, therapy. Uh, uh, yes, uh physio/ no, eight o'clock, physio, uh, a quarter of an hour ...) (A. R. Lecours *et al.*, 1983, p. 86.)

Receptive aphasia

Several of the symptoms of Wernicke's aphasia can be seen in this French patient's response to a question about his family (strong stresses are italicized):

Oui, j'ai une autre *femme* qui est restée depuis la /bœtre/ de l'enfant de *ma* *fi*ls. *Il* a/ elle avait dix ans quand mon /fes/ est mort. Et alors, elle est là maintenant. Elle va sur /syz/ ans. Elle va toujours à l'école,

puisque'elle se présente les/ Je l'avais envoyée à l'école puisque, moi, je travaillais bien dans les /syz/ / – euh – à la /farmid/ de/ de/ de /syz/, n'est-ce pas, de deux /etmîr/. Et alors, je/ Cette /mwazc/ – la – euh, *Gi*nette, elle s'appelle – elle/ elle /abil/ ... (Yes I have another *woman* who has remained since the /bœtre/ of the child of *my son*. *He is/ she was* ten years old when my /fes/

died. And then, she is there now. She will soon be /syz/ years old. She is still going to school since she presents herself the/ I had sent her to school since I myself was indeed working in the /syz/ / – uh – at the /farmid/ of/ of /syz/ isn't it, of two /etmîr/. And then, I/ This /mwazc/ – there uh, *Ginette* is her name – she/ she /abil/ ...) (A. R. Lecours *et al.*, 1983, p. 94.)

Other symptoms

Aphasia is often accompanied by other symptoms which need to be taken into account when assessing the communication impairment as a whole.

- **Agnosia:** a difficulty in recognizing familiar sensory stimuli. When the disability relates to sounds, it is known as *auditory* agnosia; when it relates to pictures or shapes, it is known as *visual* agnosia.

- **Apraxia (or dyspraxia):** an often severe difficulty in controlling voluntary movements of limbs or vocal organs. In particular, there may be an inability to control sequences of sounds (*articulatory* or *verbal* apraxia) or gestures. The intention to communicate is present, but the patient cannot carry it out.

- **Anarthria (or dysarthria):** there is often an accompa-

nying weakness or paralysis in the side of the body opposite the hemisphere which has been damaged (p. 258). When this affects the face or neck, the functioning of the vocal organs can be impaired, to produce a poorer quality of articulation. The effects range from mild to severe – from a slight slurring to total unintelligibility.



A group enjoying the atmosphere of a stroke club – one of many voluntary groups that have been set up to aid the process of rehabilitation in people who are impaired by the range of handicaps that follow a stroke – notably paralysis and aphasia.

Dyslexia and dysgraphia

The onset of brain damage in adult life frequently leads to a disorder of reading or writing in people who have previously been literate. The handicap is usually accompanied by aphasic symptoms affecting spoken language (p. 270); occasionally, it is the only, or predominant, symptom. In all cases, the reading disorder is referred to as (*acquired*) *dyslexia* and the writing disorder as (*acquired*) *dysgraphia*. The *a-* prefix is also used, especially in Europe and North America (*alexia*, *agraphia*). The label 'acquired' distinguishes the handicap from the more widely known *developmental* kinds of dyslexia and dysgraphia that occur in young children where there is no evidence of any brain damage (see p. 273).

Neuropsychological studies of these handicaps have generally proceeded by classifying patients into types, based on a detailed description of the kinds of errors made. The process is a slow and difficult one, partly because of the large amounts of vocabulary that have to be analysed before an error pattern emerges, and partly because there are usually associated language symptoms that also need to be taken into account. Nonetheless, since the 1970s several types of acquired dyslexia and dysgraphia have been proposed, based on a small number of case studies.

TYPES OF ACQUIRED DYSLEXIA

Phonological dyslexia People with this problem are unable to read on the basis of the 'phonic' rules that relate graphemes to phonemes (§34). This means that they can manage to read familiar words, but they have great difficulty with new words (such as technical terms) or with simple nonsense words (such as *lak*).

Deep dyslexia Here too people are unable to read new or nonsense words, but in addition they make many semantic errors (e.g. reading *forest* as 'trees'). There are also several other types of difficulty, including visual errors (e.g. reading *signal* as 'single'), and errors that combine visual and semantic properties (e.g. reading *sympathy* as 'orchestra', presumably because of the link via *symphony*). Words with concrete (as opposed to abstract) meanings are easier to read. The table (right) gives further examples of this unusual syndrome.

Surface dyslexia People with this problem are very poor at recognizing words as wholes, and rely greatly on a process of 'sounding out' the possible relationship between graphemes and phonemes. Irregular words (such as *yacht*) pose particular difficulty. A wrongly pronounced word will be given a meaning on the basis of how it sounds, not how it looks (e.g. one person read *begin* as 'beggin', then added 'collecting money'). There is a problem with homophones (see Glossary, Appendix I) (e.g. one person understood *bury* as 'a kind of hat').

Several other types have been proposed. There is, for example, a visually based dyslexia, in which people fail to read the parts of a word correctly (e.g. one patient read 'night' when shown *near* + *light*), or confuse words of similar appearance (as when *met* was misread by one patient as 'meat', and *rib* as 'ride'). In such cases, the patient can often name the letters of the word correctly, but remains unable to identify the whole word. There are also several disorders of a neurologically more 'peripheral' kind, such as letter-by-letter reading, in which patients find it necessary to name all the letters of a word (aloud or subvocally) before they can identify it.

The search for 'pure' types of dyslexia is complicated by the occurrence of individual differences between patients, and by the existence of cases where symptoms are 'mixed'. Problems of interpretation are therefore considerable. Are deep dyslexic errors due to a partial impairment of the left hemisphere alone, or is the right hemisphere involved in some way? And, within the first of these possibilities, is the disorder the result of an impaired semantic system, or is that system intact, with the problems arising out of an impaired ability to make correspondences between graphemes and phonemes? Answers to such questions will only emerge once the database is enlarged by in-depth linguistic descriptions of many more cases.

TYPES OF ACQUIRED DYSGRAPHIA

Most work in this field has studied the disruption caused to spelling ability (p. 213). Three syndromes have been proposed, analogous to those proposed for acquired dyslexia.

Phonological dysgraphia People with this problem can spell real words but not nonsense words (though they can sometimes read many of them, and speak them aloud).

Deep dysgraphia Here too there is no ability to spell on a phonetic basis; asked to write a dictated nonsense word, for example, it is often replaced by a real word that is similar in sound (e.g. *blom* is written *flower*, presumably because of the word *bloom*). Errors seem to be semantically related (e.g. one person, asked to write *bun*, wrote *cake*). The spelling of words with concrete meaning is better than that of words with abstract meaning. The relationship to reading ability is unclear: one patient studied had normal reading ability, but most seem to have some deep dyslexic symptoms also.

Surface dysgraphia People with this problem can spell spoken nonsense words in a plausible way, but cannot spell irregular real words (e.g. one person wrote *biscuit* as *basket*) – and even regular words may be affected. They seem dependent on using grapheme-phoneme conversion rules; whole-word spelling is impaired, though not entirely lost

Deep dyslexia symptoms

The first patient providing evidence of a deep dyslexia syndrome was studied by a Medical Research Council team in Oxford in the 1960s – a person who had been a highly literate adult before his left-hemisphere injury. His reading errors were classified into five types (in each case the target word is on the left and the patient's version on the right).

Semantic errors

act → play
close → shut
dinner → food
afternoon → tonight

Derivational errors (p. 90)

wise → wisdom
strange → stranger
pray → prayers
birth → born

Visual errors

stock → shock
quiz → queue
crocus → crocodile
saucer → sausage

Function words (p. 91)

for → and
his → she
the → yes
in → those

Non-words

wux → ('don't know')
wep → wet
dup → damp
nol → ('no idea')
(J. C. Marshall & F. Newcombe, 1980, pp. 1–3.)

Spatial dysgraphia

This patient has had an operation to remove a tumour from the parietal lobe of the right hemisphere (p. 258). One of the symptoms that resulted was a spatial dysgraphia that is clearly seen in the patient's writing abilities. The left-hand side of the page is neglected; the lines are at an angle; some letters are spaced abnormally; and there are several unnecessary repetitions of letter strokes and letters. (From H. Hécaen & P. Marcie, 1974, p. 359.)

La malade était
franche
je fis quel ques
pas dans la
cour legere
me brune
se levait de la cuisine
et venait se reposer
devant la porte
des freres

Deep dysgraphic errors

Responses of one deep dysgraphic patient to part of a single-word dictation test.

Function words are particularly poor: some are not attempted; some bear little resemblance to the stimulus word. In three cases, he added content word homophones (1b, 4b, 9b), and was able to spell two of them. The content word list shows several visual errors (e.g. *why* for *way*), but none of the semantic errors that were also a feature of this person's handicap (e.g. writing *small* for *little*). (From F. M. Hatfield & K. E. Patterson, 1984, p. 189.)

Content words		Function words	
1 Use ✓	use	1a all	too
2 Set	Sit	1b two ✓	[two]
3 Old ✓	old	2 why	how
4 Yes you	day	3 -	off
5 For men ✓	men	4a Which	him
6 In Some	see	4b my why	[hymn]
7 why	way	5 Our ✓	out
8 n	put	6 -	has
9 wa	war	7 work	why
10 v oak	set	8 -	yet
		9a -	our
		9b hour ✓	[hour]
		10 Sam	who

String inside my head

It was easy to talk about what I had seen in the park, or to sort out the ballet shoes, or to put books away neatly according to size, but to decipher the alphabet, or recognize C.A.T. and say what it spelt was almost impossible... When I was required to write, a strange feeling came over me, and I felt there was a long piece of string in my head.

My mother would say, 'C.A.T. spells cat. Susan, what does C.A.T. spell?'

'I don't know, I don't know, Mrs Hampshire (as I called her at school), I don't know what it spells.'

The string inside my head stopped me from answering. It actually felt as though my skull housed a whole ball of string, with an end sticking out of my crown. I thought that if I pulled at this, I could get the string out, empty my head of it, unravel the tangle in my brain...

'Mummy, I can feel my string.'

'Don't be ridiculous, Susan.'

The page, the pencil, my mother's face, her slightly oily skin – not a line on it – her dark brown eyes compelling me to answer correctly, her nail polish half erased by the washing-up, all this I could see and remember – but I could not remember C.A.T. Probably the most difficult word in the world, C.A.T. If only the other children couldn't spell C.A.T.

'Stop looking in the mirror and think about how you spell cat.'

I couldn't. I just could not. I tried, but I couldn't. My head was empty – except for the string.

(From *Susan's Story* (1981, pp. 26–7), the autobiography of Susan Hampshire.)

(e.g. one person spelled *yacht* as *yhagt*, showing some visual recall).

Acquired dysgraphic patients are usually also dyslexic to some degree. Moreover, classification must allow for cases where there are specific motor or sensory impairments. For example, there are people who can speak, read, spell aloud, and type, yet who cannot produce the letter shapes or movements required for writing by hand. Letters are badly formed, misplaced, repeated, or omitted. In such cases, it is graphetic rather than graphological ability that is affected (p. 185).

Developmental dyslexia

Since the early years of this century, it has come to be widely recognized that there are children who, after a few years at school, are consistently seen to fail at the tasks of reading, writing, and spelling, despite normal intelligence, instruction, and opportunity to learn. No medical, cultural, or emotional reason is available to explain the discrepancy between their general intellectual and linguistic abilities and their level of achievement in handling written language. There is often a history of early language delay, but by age 9 or so, spoken language ability is apparently normal, whereas written language skills may remain at the level of a 5- or 6-year-old.

These are the children who have been called 'dyslexic', though alternative labels have been devised for the condition in an attempt to escape the originally medical connotations of this term (notably 'specific reading disability' and 'learning dis-

ability'). In fact there are around 40 different terms used for problems in this area, some of which retain a medical bias, such as 'minimal brain dysfunction' and (in parts of Europe) 'legasthenia'. Because the handicap is viewed as a problem with 'written language' in all its forms, the term 'dyslexia' usually subsumes the kind of difficulties referred to as 'dysgraphic' in the brain-damaged adult.

The blighted school career of such children, when no-one recognizes their handicap, has been well documented. Their inability to read, whether for information or pleasure, and their daily failure in their attempts at written work, has a devastating effect upon their ability and motivation to learn. There are often associated problems in coping with number symbols (in arithmetic), and in tasks requiring short-term memory, such as following instructions. Their poor writing and spelling tends to be viewed as a symptom of educational subnormality or lack of intelligence – or, if the child is known to be intelligent, leads to a charge of laziness or 'not trying', with subsequent punishment in school and increased family tension at home. As a result, it is not surprising to find that many such children become anxious, withdrawn, or aggressive – with deteriorating behaviour in some cases leading to them being described as maladjusted. Career prospects, in such cases, are minimal.

Questions of incidence and causation are discussed on pp. 274–5, along with a more detailed illustration of the range of dyslexic symptoms.

Incidence

The dyslexia problem is becoming increasingly recognized, with many countries now setting up organizations to draw attention to the handicap and to provide special help. In a very few countries, this help is guaranteed by legislation. It is however extremely difficult to arrive at an accurate estimate of incidence because there are no internationally accepted reading tests and criteria of handicap. In one survey of 16 countries, the mean percentage of non-retarded children with reading difficulties was 8% – but this covered a range that went from 1% (China) to 33% (Venezuela). Some estimates suggest that dyslexic boys outnumber girls in a ratio of around 3:1, others that it may be as many as 10:1.

The uncertainty derives from the fact that reading difficulty is a continuum from normal to abnormal, with the only criterion of handicap being that the children's ability is well below their age and intelligence. Everything therefore depends on how intelligence and reading achievement is measured, and what is considered to be 'well' below normal. For example, if the definition of dyslexia includes only those children who are retarded by at least two years in reading ability, the numbers affected will be appreciably greater than one that requires that they be retarded by at least three years. Such differences of method, even within a single country, make it virtually impossible to arrive at an agreed statement of incidence.

Causation

The question of causation has also promoted great controversy. Until recently, there was a widespread assumption that all dyslexics were fundamentally alike, and that a single cause of the handicap could be found. A large number of candidate 'causes' were therefore proposed, postulating any of several medical or psychological factors, such as visual perception, intersensory integration, memory, attention, eye movement, verbal processing, and hemispheric dominance (p. 258). There could be several possible approaches within any one of these headings. For example, under dominance it has been argued that dyslexia is the result of (a) a lack of dominance, (b) a lag in dominance development, (c) a specific left-hemisphere deficit, (d) right-hemisphere interference, or (e) a disintegration of functioning between the two hemispheres. The role of the left hemisphere is strongly implicated (as is suggested by associated spoken-language delays and errors, and problems of motor coordination), but its exact influence is unclear.

Recent reviews of what is now a vast experimental literature indicate that a unitary explanation for dyslexia is illusory. The modern focus on individual case studies (as opposed to the traditional use of group studies) is bringing to light the existence of a variety of dyslexic syndromes, reflecting several possible causes. A popular contemporary view is that there is a large set of factors

Copying

Copying by three children, which shows some of the problems of the backward reader. The style of (b) is well behind that of (a), who is the same age, and in many respects it is not as well organized as that of

the younger child (c).

(a) Normal reader, aged 9 years, 8 months.

(b) Backward reader, aged 9 years, 8 months, with a reading age of 6 years, 9 months.

(c) Normal reader, aged 6 years, 6 months, with a reading age of 6 years, 9 months. (From L. Bradley, 1983, p. 238.)

(a) Then he went to sleep on the sand and this time nothing happened, and all was well and he slept till morning. The sun ~~was~~ woke him up, and he had just had time to shake himself when he saw them coming across the sand.

(b) Then he went to sleep on the sand and this time nothing happened and all was well and he slept till morning. The sun woke him up and he had just had time to shake himself when he saw them coming across the sand.

(c) Then he went to sleep on the sand and this time nothing happened and all was well and he slept till morning. The sun woke him up and he had just had time to shake himself when he saw them coming across the sand.

Dyslexic progress

(a) A sample of a dyslexic boy's free writing at 8 years of age. The sentence reads: 'My favourite hobby is art work and maths.'

(b) The same child's free writing at age 9 years, 8 months, after specialized help. The sentence reads: 'I was walking down the street and I heard a scream and I went into the house and I saw a man with a knife.'

(c) The same child's spelling at age 8. The words are: see, cut, mat, in, ran, led, lot, hat, pen.

(d) The same child's spelling of these words at age 9. (From M. Thomson, 1984, pp. 41–2.)

(a) MI tan hah kshat wac ata mas

(b) I was wocin don the stet and I had a sscream and I went in to the house and I sur a manuif a knife

(c) sam cbt han hi ham
ban thn hat ba

(d) see cut mat in ran leg dot hat pen

implicated in dyslexia, some sub-set of which turn up in individual cases. For example, in one group of children, there was clear evidence of an unstable eye dominance: the children had not established a stable 'leading' eye in their reading. Another group showed difficulties with making perceptual distinctions (e.g. distinguishing same/different letters). A further group displayed problems with short-term memory.

The main methodological problem in such research is to determine whether the weakness shown by dyslexics is the cause or the result of the handicap. For example, many of these children have faulty eye movements (shorter saccades, longer fixations, more regressions, §34), but it is an open question whether these form a constitutional problem that made it difficult for them to learn to read, or whether the poor movements began as a result of their difficulties with reading, or whether there is no functional relationship between them at all. If information is not available on what the children were like before they began to read, and on how they perform with non-reading tasks, it is difficult to interpret the results of such experiments.

The conflicting and ambiguous research findings, linked with ambitious claims about 'the' cause of dyslexia, have led to a great deal of scepticism about the condition, especially when the possibility of an underlying medical cause is being stressed. It will be some time before these doubts are resolved, and new research initiatives will need to be forthcoming – in particular, devising individual developmental profiles, along the lines of the acquired dyslexia research, and relating findings more to the nature of reading development in normal children, in order to establish what counts as an 'abnormal' error. In such ways, it will be possible to devise better developmental classifications based on behavioural symptoms.

Acquired vs developmental?

The several similarities between the symptoms presented by the two kinds of dyslexia have led some scholars to argue that there is an underlying identity. Parallels have been proposed between developmental dyslexics and acquired deep dyslexics (p. 272) – for example, both groups have trouble in reading nonsense words, and are better at reading concrete words. However, so far there is little clear evidence that children display the kinds of semantic error that are crucial to the identity of the deep dyslexia syndrome. Similarly, there have been proposals that developmental dyslexia displays a parallel with acquired surface dyslexia (e.g. because of similarities in phonic reading ability) and with phonological dyslexia (e.g. because of similarities in direct visual word recognition). None of these positions has yet produced a substantial child database, however, and several differences between the adult and child populations remain – in particular, the greater variability of children's performance.

There is, moreover, always the possibility that the brain mechanisms that underlie reading acquisition are different from those used to maintain reading skills in later life. The unity view thus provides us with a set of intriguing but at present largely speculative hypotheses.

Common features of dyslexia

A wide range of factors has been implicated in the search for a definition of dyslexia. The following features commonly recur, but it must be stressed that there is great variation between dyslexic children (and, of course, between those whose symptoms have continued into adult life). Probably no dyslexic child would display *all* of these features, but most display several.

Background features

Sight normal.
Hearing normal.
IQ near-average or above.
Health normal.
Adequate first teaching.
No previous emotional disturbance.
No gross brain damage.
No socio-cultural deprivation.

No serious lack of schooling.

Psycholinguistic features

- Reading, spelling, and writing all below that expected for age and IQ.
- Persistent and often bizarre reading and spelling errors, e.g. letters reversed or out of order (confusion of *b/d*, *was/saw*, etc.).
- Confusion when labelling left and right, and generally poor directional ability.
- Difficulties in coding symbols and sounds, e.g. naming letters of the alphabet.
- Difficulties in sequencing, e.g. putting things in a series, remembering days of the week, keeping one's place.
- Poor short-term memory, e.g. remembering tables or instructions.

- A history of late language development.
- Some pronunciation difficulty, especially with long words.
- Non-fluency in speech.
- Poor auditory discrimination of speech sounds.
- Problems of visual perception.
- A history of motor clumsiness.
- Problems of finger differentiation.
- Mixed handedness or confused laterality.
- Poor concept of self.
- Sometimes good spatial skills, e.g. model making.

Hyperlexia

Reading-retarded children sometimes develop a surprising ability to read aloud – including the accurate production of quite advanced vocabulary, well beyond their level of comprehension. In one study, this remarkable skill was observed in a 7-year-old boy with an IQ of only 77, and a level of motor development equivalent to a 3½-

year-old. He had learned nursery rhymes and television commercials as early as age 2, and learned to read soon after 4 with little help from his parents. By the time he was 5 years old, he was fluently reading aloud material that would be appropriate for a normal 10-year-old.

The ability such children have to read aloud goes

well beyond their other cognitive abilities. They have great difficulty, for example, associating the words they read with objects or pictures. On the other hand, they have great facility in sounding out nonsense words. (After P. R. Huttenlocher & J. Huttenlocher, 1973.)

2471760

147
DOR

8899Y

12345678901121

A serious directional problem illustrated in the writing of a 7-year-old girl. (From L. Tarnopol & M. Tarnopol, 1976, p. 283.)

Voice disorders

Many people develop an expressive handicap in which their voice has a markedly abnormal quality. The pitch, loudness, and timbre (§29) may be so inefficient that the message carried by the spoken language may be largely or wholly unintelligible. But even if the speech can be understood, the voice quality interferes with communication by calling attention to itself. The sound can be highly unpleasant – for example, the harsh hoarseness or highly nasal qualities that can be heard in some disorders. Alternatively, the voice quality may simply be inappropriate to the speaker or the needs of the situation – as when an older male teenager retains the high-pitched voice of a younger child.

Voice handicaps are classified into disorders of *phonation* (an abnormal kind of vibration in the vocal tract, as when the vocal folds fail to function normally) and disorders of *resonance* (abnormal modifications of the sound vibration as it passes through the cavities of the vocal tract, §22). The first type manifests itself mainly in abnormal qualities of pitch and loudness – such as very monotonous, high-pitched, or weak voices – and in a range of breathy, husky, and hoarse effects that are cumulatively labelled *dysphonia*. The second type is best illustrated from the many abnormal nasal resonances that can affect the voice – some excessively nasal (or ‘twangy’), some with reduced nasality (‘blocked nose’ effects).

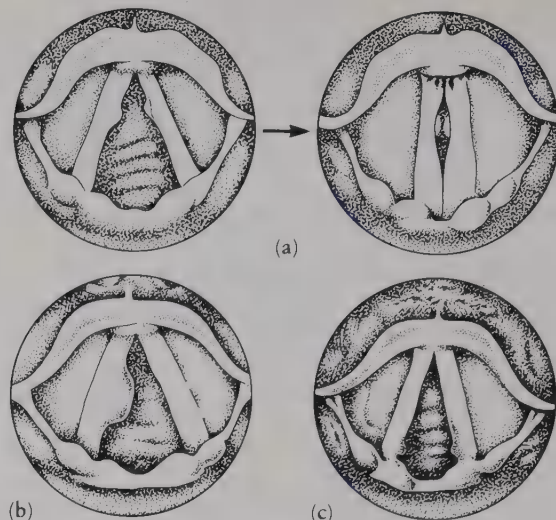
About a third of all voice handicaps have a clearly physical cause – an anatomical or neurophysiological abnormality in the vocal tract. Excessive friction between the vocal folds can cause *nodules* or *nodes* to form at their margins. Other interfering formations include polyps, contact ulcers, and various kinds of cancerous growth. Vocal-fold movement may become weak because of disease affecting the main nerve leading to the larynx. External damage, such as a blow to the neck, can easily affect larynx functioning.

The majority of voice disorders, however, have a non-physical, or ‘functional’ cause. For example, emotional stress can itself be sufficient for people to ‘lose their voice’, resulting in a range of psychological conditions that require lengthy and sympathetic investigation and therapy if they are to be resolved. Factors of this kind may also have physical consequences. Nodules and ulcers result from ‘vocal abuse’ – an excessive use of the voice, which in time causes chronic dysphonia. But the reasons for the abuse are functional, arising out of the life-style of the speakers: in particular, it is very common for nodules to form in those who live by their voice, such as singers and teachers, and who are regularly faced with vocally demanding situations.

Laryngeal abnormalities

The illustration shows some abnormal laryngeal conditions, all of which can cause dysphonia.

(a) Vocal nodules – inspiration followed by phonation. The vocal folds are prevented from closing properly along their mid-line.
(b) A large, broad-based polyp, which will interfere with the normal movement and closure of the vocal folds.
(c) Contact ulcers, formed at the point of maximum closure of the vocal folds.



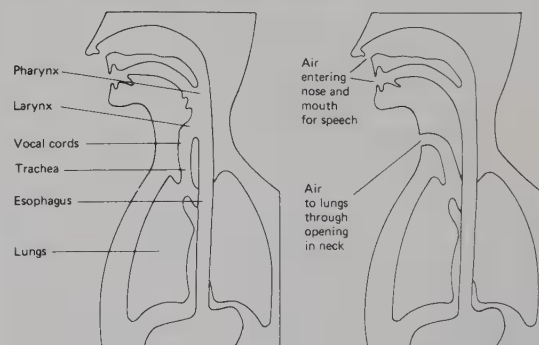
Laryngectomy

Malignant growths in the throat, in the region of the vocal folds, can be treated with radiotherapy, but if this fails, it may be necessary to remove the larynx surgically, in an operation known as a *laryngectomy*. After this operation, the trachea (§22) cannot be re-joined to the pharynx, as food would spill into the lungs. The defect in the pharynx is therefore closed during the operation, and an alternative opening to the trachea is made at the front of the neck (a *tracheostomy*).

Patients who have had this operation are *laryngectomees*. Many learn to use the upper part of their pharynx and esophagus to in-

itiate vibration, resulting in a throaty ‘esophageal’ voice quality. Alternatively, they may use an artificial larynx to provide a source of vibration – a device that

emits a buzzing sound, and, when placed against the neck while they are ‘mouthing’ speech, provides a source of phonation.



The upper respiratory tract, before (left) and after (right) laryngectomy.

Artificial larynx

An electronic artificial larynx being used by a laryngectomee. The device weighs 200 grams (about 7 oz) without its battery, is 12½ cms (5") long and 4 cms (1½") wide. It offers the user both volume and tone controls, and by rotating the head of the unit it will give a softer or more strident tone.



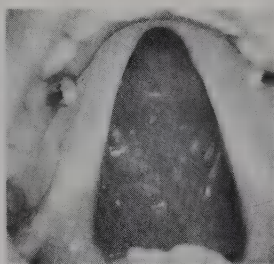
Cleft lip and palate

Between one and two out of every 1,000 children is born with cleft palate syndrome. A *cleft palate* is a congenital fissure along the midline of the palate (§22). It may extend throughout the whole palate (a) or affect only part of it (b). *Cleft lip* (an older label, 'hare lip', is nowadays felt to be demeaning) is the associated condition in which the upper lip is split. The lip may be only slightly notched, or the division may be complete (c), and include the upper teeth ridge behind (d). The split may be in the middle, on one side, or on both sides (e). Lip and palate may be simultaneously affected (f). There are also 'sub-mucous' clefts of the palate, in which the surface tissues have united, but the underlying structures have not.

Clefts of the lip or palate have very serious consequences because the condi-

tion affects not only the development of speech, but also the child's ability to eat. It is also extremely disfiguring, and a source of great emotional trauma to parents. Early surgical intervention is thus normal (lip operations are often within the first three months). Special prosthetic devices are sometimes used to cover the palatal gap, until the operation is performed, to aid the development of normal movement within the mouth.

Because of the early intervention, many cleft palate children develop fairly normal speech. However, problems of voice quality (often very nasal) and articulation can persist for several years, and there may be associated problems of language delay and hearing loss. A child who is making poor progress can still be largely unintelligible to all but his family at the age of 3 or 4. The reasons gov-



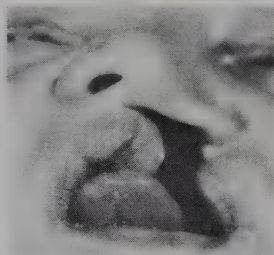
(a)



(b)



(c)



(d)



(e)



(f)

erning lack of progress are not well understood, though a great deal must depend on the severity of the clefts and

the extent to which the vocal organs have been able to grow in a normal way, after surgical closure, permitting

flexible movement. The availability of intensive speech therapy is also a crucial factor.

Articulation handicaps

Traditionally, problems of articulation were studied solely from a phonetic point of view; today, there is also a phonological dimension to the analysis (§§27–8). An extremely wide range of difficulties is subsumed under the term. At one extreme, there are slight difficulties with pronunciation that hardly interfere with communication, but that cause some anxiety to the speaker (such as a lisp, or a 'weak' *r*). At the other, there are sound systems which are so misarticulated or disorganized that the person is largely unintelligible – something that is quite common in adults following acquired brain damage, when the motor control of speech can be severely disrupted (p. 271).

In children, many of the pronunciation problems that cause parental concern are due to a general delay in the ability to control movements of the vocal organs. Some children at age 4 or 5 are still pronouncing words in ways typical of a child of 2 or 3 – making immature omissions, substitutions, additions, or transpositions of sounds. (It should be added that the children's hearing may be perfectly normal, in such cases.) Others have more serious problems of incoordination, such as being unable to control the speed and direction of tongue movements, or to maintain consistent pressure between articulators. It takes only a slight lack of control to turn a plosive into an affricate or fricative (e.g. [p] becoming [pʰ] or [f]), or a fricative into a plosive (e.g. [s] becoming [t]).

There are other articulation problems, however,

that cannot be explained by such factors as language delay or poor motor coordination. In some cases, there is a difficulty in the perception of sounds (§25) – in particular, a failure to discriminate differences between related sounds (such as [p] vs [b]). In others, it proves impossible to detect any problems of an anatomical, neurophysiological, or sensory kind, and yet pronunciation may be considerably disordered. The explanation of such 'functional' articulation problems is unknown, though one must assume that something is wrong in the area of the brain involved in the control of phonological skills (both segmental and suprasegmental, §§28–9).

Breaking the code

One 4½-year-old girl produced the following pronunciations:

bees /bi:t/	horse /hɔ:t/
car /tɑ:/	little /jɪt/
feather /tedʌ/	pen /pen/
finger /pɪnʌ/	scissors /ɪkʌd/
five /paɪt/	seven /heβɪn/
girl /dɑ:/	spoon /pu:n/
cake /tɑ:/	blue /bwu:/
train /braɪn/	boy /bɔɪ/
flower /pfauə/	warm /wɔ:m/
four /pɔɪ/	bird /bɜ:d/

Her speech was generally difficult to understand, but her errors were usually not random. A detailed analysis shows some interesting

trends, which would need to be confirmed by a much larger sample before a therapist would begin treatment.

- Vowels are generally correct, or nearly so.
- Fricatives (p. 157) are always replaced by plosives, except for two cases where [h] is involved, one case where [s] is omitted (in the consonant cluster, *spoon*), and one 'odd' case (*scissors*).
- Plosives are always articulated as plosives, but the

child mixes up her place of articulation, substituting [t] for /k/ and [d] for /g/. She seems to have no problems with bilabial plosives, /p/ and /b/. Note that in all cases the contrast of voicing (p. 128) is maintained.

- There are evidently problems with /l/, which is omitted or replaced, and which turns up inexplicably in *scissors*.
- In no case is a consonant cluster used correctly, as in *blue*, *train* and *flower*.

Fluency disorders

A disorder of fluency, in the context of language, refers to a major lack of ability to communicate easily, rapidly, and continuously. The problem is most noticeable when people have difficulty in controlling the rhythm and timing of their speech, to produce the phenomenon of *stuttering* or (as it is more widely known in Britain) *stammering*.

Stuttering is difficult to summarize because it involves several kinds of non-fluency that vary considerably from speaker to speaker.

- The most widely recognized symptom is the abnormal amount of repetition of sounds, syllables, words, or phrases, e.g. *p-p-p-please, he's got a - got a - got a - car*.
- Sounds may be abnormally lengthened, e.g. *sssee*, where the initial [s] can last several seconds, often with an uncertain rhythm.
- The speaker prepares to articulate a sound, but is unable to release it. In severe cases, facial spasms and sudden body movements may be used in an effort to get over the 'block'.
- Extra words are introduced at points of difficulty, e.g. *oh, gosh*.
- Words show erratic stress patterns, and there is an abnormal intonation and speed of speech (§29).
- Words and phrases may be left unfinished.
- Speakers may avoid words and phrases that contain the sounds they find difficult, and replace these by circumlocutions. One stutterer, who had great difficulty with [p], would always replace *policeman* by 'officer of the law'.

A certain amount of 'normal non-fluency' is found in young children (especially around the age of 3), and indeed everyone is prone to hesitation, especially in situations where they have to speak under pressure. Stutterers too vary greatly in the control they have over their speech, and clinicians therefore look closely at the contexts that most promote a stutter when they are investigating the problem. It is very difficult to draw a clear line between normal speech and stuttering, though there is no mistaking the handicap in its severe form, with its uncontrolled, tense, and irregular speech, and the anxiety and embarrassment (for listener as well as speaker) that is invariably present.

Theories and treatment

Many theories of the origins of stuttering have been proposed, but there is no current consensus. Doubtless the many variations between stutterers obscure the existence of several contributing causative factors. Physical factors have often been implicated, such as mixed cerebral dominance (p. 258), a specific left-hemisphere deficit, or a defect in the feedback mechanism between ear and brain (which reduces a person's ability to monitor output efficiently). There have been several 'psychoneurotic' theories, which attempt to relate stuttering to the

speaker's personality or emotional state (some tracing the problem back as far as infancy). 'Anxiety' theories stress the role that adverse listener reactions can play in promoting a stutter. A typical example is when parents prematurely correct their children for non-fluency, or become impatient when their child is non-fluent; this causes insecurity and anxiety, which in turn causes further growth in the non-fluency. It is difficult to choose between such theories, as so much of the relevant evidence is lacking (e.g. what happened when the stutterer was young?).

Many treatment methods and programmes are now available, all of which, in the absence of agreed theory, have had their successes and failures. Some methods focus on the feedback problem, such as by taking stutterers' attention away from their non-fluent speech (by playing specially generated noise into their ears while they speak). Others focus on altering the stutterer's breath control, or develop techniques in which speech comes more slowly or evenly than normal. Learning to relax is an essential feature of many methods, as is learning to interact with others (especially in the situations that cause particular tension). These days, particular attention is paid to helping the stutterer develop a style of behaviour that more closely resembles that of fluent people; many stutterers, it must be remembered, have become so isolated and withdrawn on account of their stutter, that they may need to be taught a new way of life (or at least, way of looking at life) as therapy proceeds.

Cluttering

The main symptom of this less well-known form of non-fluency is the excessive rapidity of speech. Clutterers seem unable to control their speech rate, and as a result introduce distortions of rhythm and articulation into their speech. Sounds become displaced, mispronounced, or omitted. Syllables telescope into each other. The utterance comes out in relatively short bursts, often interfering with syntax. The speed may increase as the utterance proceeds – a phenomenon known as 'festination'. Very often the resulting speech is largely unintelligible. What is surprising is that clutterers (unlike stutterers) are often unaware of the problems caused by their non-fluency.

There is no clear explanation for the handicap, though many researchers accept that it may well have a physical basis. Electrical recordings of brain activity often show significant abnormalities, for example. A possible theoretical explanation is an inadequate neural 'pace-maker' at the neurophysiological level in the motor control of speech (p. 262); but there is as yet no empirical support for this hypothesis.

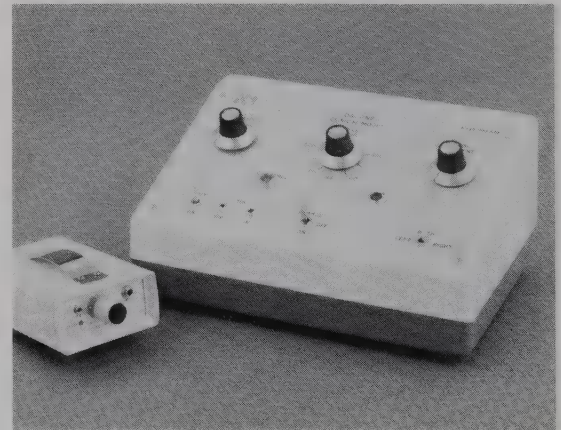
DAF

The equipment used in a 'delayed auditory feedback' (DAF) system. The speaker talks into a microphone attached to a tape recorder. A device in the recorder delays the voice for a fraction of a second, and then plays it back through the headphones sufficiently loudly that it becomes the dominant sound to be heard. When this is done to normally fluent people, many of them start to stutter. The technique is sometimes used with stutterers, and in some cases it has a positive (but temporary) effect.

Why it should help is unclear: the stutterers may be benefitting from having their normal speech masked, or they may be

being forced to speak more slowly, which itself helps control a stutter. A great deal more research needs to be carried out into the variables involved (e.g.

stuttering severity, delay time, feedback intensity) before clinicians will be in a position to say why some stutterers benefit, and others do not.



Language delay

Most of the children seen in a speech therapy clinic show some kind of delay in their development of spoken language. In school, where there is usually an accompanying – and often more dramatic – delay in the acquisition of the written language (p. 274), estimates of prevalence vary from 2% to as much as 15%. Delays range from a barely noticeable few months to one of several years. In some conditions, teenage children and young adults may still be using a kind of spoken language equivalent to that found in 1- or 2-year-olds.

In about a third of cases, the reason for the delayed language development is known. Mentally handicapped children, for example, display some of the most marked delays. In a study of 1,381 severely sub-normal children between the ages of 3 and 16, over 40% of the 16-year-olds were unable to use grammatical constructions; and 17½% had not even reached the one-word stage (§41) (W. Swann & P. Mittler, 1976). Other groups where the language delay is part of a more general problem include those who are deaf, psychologically disturbed, autistic, or physically handicapped. Accidents, strokes, and other incidents result in acquired language problems (p. 270) for a small number of children.

In the majority of cases, however, there is no clear physical reason for the language delay. The children have no relevant medical history, are of normal intelligence, and are not socially deprived or emotionally disturbed. Nonetheless, their language is well behind that of their peers. In several instances, there are accompanying difficulties of a cognitive or social kind – such as a general auditory imperception, poor memory, poor concentration, or a reluctance to cooperate with others. However, not all delayed children display such problems: for many, the language difficulty is the primary or only symptom. And even when other problems are present, it is never easy to determine whether one factor (such as memory) is the ‘cause’ of the language delay.

‘Aphasic’ children

These are the children who are sometimes called ‘developmentally aphasic’ (or ‘dysphasic’) – labels that are somewhat controversial. The terms derive from an analogy with the linguistic symptoms of people who have suffered brain damage (p. 270), but they have been criticized on the grounds that the developmental condition raises quite different issues. Here, there is no evident brain damage, and the associated problems are best defined in psychological, social, and educational terms, and not neurologically. It has also been argued that the linguistic symptoms are different: language delay, typically, displays few usages that fall outside the range of normal language development; aphasic disturbance, typically, contains a great deal of abnormal, ‘deviant’ construction.

As with normal language acquisition, developmental language handicap needs to be investigated in terms of both production and comprehension: the children are regularly referred to as having predominantly ‘expressive’ or ‘receptive’ problems (pp. 232, 265), and of course there are many ‘mixed’ cases. Within each category, also, the problems may be located under any of the headings recognized in models of language structure and use (§13). Phonological handicaps manifest themselves in such areas as poor rhythmical ability, the persistence of immature processes of sound formation, and difficulties in auditory discrimination. Grammatical handicaps are shown by a restricted range of sentence constructions, uncertain control of word order, and the avoidance of particular features in morphology and syntax (e.g. omitting word endings on nouns and verbs, or the verb *to be* in such sentences as *The man is happy*). Semantic handicaps are mainly noticeable in a limited vocabulary. And there are several kinds of pragmatic handicap (§21), whereby children fail to make use of norms of interaction appropriate to their age – for example, an inappropriate use of questions, or an inability to ‘keep to the point’.

Grammatical handicap

This 3½-year-old boy (C) had several phonological problems, as can be seen from his unintelligible utterances (marked as *syllables*), but his main difficulties were a failure to develop a normal grammatical system. His short sentences are more typical of a 1½- to 2-year-old. He also had some difficulty comprehending some of the therapist's (A) questions, and he hardly ever produced a sentence spontaneously.
A: What does the fire engine do?
C: *syllable*
A: Where does it go?

C: –
A: Hm?
C: *2 syllables*
A: Where does it go? Does it go to a fire?
C: Yes.
A: What does it do, when it gets to the fire?
C: Ladder.
A: There's a ladder, yes, and what does the ladder do?
C: Go – up.
A: Goes up, yes. And then, when the ladder's up, what do the men do?
C: Water – out.
A: Oh. And what does the water do?
C: *4 syllables* Stop – fire.

A: It stops the fire.
C: Yes.
A: Mhm. And what do the men do?
C: On ladder here.
A: On the ladder.
C: Yes.
A: What do they do on the ladder?
C: Go up.
A: They go up, yes. And when they get to the top what do they do?
C: –
A: Hm?
C: –
A: Do they jump off?
C: Yes. No. Come down. (D. Crystal *et al.*, 1976, p. 142.)

Pragmatic handicap

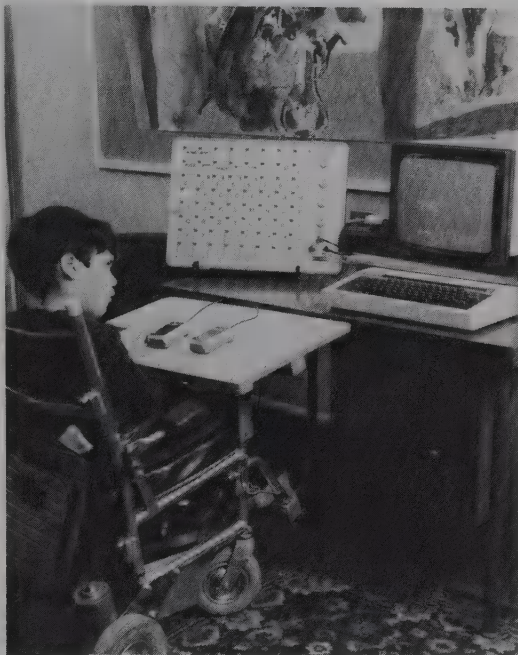
This 10-year-old boy (C) has no real problems with segmental phonology or grammar, and he has a fairly good vocabulary. His main handicap is an inability to organize and maintain a conversation; his answers are often said to be ‘bizarre’ and his thinking ‘confused’, as illustrated by the following extract from a conversation with his

speech therapist (A) about a forthcoming sports day at his school.
A: Which race would you like to be in?
C: I like to be in X (= *a town several miles from the school*) in the sports day.
A: In X?
C: Yes.
A: What do you mean?
C: I mean something.
A: Is there a sports day in

X?
C: There is not. There is a sports day in Y (= *his own school*).
A: Then what's X got to do with it?
C: Nothing.
A: Then why did you mention it?
C: Indeed I did mention it.
A: Why did you mention it?
C: I don't know. (M. McTear, 1985, p. 246.)

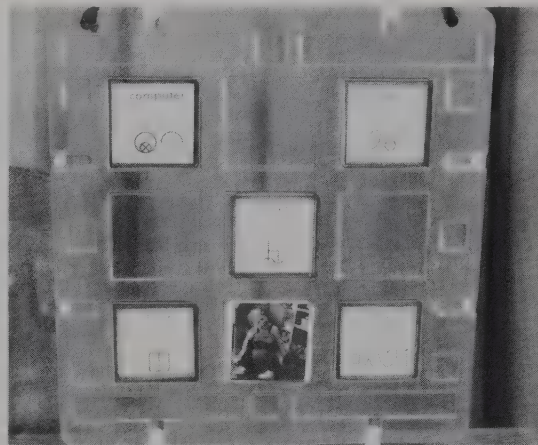
Possums

Several communication aids can be controlled by a simple switching arrangement, activated by a mobile part of the body, such as the arm, foot, eyebrow, chin, or mouth. The picture shows one of the scanner systems devised by Possum Controls Ltd.



ETRAN frames

An ETRAN eye-gaze chart for use by severely handicapped children. This is a two-movement system: the first eye movement indicates the group where the required element is to be found, and the second indicates its specific location within the group.



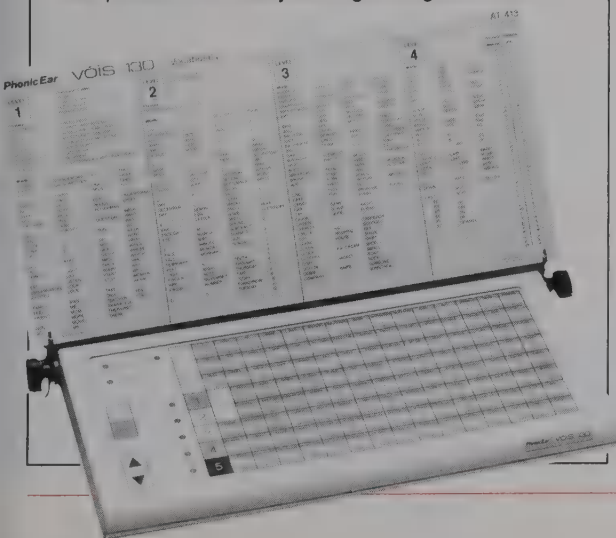
The Canon Communicator

This device is a very compact, portable communication aid that straps to the wrist. The messages are printed onto a paper strip.



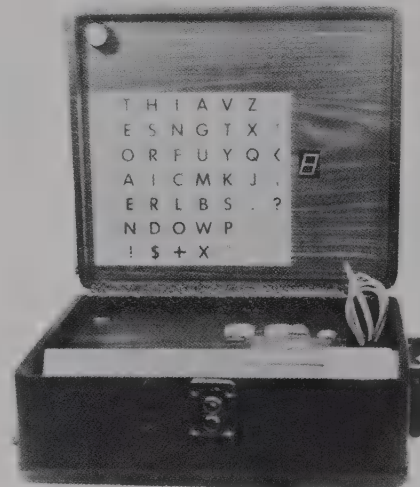
The Phonic Ear

In recent years, speech synthesis has added to the capabilities of communication boards. The first portable system in this field was the Phonic Mirror Handivoice, a 128-square direct selection aid introduced in 1978. The picture shows one of the new generation of Phonic Ear products, the Vois 130. The user can make four selections of preprogrammed words, or can select to communicate in phonemes (§28) or letters (thus allowing the compilation of an indefinitely large vocabulary). A few affixes and phrases are also built in to the system (e.g. *un-*, *-ing*, *My name is . . .*). The three-part system consists of a synthesizer, a speaker, and a touch-sensitive display board. There are also smaller versions, with fewer keys and a numeric keyboard, intended for use by people with poorer motor ability and higher cognitive skills.

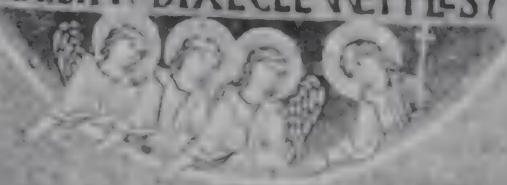


The Portaprinter

This was the first fully portable scanning aid. The device scans rows and columns, enabling the user to make a selection when an appropriate symbol is reached. The letters are arranged to form common patterns, with some repeated. The output is printed on a paper strip.



7EFAUAMOBKVIRE7VRREVIOLMPTICADCELV. 7OINDESOSAIT. 7ERIEVDEREIVIA
 7VRREVAEDFFICIAWAM. 7DIXECEVENEPPIKS7WVBIWOMB. 7ENIEGDESSCEDAM7COFVDA



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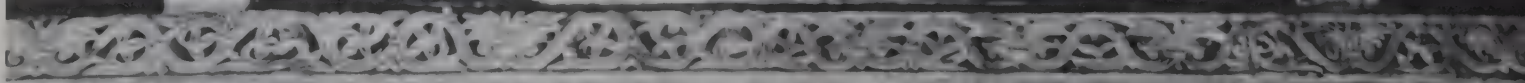
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PART IX

The languages of the world

Aakwo, Anus, Bella Coola, Blood, Bok, Deerie, Gold, Grawadunglung, I, Kukukuku, Lule, Marraawarree, Mimika, Ngeq, Nupe, Ok, Ron, Santa, Shiriana, Tiini, Tzotzil, U, Yangman, Zyrian ... The litany of the world's lesser-known languages reads like a mixture of mad invention and poetic inspiration. Over 22,000 names of languages, dialects and tribes have been collected, as part of the task of linguistic identification and classification. In the first sections of this part, we look at the problems which would face anyone embarking on this task. How many languages are there? How many speakers do these languages have? Such questions are not easy to answer, and it is important to know why.

The multiplicity of languages leads naturally to a consideration of the reasons for the diversity. What are the origins of human language? In the next sections, we review the ancient speculations concerning the origins of language, and the attempts by scholars in the 20th century to say something sensible about the matter, using techniques borrowed from palaeontology and other sciences.

Comparative philology is the branch of language study which first looked as far back as possible into the history of language. Out of this study comes the basic classification of the world's languages into families. We describe the way in which families of languages are set up, and the alternative methods of classification that have been devised. We then outline the languages of the world, family by family, beginning with Indo-European, and ending with some of the languages which do not fit neatly into any of the families – the so-called 'isolates'.

When we try to account for linguistic diversity, it is the phenomenon of language change which is the central fact to be identified and explained. The remaining sections therefore describe the many ways in which language can change, and discuss the various reasons which have been proposed to account for this process. Finally, we look at some special cases which illustrate the ways in which social forces can promote new language growth – the world's pidgins and creoles.

The Tower of Babel, 13th century, in the vaults of the Basilica di S. Marco, Venice.

47 How many languages?

There is no agreed total for the number of languages spoken in the world today. Most reference books give a figure of 4,000 to 5,000, but estimates have varied from 3,000 to 10,000. To see why there is such uncertainty, we need to consider the many problems facing those who wish to obtain accurate information, and also the reasons (linguistic, historical and cultural) which preclude a simple answer to the question 'What counts as a language?'

Discoveries

An obvious reason for the uncertainty over numbers is that even today new peoples, and therefore languages, continue to be discovered in the unexplored regions of the world – especially in the Amazon basin (as the Transamazonica road system is extended), Central Africa, and New Guinea. However, only a few languages are likely to be encountered in this way; and it is much more usual to find parts of the world where the people are known, but the languages spoken in their area are not. There are in fact many countries where linguistic surveys are incomplete or have not even begun. It is often assumed that the people speak one of the known languages in their area; or that they speak a dialect of one of these languages; but upon investigation their speech is found to be so different that it has to be recognized as a separate language.

ALIVE OR DEAD?

Against this steady increase in the world language total, there is a major factor which decreases it. For a language to count as 'living', there obviously have to be native speakers alive who use it. But in many parts of the world, it is by no means an easy matter to determine whether native speakers are still living – or, if they are, whether they still use their mother tongue regularly.

The speed with which a language can die in the smaller communities of the world is truly remarkable. The Amazonian explorations led to the discovery of many new languages, but they also led to their rapid death, as the Indians became swallowed up by the dominant western culture. Within a generation, all traces of a language can disappear. Political decisions force tribes to move or be split up. Economic prospects attract younger members away from the villages. New diseases take their toll. In 1962, Trumai, spoken in a single village on the lower Culene River in Venezuela, was reduced by an influenza epidemic to a population of fewer than 10 speakers. In the 19th century,

there were thought to be over 1,000 Indian languages in Brazil; today, there are fewer than 200.

LANGUAGE – OR DIALECT?

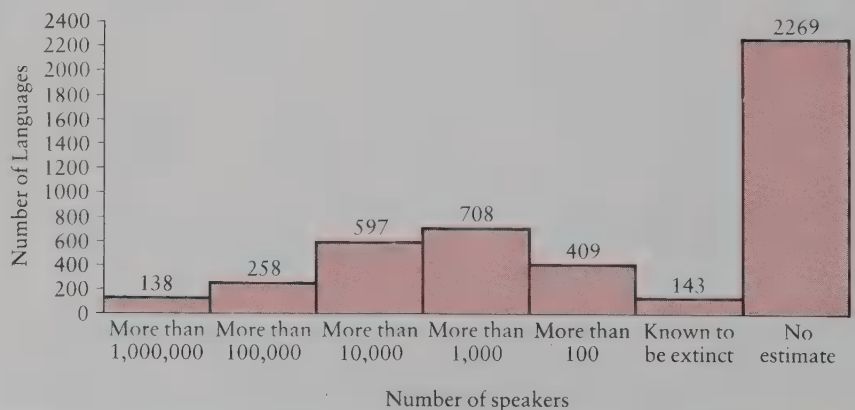
For most languages, the distinction between language and dialect is fairly clear-cut (p. 25). In the case of English, for example, even though regional vocabulary and local differences of pronunciation can make communication difficult at times, no-one disputes the existence of an underlying linguistic unity that all speakers identify as English, and which is confirmed by the use of a standard written language and a common literary heritage. But in hundreds of cases, considerations of this kind are in conflict with each other, or do not clearly apply.

The best-known conflicts occur when the criteria of national identity and mutual intelligibility do not coincide. The most common situation is one where two spoken varieties are mutually intelligible, but for political and historical reasons, they are referred to as different languages. For example, using just the intelligibility criterion, there are really only two Scandinavian languages: Continental (Swedish, Danish, and two standard varieties of Norwegian) and Insular (Icelandic, Faeroese). Swedes, Danes, and Norwegians can understand each other's speech, to a greater or lesser extent. But as soon as non-linguistic criteria are taken into account, we have to recognize at least five languages. To be Norwegian is to speak Norwegian; to be Danish is to speak Danish; and so on. In such cases, political and linguistic identity merge. And there are many other similar cases where political, ethnic, religious, literary, or other identities force a division where linguistically there is none – Hindi vs Urdu, Bengali vs Assamese, Flemish vs Dutch, Serbian vs Croatian, Twi vs Fante, Xhosa vs Zulu.

The opposite situation is also quite common. Here we find cases where spoken varieties are mutually *unintelligible*, but for political, historical

Number of speakers

Number of speakers of the world's languages, based on Voegelin and Voegelin's *Classification and Index of the World's Languages*. Languages which they classify as of uncertain existence (marked by a question-mark, in their book) have been excluded. In about three-quarters of the cases where no numerical estimates are available, the numbers of speakers are extremely small. The total number of languages (including extinct ones) is 4,522.



or cultural reasons they are nonetheless called varieties of the same language. The three main 'dialects' of Lapp fall into this category, for example. Chinese is a case where linguistic criteria alone are in conflict with each other. From the viewpoint of the spoken language, the many hundreds of dialects in China can be grouped into eight main types (p. 312), which are mutually unintelligible to various degrees. But speakers of all these dialects share the same written language tradition, and those who have learned the system of Chinese characters are able to communicate with each other. Despite the linguistic differences, therefore, Chinese is considered by its speakers to be a single language.

In the above cases, the languages in question have been well studied, and many speakers are involved. When languages have been little studied, or have very few speakers, it is much more difficult for linguists to interpret all the factors correctly. For example, when two languages are in close proximity, they often borrow words from each other – sometimes even sounds and grammar. On first acquaintance, therefore, the languages may seem more alike than they really are, and analysts may believe them to be dialects of the same language. This has proved to be a real problem in such parts of the world as South America, Africa, and South-east Asia, where whole groups of languages may be affected in this way. Similarly, decisions about how to analyse all cases of dialect continua (p. 25) will affect our final total of languages.

LANGUAGE NAMES

A big problem, in working on lesser-known language areas, is deciding what credence to give to a language name. This issue does not arise when discussing the main languages of the world, which are usually known by a single name that translates neatly into other languages – as in the case of *Deutsch*, *German*, *Tedesco*, *Nemetskiy*, and *Allemand*, for instance. But in many cases the situation is not so straight-forward.

At one extreme, many communities have no specific name for their language. The name they use is the same as a common word or phrase in the language, such as the word for 'our language' or 'our people'. This is often so in Africa (where the name *Bantu*, which is given to a whole family of languages, means simply 'people'), and also in Meso- and South America. In the latter areas, we find such examples as *Carib* = 'people', *Tapuya* = 'enemy', and *Macu* = 'forest tribes'. Some tribes were called *chichimecatl* (= 'lineage of dogs'), *chontalli* (= 'foreigners') or *popoloca* (= 'barbarians'), and these labels led to the modern language names Chichimeca, Chontal, and Popoloca. Frequently, the name is the same as a river on which a tribe has been observed to live, as with the many groups of Land Dayak, in the West Indonesian family. In several Australian aboriginal languages, the name for the language is the word for 'this': for example, the nine languages within the

Yuulngu family are known as *Dhuwala*, *Dhuwal*, *Dhiyakuy*, *Dhangu*, *Dhay'yi*, *Djangu*, *Djinang*, *Djining*, and *Nhangu*. Asking native speakers what language they speak is of little practical help, in such circumstances, if they only answer 'this'!

At the other extreme, it is quite common to find a community whose language has too many names. A South American Indian tribe, for instance, may have several names. A tribe, first of all, will have a name for itself (see above). But adjacent tribes may give the people a different name (e.g. *Puelche* means 'people from the east' in Araucanian). The Spanish or Portuguese explorers may have given them a third name – perhaps a characteristic of their appearance (e.g. *Coronado* means 'crowned' in Portuguese). More recently, anthropologists and other investigators may have used another name, often based on the geographical location of the tribe (e.g. 'up-river' vs 'down-river'). And lastly, the same language may be spelled differently in Spanish, Portuguese, English, or in its own writing system (if one has been devised). For example, Machacali, spoken in Minas Gerais, Brazil, is sometimes spelled Maxakali, sometimes Maxakari. When the initial letters vary (as when the Peruvian language Candoshi is spelled Kandoshi), indexing is especially awkward.

There are further complications. Sometimes, the same name is applied to two different languages, as when *mexicano* is used in Mexico to refer to Spanish (otherwise known as *español* or *castellano*) and to the main Indian language (*nahuatl*). Sometimes, speakers from different backgrounds may disagree about whether their ways of speaking should be related at all. Speakers of Luri, spoken in south-west Iran, say that their speech is a dialect of Persian; speakers of Persian disagree. Asking the native speakers is evidently no solution, for their perceptions will be governed by non-linguistic considerations, especially of a religious, nationalistic, or socioeconomic kind.

TO CONCLUDE

When all these factors are taken into account, it is plain that there will be no single answer to the question 'How many languages?' In some parts of the world, there has been a tendency to over-estimate, by taking names too literally and not grouping dialects together sufficiently – the Malayo-Polynesian languages are often cited in this connection. In other places, the totals are likely to have been underestimated – Indonesian languages, for example. There are over 20,000 language or dialect names listed in the Voegelins' great *Classification and Index of the World's Languages* (1977), and these have been grouped into around 4,500 living languages. Since the publication of that work, the total must have become somewhat less, in view of the trend indicated in the table of population estimates on p. 284; but it seems unlikely that it should be less than 4,000.

48 How many speakers?

Estimating the number of speakers of a living language is, if anything, more complicated than estimating the number of languages. Any language which continues to be spoken in an area counts as 'one', in our language total. But the number of its speakers may vary wildly, from one decade to the next. A contemporary example is Vietnamese, where the movements of population since the Vietnam War have led to dramatic differences, in both the totals of speakers, and the places they are to be found. An even more recent example is the massive changes that have affected people in Ethiopia and the surrounding regions during the famine of the early 1980s. The combined effects of large-scale loss of life, refugee migrations, and local government relocation policies mean that all estimates are now seriously out of date. It will be many years before accurate census information becomes available, and in the meantime, numerical data from the area must be viewed with extreme caution.

Trends in the world demographic situation will obviously be a major factor in any speaker estimates. The world population is currently increasing at a rate of nearly 2% per annum. In mid 1987, the number of people was estimated to be over 5,000 million. A UN projection to the year 2000 indicates a world population of over 6,000 million. In these circumstances, any estimates of speakers, especially of the languages of the less-developed countries, are going to be well out of date as soon as they are printed. In the case of the many languages spoken within the Indian sub-continent, most of the available estimates were made in the 1970s; but as the population of India increased by 25% between 1971 and 1981, the figures need to be interpreted with a great deal of caution. All the estimates in Appendix III are subject to this proviso.

Even if a population is stable, it is rarely easy to obtain accurate information about number of speakers. This is obviously a problem in the less accessible parts of the world. Less obviously, it is a problem which can affect any country, especially where minority groups are involved. The information might be obtained from a census, but not all census forms contain questions about linguistic background. Some countries do not think the matter important; others would like to know, but find it difficult to phrase the questions in such a way that they do not offend minority groups.

It is in any case difficult to use a questionnaire to establish the facts of language use (p. 26). In many of the more multilingual communities in the world, it is not even easy to answer the simple question, 'What is your mother tongue?' Nor is it easy to allow for such diverse cases as might be found

in a British immigrant family from Pakistan, where in addition to their mother tongue, the mother's English might be poor, the father's moderate, and the teenage children's good, or even fluent. How does one cater for the situation in Scotland, where there is enormous variation in the fluency with which people command Gaelic? How does one cater for the situation in countries where English is an official language (e.g. India, Nigeria), but the population has achieved various levels of proficiency? How does one allow for people who have only a reading knowledge of a language, or who use a language only for special purposes (§63)? There are innumerable complications of this kind facing the linguistic demographer.

Moreover, how trustworthy is the information about language ability obtained through a census or other official report? There are many parts of the world where language estimates may be

An extract from the 1986 Canadian census form. The two language questions focus on speaking, but listening comprehension is implicit in the way question 19 is phrased. The Census Guide that is sent out along with the form stresses the issue of ability: 'Do not report French or English learned at school unless you can conduct a conversation of some length on various topics in that language.'

By contrast, the 1981 census form used in England had no language question at all: respondents were asked to state their country of birth only.

Statistics Canada / Statistique Canada

Canada



1986 Census of Canada

Please complete your questionnaire on
Tuesday, June 3, 1986

Statistique Canada / Statistics Canada

Canada



Recensement du Canada de 1986

À remplir le mardi 3 juin 1986

18. Quelle langue parlez-vous à la maison maintenant?
(If more than one language, which language do you speak most often?) (Consultez le Guide)

- 43 ☐ Anglais
44 ☐ Français
45 ☐ Italien
46 ☐ Chinois
47 ☐ Allemand

48 ☐

18. What language do you **yourself** speak at home now?
(If more than one language, which language do you speak most often?) (See Guide)

- ☐ English
☐ French
☐ Italian
☐ Chinese
☐ German

☐ Other (specify)

19. Connaissez-vous l'anglais ou le français bien enough to conduct a conversation? (Consultez le Guide)

- Cochez une seule case
49 ☐ L'anglais seulement
50 ☐ Le français seulement
51 ☐ L'anglais et le français
52 ☐ Ni l'anglais ni le français

19. Can you speak English or French well enough to conduct a conversation? (See Guide)

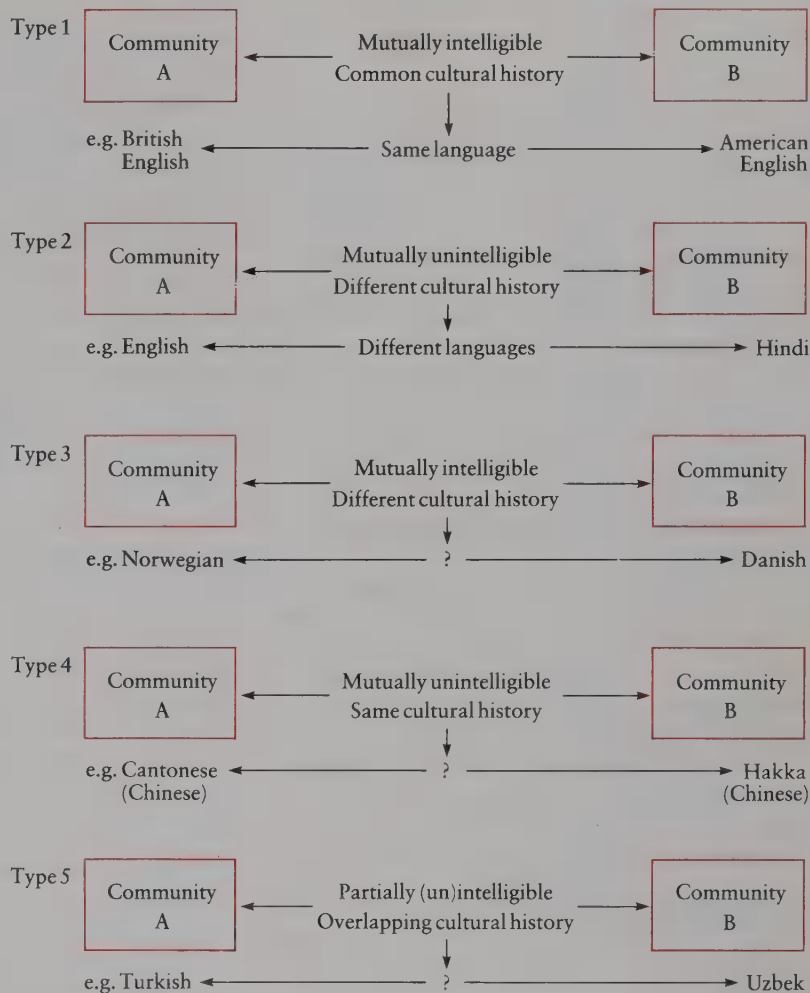
- Mark one box only
☐ English only
☐ French only
☐ Both English and French
☐ Neither English nor French

inflated, because people who may have relatively little command of a language claim they speak it, in order to support the cultural or political cause with which the language is associated (e.g. Breton, Welsh). Equally, there are many places where it is unspoken government policy to underestimate the number of speakers of a minority language, in order to play down the political significance of that section of the community (e.g. Breton, Xhosa). Official figures, in such circumstances, should not be taken too literally.

Uncertainty over the name of a language does not help, and this is very common (p. 285). Often, the name of a dialect, the name of a language, and the name of a language family become confused – as if someone were to say ‘He doesn’t speak English; he speaks Cockney’, or ‘... he speaks Germanic’. In a little-known area of the world, the reality of the situation may not be at all obvious. For example, Kru, Chin, Kachin, Dayak, Teso, Nuer, and Mongo-Nkundu are names that have been used both for single languages and for whole groups of languages, and speaker numbers are dramatically altered depending on which perspective one adopts. Mandara is a Chadic name which is sometimes used for a single language and sometimes for a group of related languages. If the former interpretation is taken, the speakers number some 30–40,000; if the latter, the total is nearly 400,000.

Approximations and uncertainties are thus the norm in language estimates, especially for those languages which are rapidly expanding, and those which are in a state of serious decline. In Appendix III, where speaker estimates are given for 1,000 languages, it has often not been possible to choose between conflicting totals; and in these cases, both upper and lower totals are listed.

Five types of relationship between dialect and language



Indo-European	2,000,000,000
Sino-Tibetan	1,040,000,000
Niger-Congo	260,000,000
Afro-Asiatic	230,000,000
Austronesian	200,000,000
Dravidian	140,000,000
Japanese	120,000,000
Altaic	90,000,000
Austro-Asiatic	60,000,000
Korean	50,000,000
Tai	50,000,000
Nilo-Saharan	30,000,000
Amerindian	
(North, Central, South America)	25,000,000
Uralic	23,000,000
Miao-Yao	7,000,000
Caucasian	6,000,000
Indo-Pacific	3,000,000
Khoisan	50,000
Australian aborigine	50,000
Palaeosiberian	25,000

Family statistics Estimated numbers of speakers in the main language families of the world in the early 1980s, when the world population was well over 4,000 million.

The top twenty languages

Mother-tongue speakers	Official language populations
1. Chinese (1,000)	1. English (1,400)
2. English (350)	2. Chinese (1,000)
3. Spanish (250)	3. Hindi (700)
4. Hindi (200)	4. Spanish (280)
5. Arabic (150)	5. Russian (270)
6. Bengali (150)	6. French (220)
7. Russian (150)	7. Arabic (170)
8. Portuguese (135)	8. Portuguese (160)
9. Japanese (120)	9. Malay (160)
10. German (100)	10. Bengali (150)
11. French (70)	11. Japanese (120)
12. Panjabi (70)	12. German (100)
13. Javanese (65)	13. Urdu (85)
14. Bihari (65)	14. Italian (60)
15. Italian (60)	15. Korean (60)
16. Korean (60)	16. Vietnamese (60)
17. Telugu (55)	17. Persian (55)
18. Tamil (55)	18. Tagalog (50)
19. Marathi (50)	19. Thai (50)
20. Vietnamese (50)	20. Turkish (50)

Speaker estimates for the world's top 20 languages (given in millions).

The first column lists the languages on the basis of the number of mother-tongue (first-language) speakers they have. When conflicting estimates have been given (cf. Appendix III), the higher one has been used here. The second column gives population estimates for those countries where the language has official status. Note that the totals do not always coincide, since some major languages (such as Javanese and Telugu) are not official languages of whole countries, and some languages (such as Malay and Tagalog) are official languages of multilingual countries. The second-column figures are often over-estimates, as by no means everyone in the countries where a second language is recognized (e.g. India) will be fluent in it; on the other hand, the figures are of some interest as indicators of the way languages are moving.

49 The origins of language

For centuries, people have speculated over the origins of human language. What is the world's oldest spoken language? Have all languages developed from a single source? What was the language spoken in the Garden of Eden? How did words come to be, in the very beginning? These questions are fascinating, and have provoked experiments and discussion whose history dates back 3,000 years. The irony is that the quest is a fruitless one. Each generation asks the same questions, and reaches the same impasse – the absence of any evidence relating to the matter, given the vast, distant time-scale involved. We have no direct knowledge of the origins and early development of language, nor is it easy to imagine how such knowledge might ever be obtained. We can only speculate, arrive at our own conclusions, and remain dissatisfied. Indeed, so dissatisfied was one group of 19th-century scholars that they took drastic action: in 1866, the Linguistic Society of Paris published an edict banning discussion of the topic at their meetings. But the theorizing continues, and these days there is a resurgence of interest, as new archaeological finds and modern techniques of analysis provide fresh hints of what may once have been.

Early 'experiments'

The lengths to which some people have gone in order to throw light on the question are truly remarkable – if the accounts are to be believed. One of the best-known reports concerns the Egyptian king, Psamtik I, who reigned in the 7th century BC. According to the Greek historian, Herodotus, Psamtik wished to find out which of all the peoples of the world was the most ancient. His way of determining this was to discover the oldest language which, he thought, would be evidence of the oldest race. This is how Herodotus tells the story.

He gave two new-born babies of ordinary men to a shepherd, to nurture among his flocks after this manner. He charged him that none should utter any speech before them, but they should live by themselves in a solitary habitation; and at the due hours the shepherd should bring goats to them, and give them their fill of milk, and perform the other things needful. Thus Psammetichus did and commanded because he desired, when the babes should be past meaningless whimperings, to hear what tongue they would utter first.

And these things came to pass; for after the shepherd had wrought thus for a space of two years, when he opened the door and entered in, both the babes fell down before him, and cried *becos*, and stretched out their hands. Now when the shepherd heard it for the first time, he held his peace; but when this word was oftentimes spoken as he came to care for them, then he told

his lord, and brought the children into his presence when he commanded. And when Psammetichus had also heard it, he enquired which nation called anything *becos*; and enquiring, he found that the Phrygians call bread by this name. Thus the Egyptians, guided by this sign, confessed that the Phrygians were elder than they. That so it came to pass I heard of the priests of Hephaestus in Memphis.

Phrygian is now extinct, but at the time it was spoken in an area corresponding to the north-western part of modern Turkey.

Psamtik's conclusion was wrong, for we know from philological studies that Phrygian is but one of several languages which had developed in that period of history. So why did the children say *becos*? Doubtless they had begun to babble naturally and repetitively to each other, in a similar way to twins (see p. 247), and this was one of the 'snatches' that the shepherd recognized. Some commentators have even suggested that they were imitating the sound of the goats!

Whether the Psamtik experiment ever took place is open to question. Possibly the origins of the story lie in a fiction invented by someone to discredit the Egyptians. But whatever the reality, the initiative credited to Psamtik has apparently had its parallels in several later times and places. At least two similar experiments have been reported – though again, there are doubts as to their authenticity (see also p. 228).



Psamtik I of Egypt (663–610 BC).

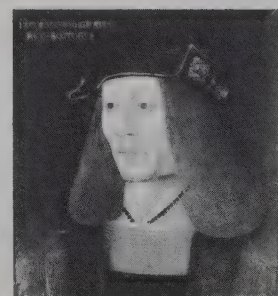
The Holy Roman Emperor, Frederick II of Hohenstaufen (1194–1250) also carried out an experiment with children. According to the chronicle of a Franciscan friar, Brother Salimbene:

He made linguistic experiments on the vile bodies of hapless infants, bidding foster-mothers and nurses to suckle and bathe and wash the children, but in no wise to prattle or speak with them; for he would have learnt whether they would speak the Hebrew language (which had been the first), or Greek, or Latin, or Arabic, or perchance the tongue of their parents of whom they had been born. But he laboured in vain, for the children could not live without clappings of the hands, and gestures, and gladness of countenance, and blandishments.



James IV of Scotland (1473–1513) is said to have carried out a similar experiment. The account given in the History of Robert Lindsay of Pitscottie runs as follows:

The king took a dumb woman and put her in Inchkieth, and gave her two young children in company with her, and furnished them of all necessary things pertaining to their nourishment, that is to say food, drink, fire and candle, clothes, with all other kinds of necessities which is required to man or woman, desiring the effect hereof to come to know what language the children would speak when they came to lawful age. Some say they spoke good Hebrew, but as to myself I know not but by hearsay.



Five theories of the origins of language

The Danish linguist, Otto Jespersen (1860–1943), grouped commonly held theories about the origins of language into four types, and added a fifth of his own. They are often referred to by nicknames.

The 'bow-wow' theory

Speech arose through people imitating the sounds of the environment, especially animal calls. The main evidence would be the use of onomatopoeic words (p. 174), but as few of these exist in a language, and as languages vary so much in the way they represent

natural sounds, the theory has little support.

The 'pooh-pooh' theory

Speech arose through people making instinctive sounds, caused by pain, anger, or other emotions. The main evidence would be the universal use of sounds as interjections (p. 91), but no language contains many of these, and in any case the clicks, intakes of breath, and other noises which are used in this way bear little relationship to the vowels and consonants found in phonology. The spelling is never a satisfactory guide.

The 'ding-dong' theory

Speech arose because people reacted to the stimuli in the world around them, and spontaneously produced sounds ('oral gestures') which in some way reflected or were in harmony with the environment. The main evidence would be the universal use of sounds for words of a certain meaning, but apart from a few cases of apparent sound symbolism (p. 174), the theory has nothing to commend it. Several fanciful examples have nonetheless been cited – *mama* is supposed to reflect the movement of the lips as the mouth

approaches the breast, and *bye-bye* or *ta-ta* show the lips and tongue respectively 'waving' good-bye.

The 'yo-he-ho' theory

Speech arose because, as people worked together, their physical efforts produced communal, rhythmical grunts, which in due course developed into chants, and thus language. The main evidence would be the universal use of prosodic features (p. 169), especially of rhythm; but the gap between this kind of expression and what we find in language as a whole is so immense that an expla-

nation for the latter would still have to be found.

The 'la-la' theory

Jespersen himself felt that, if any single factor was going to initiate human language, it would arise from the romantic side of life – sounds associated with love, play, poetic feeling, perhaps even song. But again, the gap between the emotional and the rational aspects of speech expression would still have to be accounted for.

CHILDREN OF THE WILD

For several hundred years, cases have been reported of children who have been reared in the wild by animals or kept isolated from all social contact. These cases are listed below, adapted from Lucien Malson's *Wolf Children* (1972). Sometimes the information is based on little more than a brief press report. At other times, the cases have been studied in detail – in particular, the stories of Victor, Kaspar Hauser, Amala and Kamala, and Genie.

The ideas of Psamtik I receive no support at all from these children. Only some of the reports say anything about the children's language abilities, and the picture is quite clear: none could speak at all, and most had no comprehension of speech.

Most attempts to teach them to speak failed. The cases of 1694, 1731, and 1767 (Fraumark) are said to have learned some speech, and Tomko of Hungary (also 1767) is reputed to have learned both Slovak and German. The 1717 girl and the 19th-century Bankipur child are both said to have learned some sign language. But of the well-attested cases, the results are not impressive. Victor, the 'Wild Boy of Aveyron', remained unable to speak, though he could understand and read to some extent. Kamala of Midnapore learned some speech and sign. The two most successful cases on record are Kaspar Hauser, whose speech became quite advanced, and Genie (§46), who learned a few words immediately after discovery, and whose subsequent progress in speech was considerable.

Recorded cases of child isolation

	Date of discovery	Age at discovery		Date of discovery	Age at discovery
Wolf-child of Hesse	1344	7	Wolf-child of Sekandra	1872	6
Wolf-child of Wetteravia	1344	12	Child of Sekandra	1874	10
Bear-child of Lithuania	1661	12	Wolf-child of Kronstadt	?	23
Sheep-child of Ireland	1672	16	Child of Lucknow	1876	?
Calf-child of Bamberg	c1680	?	Child of Jalpaiguri	1892	8
Bear-child of Lithuania	1694	10	Child of Batsipur	1893	14
Bear-child of Lithuania	?	12	Child of Sultanpur	1895	?
Kidnapped Dutch girl	1717	19	Snow-hen of Justedal	?	12
Two boys of Pyrenees	1719	?	Amala of Midnapore	1920	2
Peter of Hanover	1724	13	Kamala of Midnapore	1920	8
Girl from Sogny	1731	10	Leopard-child of India	1920	?
Jean of Liège	?	21	Wolf-child of Maiwana	1927	?
Tomko of Hungary	1767	?	Wolf-child of Jhansi	1933	?
Bear-girl of Fraumark	1767	18	Leopard-child of Dihungi	?	8
Victor of Aveyron	1799	11	Child of Casamance	1930s	16
Kaspar Hauser of Nuremberg	1828	17	Assicia of Liberia	1930s	?
Sow-girl of Salzburg	?	22	Confined child of Pennsylvania	1938	6
Child of Husanpur	1843	?	Confined child of Ohio	1940	?
Child of Sultanpur	1843	?	Gazelle-child of Syria	1946	?
Child of Sultanpur	1848	?	Child of New Delhi	1954	12
Child of Chupra	?	?	Gazelle-child of Mauritania	1960	?
Child of Bankipur	?	?	Ape-child of Teheran	1961	14
Pig-boy of Holland	?	?	Genie, U.S.A.	1970	13½
Wolf-child of Holland	?	?			

Scientific approaches

By contrast with the informal discussion and speculation of preceding centuries, serious attempts have been made in recent years to see if modern science can throw any light on the question of the origins of language. The study is sometimes called *glossogenetics* – the study of the formation and development of human language, in both the child and the race. The main sciences involved are biology (especially sociobiology), anthropology, psychology, semiotics (p. 399), neurology (for the study of brain evolution), primatology, and linguistics.

THE EVIDENCE FROM PALAEOONTOLOGY

Might it be possible to deduce, from the fossil record of early man, the point at which speech began? The matter has been well investigated, but the results are not conclusive.

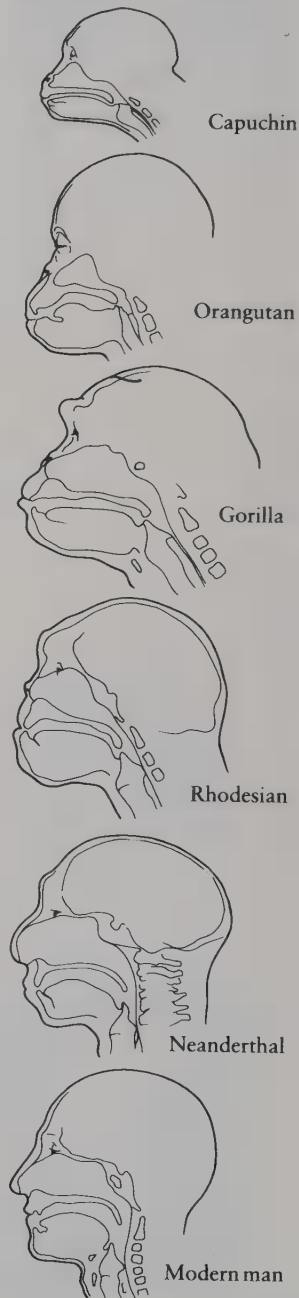
It is possible to make plaster casts of the bony cavities within the skulls which have been found. It can be shown, for example, that both Neanderthal man and Cro-Magnon man (pre-30,000 BC) had similar brain sizes to that of modern man. But this information is of limited value. The relative size and shape of the brain can be established, but none of the more relevant detail (such as the orientation of the various furrows, or sulci (§45)). In any case, there is no direct correlation between the size of a brain and the use of language: in modern man, language is found in people with small brains, such as nanocephalic dwarfs, or children who have had large areas of brain removed – and some gorillas have a brain size close to these. It is plausible that an increase in the number of brain cells increases intellectual or linguistic capacity, but no correlation has been established.

Another way of looking at the problem is to ask whether primitive man had the physiological capacity to speak, and this has led to a great deal of interesting research. The problem is that only the shape of the jaws and the oral cavity are preserved in fossils; there is no direct information about the size and shape of the soft tissues of tongue, pharynx or larynx, nor about the ability to move these organs (§22). Most of the reasoning has therefore had to be based on reconstruction using plaster casts, and comparison with the physiology and vocalization of present-day primates and human infants.

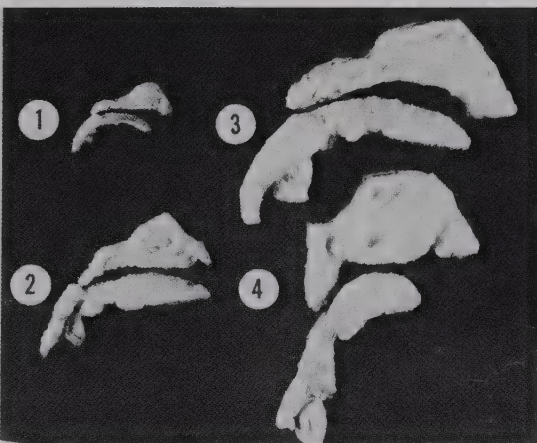
It is possible to say with some conviction, using this kind of argument, that the older hominids did not possess speech; but the position of the more recent remains is unclear. It is unlikely that *Australopithecus* (who appeared around 4–5 million BC) could speak, but the evidence is ambiguous for Neanderthal man (70–35,000 BC). Linguists and anatomists have compared the reconstructed vocal tract of a Neanderthal skull with those of a newborn and an adult modern man. The newborn and Neanderthal vocal tracts are remarkably similar. Neanderthal man would have been able to utter only a few front consonant-like sounds and centralized vowel-like sounds, and may have been unable to make a contrast between nasal and oral sounds. This is well below what is found in the phonologies of the world's languages today (p. 165). It would have been possible to construct a linguistic code out of these limited sounds, but it would have required a level of intellectual ability apparently lacking at that evolutionary stage. On the other hand, these phonetic abilities are far ahead of modern primates. It has thus been concluded that Neanderthal man represents an intermediate stage in the gradual evolution of speech. Cro-Magnon man (35,000 BC), by contrast, had a skeletal structure much more like that of modern man.

Primate vocal tracts

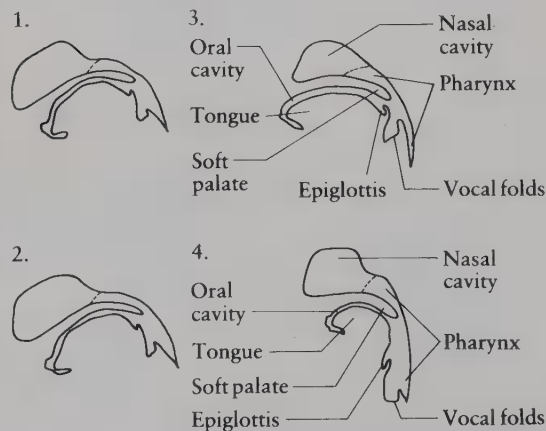
The vocal tracts of primates are very different from that of modern man. They have long, flat, thin tongues, which have less room to move. The larynx is higher, and there is little sign of a pharynx. There is no evidence of ability to change the configurations of the vocal tract, to produce the range of sounds required in speech. In the course of evolution, posture becomes erect, and the head moves forward. The larynx descends and a long, flexible pharyngeal cavity develops. (From V. E. Negus, 1949.)



Casts of the nasal, oral, and pharyngeal air passages of (1) a newborn baby, (2) an adult chimpanzee, (3) a Neanderthal reconstruction, and (4) an adult man. The differences in



dimensions can be clearly seen (below right) when the four tracts are drawn so that they are nearly equal in size. (After P. Lieberman, 1972.)



HOMO LOQUENS

It would seem that the human vocal tract evolved from a non-human primate form to enable fast and efficient communication to take place. Speech is not merely the incidental result of a system designed for breathing and eating. The changes that took place in the larynx, pharynx, and mouth came about at the cost of less efficient breathing, chewing, and swallowing. Modern man can choke from food lodged in the larynx; monkeys cannot. The survival value of speech must be considerable to compensate for such deficiencies. The human being, in short, seems to have evolved as a speaking animal – *homo loquens*.

Some hominids had a human-like vocal tract as far back as 200,000 BC, but they probably did not have a sufficiently developed nervous system to control it. There is general agreement on a time-scale from 100,000 to 20,000 BC for the development of speech. If the Neanderthal evidence is accepted, this scale narrows to 50–30,000 BC, in the latter part of the Upper Palaeolithic period.

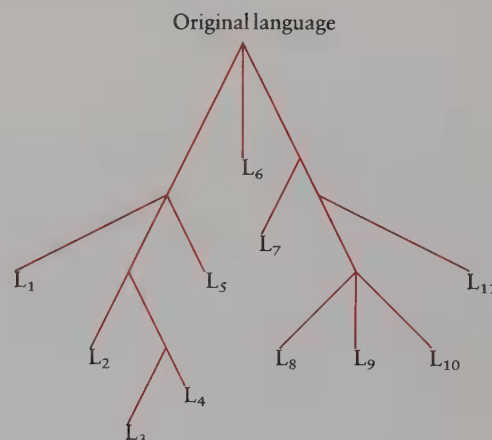
This is the conclusion regarding speech. But the lack of physical similarities with modern man does not prove that there was no language in an abstract sense, or other modes of communication. At the time indicated above, cultural development was relatively advanced, and there must have been some efficient way of transmitting information about skills from one generation to the next. Any degree of social interdependence – as found in tribal grouping, religious activity, or group hunting techniques – would seem to require a communication system. Cave drawings of the period also suggest the existence of an intellectual capability such as would be required for language.

An elaborate gesture system is one possibility. The early development of language may well have been assisted by some kind of signing, which would have been the simplest way of communicating basic meanings – such as how to use tools. Hands were no longer necessary for locomotion, so they could be used for other activities. Perhaps primitive people who were skilful in using signs stood a better chance of survival. Natural selection could then have led to the development of the intellectual faculties prerequisite for speech.

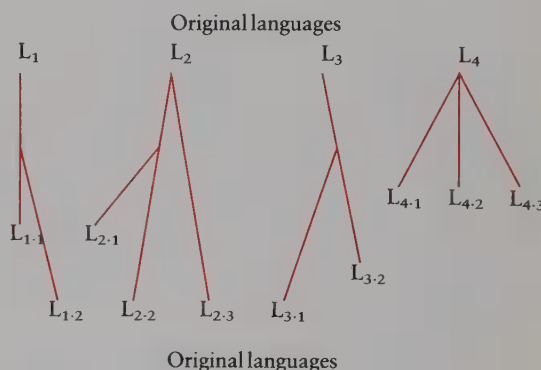
Learning to use tools, and to pass the skills on, would be most efficiently done through language. It has even been suggested that learning to use tools and learning language are interrelated skills. They are localized in the same general area of the brain (§45); and both tool using and gesture require sophisticated use of the hands. On the other hand, some non-human primates can use tools, and it is unlikely that the hands could have been used for two such different purposes for long. However, in an indirect way, tools could have promoted the development of speech. Sounds made at the same time as the gestures might have come to be associated with various activities. The idea has been proposed that, as tools came to be used for more

Was there ever an original language?

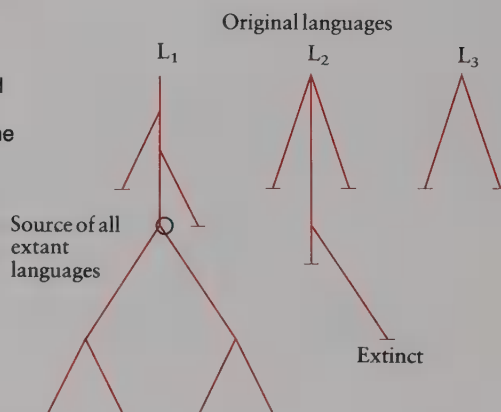
Right: The view that all languages have diverged from a common source, the result of cultural evolution or divine intervention, is known as *monogenesis*. The existence of differences between languages is then explained as a result of people moving apart, in waves of migration around the world. In this view, language universals (§14) would be interpreted as evidence of common origin.



Centre: The opposite view, that language emerged more or less simultaneously in several places, is known as *polygenesis*. Language universals, and other similarities between languages, are then explained by pointing to the similar constraints which must have operated upon the early speakers (in terms of both their physiology and their environment), and by the likelihood that, as groups came into contact, their languages would influence each other – a process known as *convergence*.



Bottom: There is also a third possibility, given the vast time-scale involved. All of the languages that now exist may indeed have diverged from a common source, but this may have been just one line of descent from an earlier era when several independent languages emerged.



advanced purposes, food would be stored, so that there would be intervals between meals, and thus more time available for the mouth to be put to other uses – such as the development of spoken language.

We can only speculate about the link between oral and gestural language. Similarly, the gap between human language and the communication systems of the nearest primates remains vast, and there is no sign of a language-like increase in communicative skills as one moves from lower to higher mammals. Human language seems to have emerged within a relatively short space of time, perhaps as recently as 30,000 years ago. But that still leaves a gap of over 20,000 years before the first unequivocal evidence of written language (p. 196).

50 Families of languages

The first scientific attempts to discover the history of the world's languages were made at the end of the 18th century. Scholars began to compare groups of languages in a systematic and detailed way, to see whether there were correspondences between them. If these could be demonstrated, it could be assumed that the languages were related – in other words, that they developed from a common source, even though this might no longer exist.

Evidence of a common origin for groups of languages was readily available in Europe, in that French, Spanish, Italian, and other Romance languages (p. 301) were clearly descended from Latin – which in this case is known to have existed. The same reasoning was applied to larger groups of languages, and by the beginning of the 19th century, there was convincing evidence to support the hypothesis that there was once a language from which many of the languages of Eurasia have derived. This proto-language came to be called Proto-Indo-European (p. 296). Very quickly, other groups of languages were examined using the same techniques.

The main metaphor that is used to explain the historical relationships is that of the language *family*, or *family tree*. Within the Romance family, Latin is the 'parent' language, and French, Spanish, etc. are 'daughter' languages; French would then be called a 'sister' language to Spanish and the others. The same approach is used with larger groups. Within the Indo-European family, Proto-Indo-European is the parent language, and Latin, Greek, Sanskrit, and others are the daughter languages. In a large family, it will be necessary to distinguish various 'branches', each of which may contain several languages, or 'sub-families' of languages.

This way of talking must not be taken too literally. A 'parent' language does not live on after a 'daughter' language is 'born', nor do languages suddenly appear in the way implied by the metaphor of birth. Nor is it true that, once branches of a family begin to emerge, they develop quite independently, and are never afterwards in contact with each other. Languages converge as well as diverge. Furthermore, stages of linguistic development are not as clear-cut as the labels on a family tree suggest, with change operating smoothly and uniformly throughout. Linguistic change, we now know, is much more uneven, with different social groups responding to change in different ways (p. 328).

Since the 19th century, other classificatory terms have come into use. *Family* is still used as a general term for any group of languages where there is a likelihood of a historical relationship (and this

is the way the term is used in this encyclopedia). But in some classifications, a distinction is drawn in terms of how definite the relationship is. If there is clear linguistic evidence of a close relationship, the term *family* continues to be used; but where the relationship is less definite, or more remote, the grouping is referred to as a *phylum*. Sometimes the term *macro-phylum* is used for yet more general and less definite groupings. It is evident, for example, that all the aboriginal languages of Australia (p. 324) are related, but as there is no clear-cut historical evidence which bears on the matter, and little typological work, scholars often refer to the Australian '(macro)phylum' rather than to the Australian 'family'.

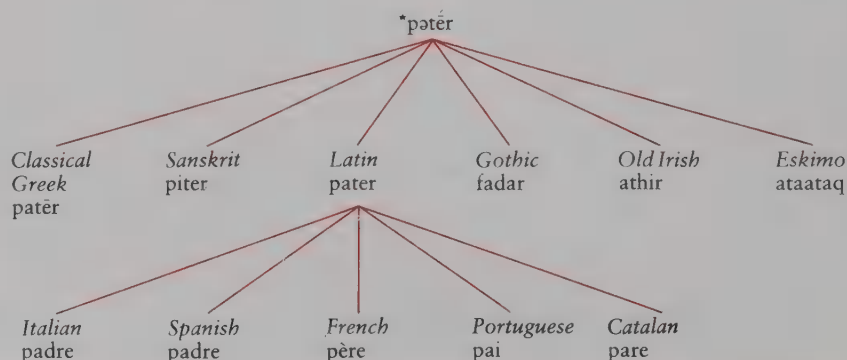
The comparative method

In historical linguistics, the *comparative method* is a way of systematically comparing a series of languages in order to prove a historical relationship between them. Scholars begin by identifying a set of formal similarities and differences between the languages, and try to work out (or 'reconstruct') an earlier stage of development from which all the forms could have derived. The process is known as *internal reconstruction*. When languages have been shown to have a common ancestor, they are said to be *cognate*.

The clearest cases are those where the parent language is known to exist. For example, on the basis of the various words for 'father' in the Romance languages, given below, it is possible to see how they all derived from the Latin word *pater*. If Latin no longer existed, it would be possible to reconstruct a great deal of its form, by comparing large numbers of words in this way. Exactly the same reasoning is used for cases where the parent language does not exist, as when the forms in Latin, Greek, Sanskrit, Welsh, etc. are compared to reconstruct the Indo-European form, **pátēr*. The aster-



August Schleicher (1821–1868) The 'family tree' theory (*Stammbaumtheorie*) was introduced by the German linguist Schleicher, who thought of language as an organism which could grow and decay, and whose changes could be analysed using the methods of the natural sciences.



isk in front of a form, in historical linguistics, shows that the form in question is a reconstruction which has not been attested in written records. Exactly how such reconstructed forms were pronounced is a matter of (at times fierce) debate: some scholars are happy to assign phonetic values to the forms, and pronounce them as if they were part of a real language; others argue that the forms are little more than abstract formulae, summarizing the sets of correspondences which have been noted (§54).

Types of linguistic classification

There are two main ways of classifying languages: the *genetic* (or *genealogical*) and the *typological* (§14). Both are used in contemporary language work, but the former has received far more investigation, and has the better developed procedures and frame of reference. A further approach (an *areal* classification) is reviewed in §8.

GENETIC CLASSIFICATION

This is a historical classification, based on the assumption that languages have diverged from a common ancestor. It uses early written remains as evidence, and when this is lacking, deductions are made using the comparative method to enable the form of the parent language to be reconstructed. The approach has been widely used, since its introduction at the end of the 18th century, and provides the framework within which all world-wide linguistic surveys to date have been carried out. The success of the approach in Eurasia, where copious written remains exist, is not matched in most other parts of the world, where a classification into families is usually highly tentative.

TYPOLOGICAL CLASSIFICATION

This is based on a comparison of the formal similarities which exist between languages. It is an attempt to group languages into structural types, on the basis of phonology, grammar, or vocabulary, rather than in terms of any real or assumed historical relationship. For example, it is possible to group languages in terms of how they use sounds – how many and what kinds of vowels they have, whether they use clicks, whether they use tones, and so on. Languages can also be classified in terms of whether their word order is fixed or free, and which order is favoured (p. 98). The earliest typologies, however, were in the field of morphology (p. 90). These, propounded by August von Schlegel (1767–1845) and others in the early 19th century, recognized three main linguistic types, on the basis of the way a language constructs its words.

Isolating, analytic, or root languages

All the words are invariable: there are no endings. Grammatical relationships are shown through the

use of word order. Chinese, Vietnamese, and Samoan are clear cases. For example, ‘I bought some oranges to eat’ in Beijing Chinese would be:

Wǒ mǎi júzi chī
literally, I buy orange eat

Inflecting, synthetic, or fusional languages

Grammatical relationships are expressed by changing the internal structure of the words – typically by the use of inflectional endings (p. 90) which express several grammatical meanings at once. Latin, Greek, and Arabic are clear cases. For example, the -o ending of Latin *amo* ‘I love’ simultaneously expresses that the form is in the first person singular, present tense, active, and indicative.

Agglutinative or agglutinating languages.

Words are built up out of a long sequence of units, with each unit expressing a particular grammatical meaning, in a clear one-to-one way. A sequence of five affixes might express the meaning of *amo*, for example – one for each category of person, number, tense, voice, and mood. Turkish, Finnish, Japanese, and Swahili form words in this way. ‘I love you’ in Swahili is *mimi ninakupenda wewe*, which can be analysed as:

mimi ni – na – ku – penda wewe
me I PRESENT you love you
TENSE

Polysynthetic or incorporating languages

Words are often very long and complex, containing a mixture of agglutinating and inflectional features, as in Eskimo, Mohawk, and Australian languages. For example, the aboriginal language Tiwi expresses ‘I kept on eating’ as *ngirruunthingapukani*, which is analysable as:

ngi – rru – unthing – apu – kani
I PAST for some eat repeatedly
TENSE time

Some linguists, however, do not regard this as a separate typological category.

Philologist – or linguist?

People who study the history of languages are sometimes called *comparative philologists* (or just ‘philologists’) and sometimes *historical linguists*. The difference lies partly in the training, partly in the subject matter. The philological tradition is one of painstaking textual analysis, often related to literary history, and using a fairly traditional descriptive framework. The newer, linguistic approach tends to study historical data more selectively, as part of the discussion of broader issues in linguistic theory, in the process using the conceptual apparatus of modern linguistics. Needless to say, proponents of the two approaches do not always see eye to eye. Philologists are often still sceptical of the new science, remembering the days when linguists considered historical topics to be of secondary importance (§65). Historical linguists, similarly, are often impatient with the philologist’s reluctance to develop general explanatory theories of language change. But nowadays there are many signs that the skills of these two categories of scholar are being seen as complementary, not in opposition.

What sort of language is English?

English is a Germanic language, according to the genetic method of classification. But from other points of view, the picture alters. Culturally, it displays many similarities with Romance, in view of the large number of loan words (p. 330) it has taken in from French and Italian, and the way these languages have even exercised some influence on grammar (e.g.

chicken supreme) and phonology (e.g. the use of final /3/ in words like *garage*). If we consider the place names of North America, then we have to allow a relationship with Amerindian languages (*Chappaquiddick*, *Susquehanna*). From a typological viewpoint, English is in fact more similar to an isolating language like Chinese than Latin: there are few inflec-

tional endings, and word-order changes are the basis of the grammar.

Three-in-one

Isolating: The boy will ask the girl.
The girl will ask the boy.
Inflecting: The biggest boys have been asking.
Agglutinating: anti-establishment-arian-ism.

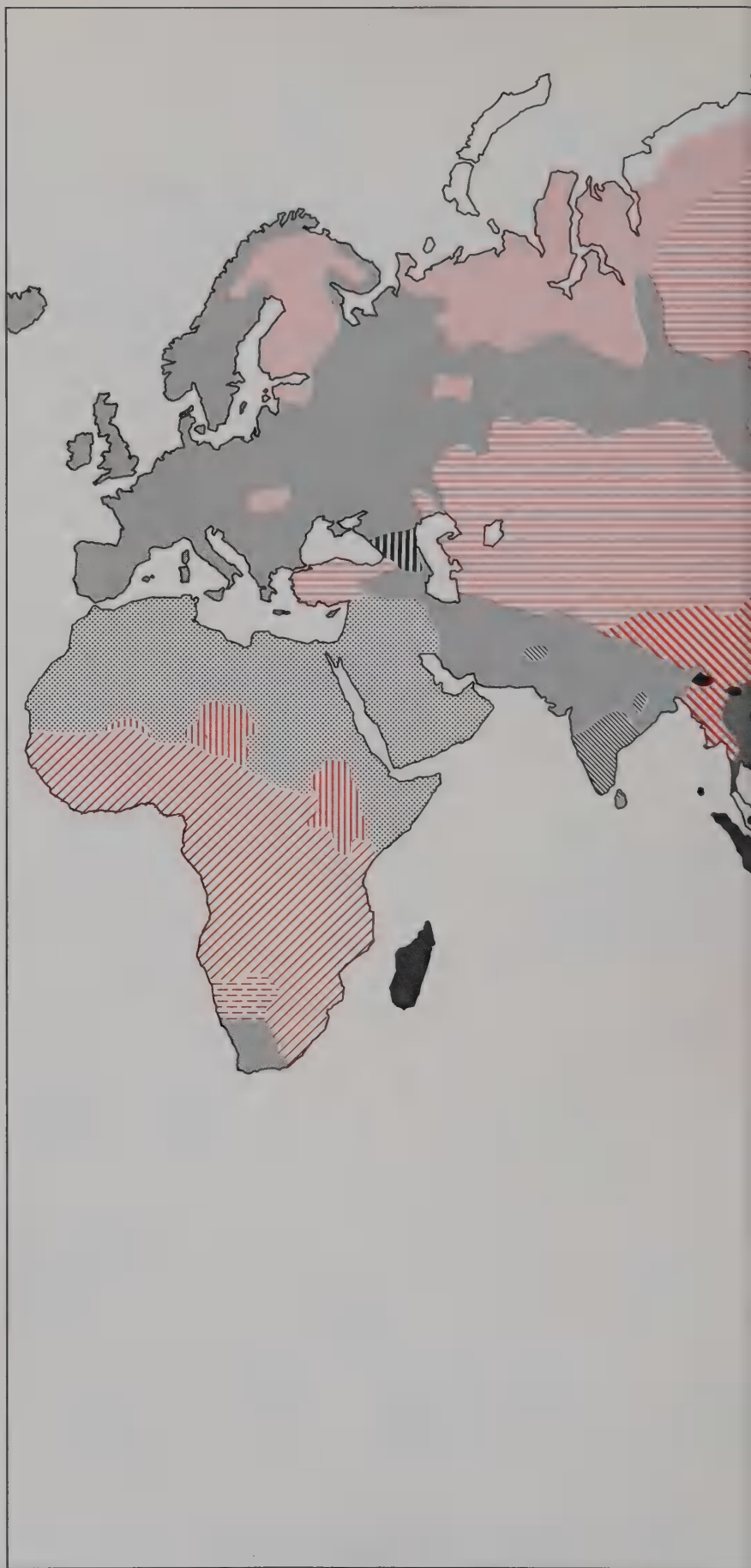
THE PROBLEM OF CLASSIFICATION

These days, typological questions are of undoubted interest – especially in relation to the search for language universals (§14). But some of the early classifications have been severely criticized because of the way they were interpreted. No one would now follow the early tendency of typologists, under the influence of Darwin, to evaluate languages as if they were points on an evolutionary scale – that isolating languages are ‘not as well developed’ as inflecting languages, for example. Nor is there any evidence that languages of a particular type are inevitably associated with particular geographical areas, or with people of a particular ethnic or cultural group. It must also be appreciated that there is no such thing as a ‘pure’ instance of one of the above types. Languages seem to have these characteristics to various degrees.

Is a typological classification possible, therefore? Everything depends on how we evaluate the variables which provide the basis of the classification. Morphology is only one variable. When we take into account *all* the features of language – syntax, phonology, discourse, and language use (§13) – the nature of the problem is evident. There are a vast number of possible classifications, and how should we decide which criteria are the most important? If two languages are 90% similar in phonology and 50% similar in grammar, are they more or less closely related than two languages which are 50% similar in phonology and 90% in grammar? Linguistic theory has hardly begun to answer such questions.

Both typological and genetic classifications ignore the relevance of cultural links between languages – the fact that languages influence each other by contact, such as by borrowing words from each other. Sometimes languages that have no historical relationship can converge so that they seem to be members of the same family. Conversely, related languages can be influenced by other languages so much that the differences become more striking than the similarities. The role of cultural contact is a real problem in studying many language families, where it is often totally unclear whether two languages are similar because they share a common origin, or because they have borrowed from each other (p. 330).

Some linguists have tried to move away from a classification into general types, proposing instead to rank languages in terms of individual structural criteria. One criterion could be the number of morphemes (p. 90) per word in a language (an ‘index of synthesis’). In the sentence, ‘The boys saw the girl’, there are 5 words but 8 morphemes, producing a synthetic index of 1.6. Using this criterion, according to one study, the average for English was 1.68, compared with 1.06 for Annamese and 3.72 for Eskimo. There are several other grammatical ratios which could be investigated in this way.





Afro-Asiatic	Austronesian	Hokan	Macro-Chibchan	Palaeosiberian
Algonquian	Aztec-Tanoan	Indo-European	Macro-Siouan	Penutian
Altaic	Caucasian	Indo-Pacific	Na-Dené	Sino-Tibetan
Andean-Equatorial	Dravidian	Japanese	Niger-Congo	Tai
Australian Aboriginal	Eskimo-Aleut	Khoisan	Nilo-Saharan	Uralic
Austro-Asiatic	Ge-Pano-Carib	Korean	Oto-Manguean	

Remaining areas contain isolated, unclassified, or unknown languages — or no speakers at all.

51 The Indo-European family

'Indo-European' is the name scholars have given to the family of languages that first spread throughout Europe and many parts of southern Asia, and which are now found, as a result of colonialism, in every part of the world. The parent language, generally known as 'Proto-Indo-European', is thought to have been spoken before 3000 BC, and to have split up into different languages during the subsequent millennium. The differences were well established between 2000 and 1000 BC, when the Greek, Anatolian, and Indo-Iranian languages are first attested.

Who were the Indo-Europeans?

Archaeological evidence shows the existence of a semi-nomadic population living in the steppe region of southern Russia around 4000 BC, who began to spread into the Danube area of Europe and beyond from around 3500 BC. The people are known as the Kurgans, because of their burial practices (*kurgan* being the Russian for 'burial mound'). Kurgan culture seems to have arrived in the Adriatic region before 2000 BC, and this coincides well with the kind of time-scale needed to produce large amounts of linguistic change. The ancestors of the Kurgans are not known, though there are several similarities between Proto-Indo-European and the Uralic family of languages (p. 304), spoken further east, and these may well have had a common parent, several thousand years before.

By comparing the similar vocabulary of the extant Indo-European languages, it is possible to draw some conclusions about the geographical origins and life-style of the people. For instance, many family words (such as 'mother', 'husband', 'brother') can be reconstructed for Proto-Indo-European. These include several words for 'in-laws', which seem to have been used solely with reference to the bride. Evidence of this kind suggests that it was the wife who was given a position within the husband's family, rather than the other way round, and that the society must therefore have been patriarchal in character.

The reconstructed language has words for horses, dogs, sheep, pigs, and other animals; there is a word for some kind of vehicle, and this vehicle definitely had wheels; there are many words for parts of the body; there are several words relating to farming, and a few words relating to tools and weapons; many abstract notions are attested, relating to such fields as law, religious belief and social status; numerals went to at least 100. Words relating to fauna and flora are of particular interest, for they can provide clues as to the place of origin

of the people. There are no words for 'palm tree' or 'vine', for example, which suggests, independently of any archaeological evidence, that the migrations did not begin in the Mediterranean area. But other clues often seem contradictory. The word for 'beech tree' is widely attested, and, as this tree does not grow in Asia, it has been suggested that the Indo-Europeans must have originated in north-central Europe. On the other hand, there is little evidence of a common word for 'oak', which is also a European tree, and if this word was not known to the Indo-Europeans, the view is supported that their migration must have begun in Asia after all. Indo-European philology (§50) raises many fascinating questions of this kind.

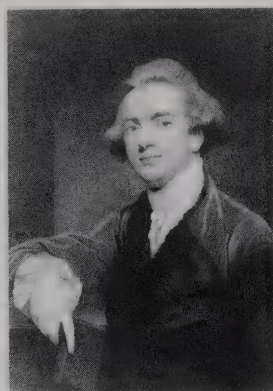
The discovery of Proto-Indo-European

It was not possible to deduce the existence of this family of languages until scholars became aware of the systematic resemblances which can be found between European languages and Sanskrit, the oldest-attested language of the Indian sub-continent. When these were first noticed, in the 16th century, many people thought that Sanskrit was the parent of the European languages; but towards the end of the 18th century the systematic studies began which showed conclusively that this was not the case.

Following an early statement of the common origin hypothesis in 1786, by Sir William Jones, the early 19th century produced several major works which laid the

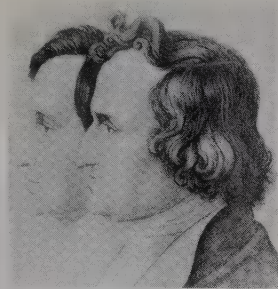
foundation of Indo-European philology. In 1816, the German philologist Franz Bopp published a study, whose scope is well illustrated by its title (translated): *On the conjugation system of the Sanskrit language, in comparison with those of the Greek, Latin, Persian and Germanic languages*. The relationship of Germanic to Latin, Greek, Slavic and Baltic was demonstrated in a work written in 1814 by the Danish linguist, Rasmus Rask, but not published until 1818, *Investigation on the Origin of the Old Norse or Icelandic Language*. Further philological treatises followed, mainly written by Germans, such as Jakob Grimm and August Schleicher. In 1833, Bopp began the publi-

cation of the first major Indo-European grammar: *Comparative Grammar of Sanskrit, Zend, Greek, Latin, Lithuanian, Old Slavic, Gothic and German*. It took 19 years to complete, and by its third edition incorporated Old Slavic, Celtic and Albanian. In due course, this work and its contemporaries became out of date, as a result of the vast amount of philological study undertaken in the second half of the 19th century. A further publishing landmark was Karl Brugmann's *Outline of Comparative Indo-European Grammar* (1897–1916). A new *Indo-European Grammar*, the outcome of a project directed by the Polish linguist, Jerzy Kuryłowicz, commenced publication in 1968.



William Jones (1746–94)
British orientalist and jurist, whose presidential address to the Bengal Asiatic Society in 1786 contained the following observation, generally quoted as the first clear statement asserting the existence of Indo-European:
The Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to

both of them a stronger affinity, both in the roots of verbs, and in the forms of grammar, than could possibly have been produced by accident; so strong, indeed, that no philologist could examine them all three, without believing them to have sprung from some common source, which, perhaps, no longer exists.



Jacob Grimm (right)
(1785–1863)

Well known to children everywhere for the collection of fairy tales and songs which he compiled with his brother. To linguists and philologists, he is also remembered for his major works in Germanic philology, especially his explanation of how the consonants of different Indo-European languages relate to each other. There is, for example, a regular relationship between words beginning with *p* in Latin and *f* in Germanic languages (as in *pater* and *father*), or between initial *t* in Greek and initial *th* in English (as in *treis* and *three*). The rules governing these sound shifts became known as 'Grimm's law' (p. 328).

What did Proto-Indo-European sound like?

There are no written records relating to this period. The Kurgans must have been illiterate – unlike the peoples of Egypt and Mesopotamia of the time. So the entire character of Proto-Indo-European has been the result of painstaking reconstruction on the part of philologists, using the methods outlined on p. 292.

There is general agreement about the number of contrasts in the consonant system (p. 165), though the status of some of the less well-attested sounds (such as /b/) is disputed. This system seems largely to have been composed of plosives (p. 157), organized into three series: voiceless, voiced, and (less definitely) voiced aspirate. Four main places of articulation were used: labial, dental, palatal or velar, and labio-velar. There was a single fricative, which was voiced or voiceless according to context. In addition, there were probably one or more laryngeal consonants (see below). There were two nasals, two continuants, and two semi-consonants (p. 152), all of which could occur at the centres of syllables as well as at syllable edges. This system may be summarized as follows:

	Labial	Dental	Palatal/ Velar	Labio- velar
Plosives				
Voiceless	p	t	k	k ^w
Voiced	b	d	g	g ^w
Voiced aspirate	bh	dh	gh	g ^w h
Fricatives			s(z)	
Nasals	m	n		
Continuants		l	r	
Semi-consonants	w		j	

There is more disagreement over the vowel system – vowels, as always (p. 167), being more difficult to analyse. Four main contrasts are generally recognized: mid-front, mid-back, open and central, the first three occurring both in long and short forms (though how far these were independent contrasts, as opposed to laryngeally controlled variants, is unclear). In addition, some scholars recognize two further contrasts in close position, /i/ and /u/, but the overlap with the use of these sounds as semi-consonants makes this analysis less certain also. The possible vowel system can thus be summarized as follows:

(i)		(u)
e/e:	ə	o/o:
	a/a:	

THE LARYNGEAL THEORY

Towards the end of the 19th century, the Swiss linguist Ferdinand de Saussure (p. 407) put forward the view that, in order to explain various anomalies in early Indo-European forms, an extra set of sounds would have to be postulated as occurring in Proto-Indo-European. Saussure did not suggest any phonetic details for these sounds, but later they

came to be called *laryngeals*, a term taken from the study of Semitic languages (p. 316), where consonants in the region of the larynx were known to occur. Laryngeal consonants did not occur in any Indo-European language known at the time, but the previous existence of some kind of sound, it was argued, was indicated by the way they had caused the changes to take place in adjacent vowels (altering their length and quality) that had long been noticed in the extant languages.

The laryngeal theory was immediately controversial, and received little support for many years. But attitudes changed after 1927, when it was found that Hittite (discovered several years after the theory was postulated) had a sound, represented by *h*, that occurred in some of the places where Saussure had predicted the laryngeals should be. However, the phonetic character of these laryngeals is still quite unclear, and philologists disagree on how many laryngeal sounds there were, whether their phonetic properties can (or should) be defined, and whether better analyses can be found. It is generally recognised that there must have been three (some say four) types, pronounced somewhere in the back part of the mouth, probably as fricatives or glottal stops (p. 157). They are usually symbolized by *H* or schwa (ə), and numbered with subscripts (*H*₁, *H*₂, etc. or ə₁, ə₂, etc.) Alternative analyses which postulate an earlier vowel, rather than a laryngeal, have also been proposed.

Laryngeal theory can be illustrated in this way. Most Proto-Indo-European basic forms (or 'roots') had a structure of Consonant–Vowel–Consonant (CVC, which is often written as CeC, when discussing this language), e.g. **bher-* 'bring', **med-* 'measure'. But several forms had only one consonant, e.g. **es-* 'be', **dō-* 'give'. It is argued that these roots can be reconstructed as having the regular CVC structure, by postulating a laryngeal as the 'missing' consonant, e.g. **Hes-*, **dōH-*. In roots such as **dōH-*, with a preceding vowel, when the laryngeal finally disappeared, it caused the vowel to lengthen, as is attested in Latin *dōnum* 'gift', and elsewhere. Using these techniques, it is possible to show that almost all the roots of the proto-language (there are still a few exceptions, such as numerals) had a CVC structure.

Some grammatical features

People often think that the oldest languages must have been simpler than their modern counterparts (§49). The noun inflections of Proto-Indo-European clearly show this not to be so. It is possible to reconstruct three genders (masculine, feminine, and neuter) and up to eight cases (nominative, vocative, accusative, genitive, dative, ablative, locative, instrumental). Adjectives agreed in case, number, and gender with the noun. The verb system was also rich in inflections, used for aspect, mood, tense, voice, person, and number (p. 93). Different grammatical forms of a word were often related by the feature of *ablaut*, or *vowel gradation*: the root vowel would change systematically to express such differences as singular and plural, or past and present tense, as is still the case in English *foot/feet* or *take/took*.

55 Indo-European varieties

Our father, who art in
Heaven . . .

Celtic

Ein Tad, yr hwn wyt yn y
nefoedd (Welsh)
Ar n-atheir, atá ar neamh
(Irish Gaelic)
Ar n-athair a tha air nèamh
(Scottish Gaelic)
Ayr ain, t' ayns niau (Manx)
Agan tas ny, us yn nef
(Cornish)

Germanic

Unser Vater, der Du bist im
Himmel (German)
Undzer voter, vos bist im
himl (Yiddish)
Fæder ure, þū þe eart on
heofonum (Old English)
Onze vader, die in de
hemelen zijt (Dutch)
Fader vår, du som er i
himmelen (Norwegian)
Fader vår, som är i
himmelen (Swedish)
Vor Fader, du som er i
himlene (Danish)

Italic

Pater noster, qui es in caelis
(Latin)
Notre père, qui es aux cieux
(French)
Padre nuestro, que estás en
los cielos (Spanish)
Pai nosso, que estás nos
céus (Portuguese)
Pare nostre, que estau en lo
cel (Catalan)

Albanian

Ati ynë që je në qiell

Greek

Páter 'ēmōn, 'o en toīs
ouranoīs (New Testament)
Patéra mas, pou̯ eĩsai stoūs
ouranoús (Modern)

Baltic

Teve mūsų, kurs esi danguje
(Lithuanian)
Mūsu tēvs debesīs (Latvian)
Tāwa nou̯son, kas tu essei
en dangon (Old Prussian)

Slavic

Otīče našī iže jesi na
nebesīchū (Old Church
Slavonic)
Otče naš, sūščij na
nebesách (Russian)
Ojča naš, katory jěšč u
nebe (Belorussian)
Otče naš, ščo na nebi
(Ukrainian)
Ojczy nasz, któryś jest w
niebiesiech (Polish)
Otče náš, kterýž jsi v
nebesích (Czech)
Otče náš, který si v
nebesiach (Slovak)

Oče naš, što si na neboto
(Macedonian)
Oče naš, koji si na nebe-
sima (Serbo-Croat)
Otče naš, kojto si na
nebesata (Bulgarian)
Oče naš, ki si na nebesih
(Slovene)

Armenian

Mer hayr or erknk'umn
(East)
Ov hayr mer or erkink'n es
(West)

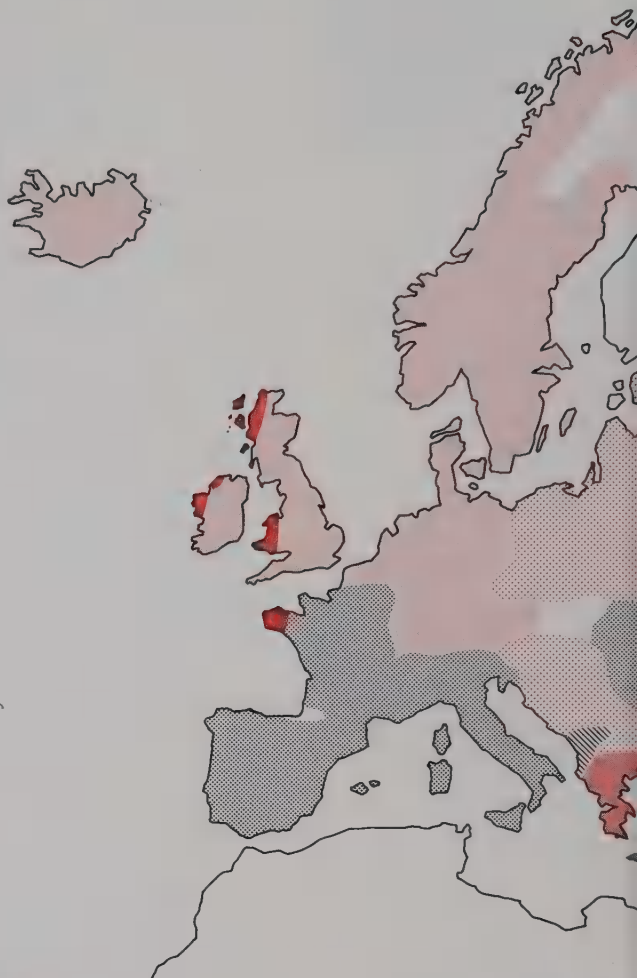
Iranian

Max fyd, kæcy dæ ærvty
midæg (Ossetic)
Yā bāwk-ī ēma, ka la
āsmān-ā-y (Kurdish)
Ei pedar-e-mā, ke dar
āsmān ast (Persian)
Phith manī, ki bihishtā asti
(Baluchi)
Aj jmuğ plāra, če pa āsmān
kxe ye (Pashto)

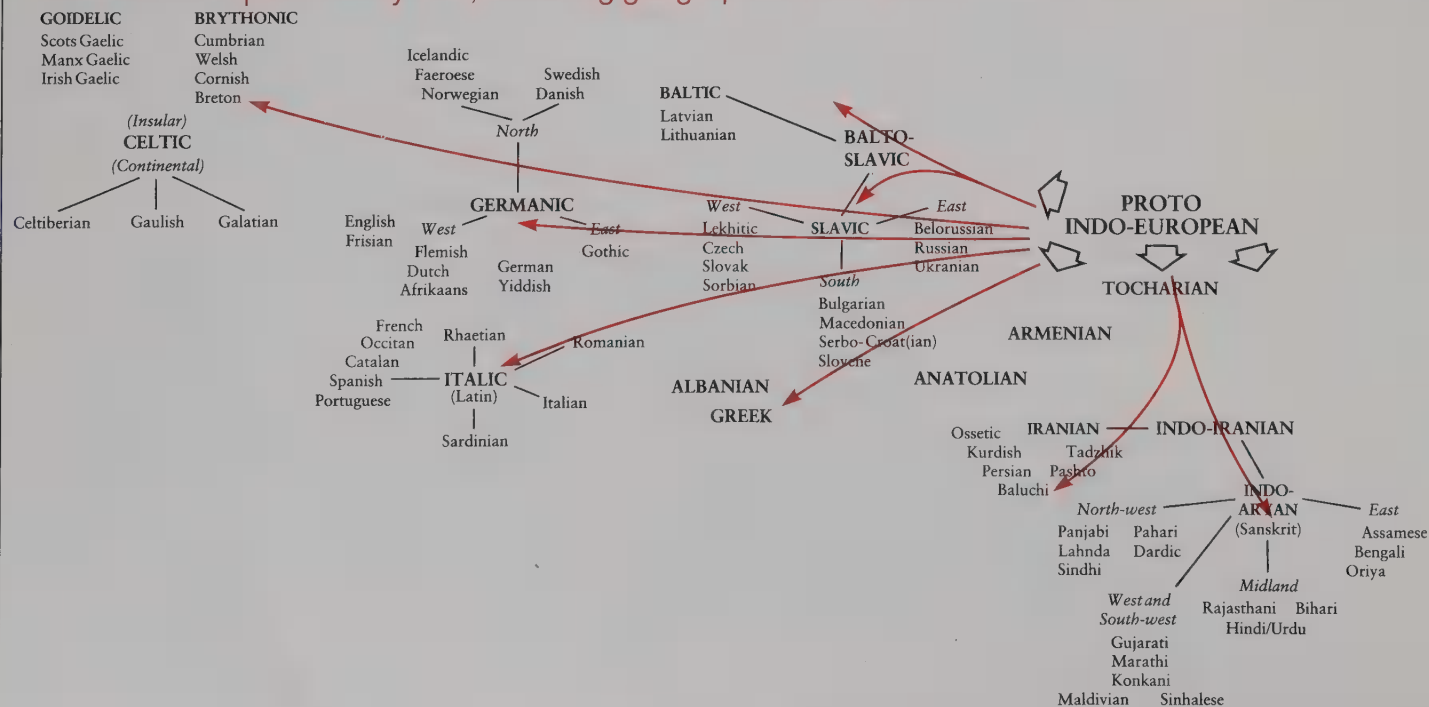
Indo-Aryan

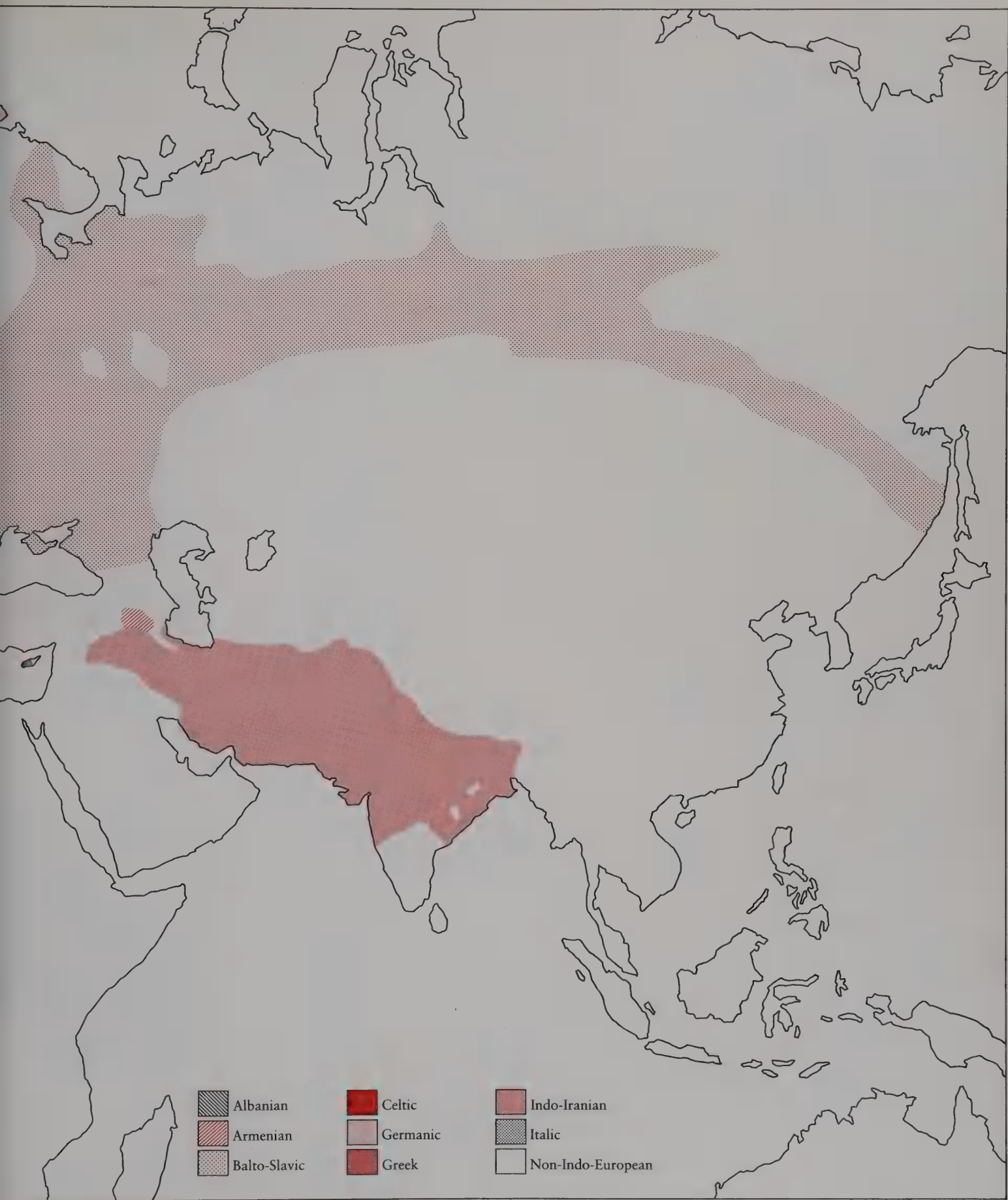
Bho asmākham svargastha
pitah (Sanskrit)
Saggatha no pitā (Pali)
He hamāre svargbāsi pitā
(Hindi)
He sādē pitā, jihṛā surg vic
hai (Panjabi)
E asān-jā piu, jo āsmāna
men āhe (Sindhi)
Ai sāni māli, yus asmānas
path chu (Kashmiri)
He hāmṛā svargavāsi pitā
(Nepali)
O ākāśamānnā amārā bāpa
(Gujarati)
He āmacya svargātīla pityā
(Marathi)
Svargayehi vāḍaṣitina
apagē piyāṇeni (Sinhalese)
He āmār svargat thakā pitri
(Assamese)
He āmāder svargastha pitā
(Bengali)
He āmbhamānaṅka
svargasha pitā (Oriya)
Dāde amaré, kaj isiēn k'o
devlé (Romany)

Geographical distribution of the Indo-European family of languages



The Indo-European family tree, reflecting geographical distribution





The Indo-European family

ALBANIAN

This language forms a single branch of the Indo-European family, spoken by nearly 3 million people in Albania, and parts of Yugoslavia, Greece and Italy. Albanian has two main dialects, known as Gheg (in the north) and Tosk (in the south), but these contain many further dialect divisions, not all of which are mutually intelligible. The history of the language is obscure, and it is not possible to demonstrate a clear relationship with any other Indo-European group. This is partly because of the many loan words which have shaped the modern language, and partly because so few written remains of earlier times exist, dating only from the 15th century, largely on religious themes. An official alphabet was not introduced until 1909, using roman characters. Since the Second World War, the official language has been based on the Tosk dialect.

ANATOLIAN

A group of languages, now extinct, spoken from around 2000 BC in parts of present-day Turkey and Syria. The main Anatolian language is Hittite, shown to be Indo-European only as recently as 1915. Its written remains, consisting of tablets inscribed with cuneiform writing (p.198), date from the 17th century BC. The earliest forms of Hittite ('Old Hittite') are the oldest Indo-European texts so far discovered. Most of the texts have religious themes, but they also contain a great deal of historical and social information. Other languages of the group are Palaic, Lydian, Lycian, and Luwian (represented in cuneiform and hieroglyphic systems). Also grouped under this heading are certain languages which do not belong to the Indo-European family (Hurrian, Urartian) or where the relationship is not certain (Phrygian).

ARMENIAN

This branch of Indo-European consists of a single language, spoken in many dialects by between 5 and 6 million people in the Armenian republic of the USSR and Turkey, and (through emigration) in parts of the Middle East, Europe, and the United States. The spoken language may have been established soon after 1000 BC, but there was no written form until after the introduction of Christianity. Classical Armenian, or *Grabar*, is the language of the older literature, and the liturgical language of the Armenian Church today. The oldest writings date from the 5th century, and the 38-letter alphabet, invented by St Mesrop, is still widely used. Modern literary Armenian exists in two standard varieties: East Armenian is the official language of the Armenian SSR; West Armenian is the dominant variety elsewhere. Because of the large numbers of loan words (see p.330) which have come into the language, its basic Indo-European character is often obscured.

BALTO-SLAVIC

Baltic languages and Slavonic languages are often placed together as a single branch of Indo-European, because of their similarities, though there is some dispute over whether these constitute evidence of common origin rather than of more recent mutual influence. Taken together, these languages are spoken by about 300 million people, more than half of whom speak Russian.

The main *Baltic* languages are Latvian (also known as Lettish) and Lithuanian, with written texts dating from the 14th century. There are around 4 million speakers in the Baltic area, with a further million abroad, mainly in the United States. Both languages have standard forms, and many dialects. Several other languages of this group are now extinct, though there are a few written remains of Old Prussian.

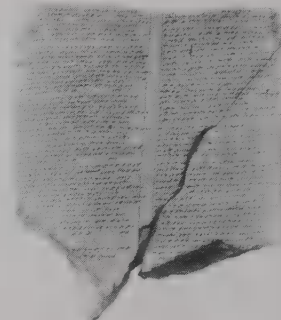
The *Slavonic* (or *Slavic*) languages are more numerous, and are usually divided into three groups: *South Slavonic*, found in Bulgaria, Yugoslavia, and parts of Greece, includes Bulgarian, Macedonian, Serbo-Croat, and Slovene; *West Slavonic*, found in Czechoslovakia, Poland, and East Germany, includes Czech, Slovak, Sorbian, and Polish; *East Slavonic*, found in the USSR, includes Russian, Belorussian, and Ukrainian. Each of the main Slavonic languages has an official status as a standard (pp.38, 364); but there are numerous dialect differences within these groupings. Old Church Slavonic is evidenced in texts dating from the 9th century, and its later form (Church Slavonic) is still used as a liturgical language in the Eastern Orthodox Church. The distinctive Cyrillic alphabet (p.202), attributed to Saints Cyril and Methodius in the late 9th century, is still used for writing Bulgarian, Serbian, Macedonian, and all the East Slavonic languages. In modified forms, it is also used for about 100 non-Slavonic minority languages of the USSR.

GERMANIC

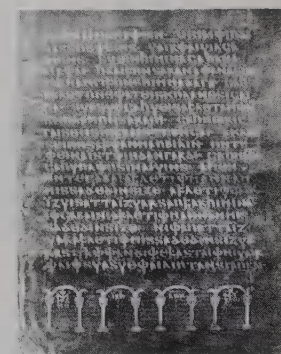
The various branches of the Germanic family of languages derive from the migrations of the Germanic tribes who lived in northern Europe during the 1st millennium BC. Some Germanic words are recorded by Latin authors, and Scandinavian inscriptions in the runic alphabet (p.203) are recorded from the 3rd century AD. The earliest main text is the Gothic Bible of Bishop Ulfilas (or Wulfila), translated around AD 350, using an alphabet of his own devising (the Gothic alphabet: p.186). Anglo-Saxon and Old High German are recorded from the 8th century, and the oldest forms of Scandinavian languages from the 12th century.

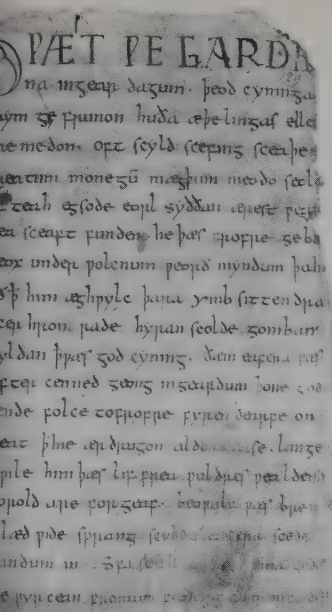
Germanic languages are used as a first language by over 500 million people, largely because of the world-wide role of English (§59). They are usually classified into three groups. *East Germanic* languages are all extinct, and only Gothic is preserved in manuscript to any extent – most recently, in a few words recorded in the Crimea in the 16th

A bilingual tablet in Hittite and Luwian, dating from around 1400 BC, on which is written a ritual against the plague. The tablet was found in Hattusas, modern Bogazköy, Turkey. Inscriptions from this area provided some of the earliest evidence for the classification of Hittite as an Indo-European language.



A page from the *Codex Argenteus*, a 5th- or 6th-century copy of the Bible of Ulfilas; its name derives from the lettering, which is in gold and silver on a purple parchment. It is kept at Uppsala, in Sweden, not far from the Goths' homeland.





A page from the oldest epic poem in English, *Beowulf* The work was probably composed in the 8th century, but the only surviving manuscript dates from around AD 1000. It tells the story of a Scandinavian hero, Beowulf, who fights and kills a monster, Grendel, in Denmark. He is later made king of the Geats, in southern Sweden, where, as an old man, he kills a dragon, in a fight that leads to his own death.



This inscription, carved in an almost impossible position at the top of a steep cliff in Behistun (modern Bisitun), Iran, recounts the feats of King Darius the Great of Persia (522–486 BC). It is in three languages, Old Persian, Akkadian, and Elamite, and proved to be of particular value in deciphering the cuneiform writing system.

century. *North Germanic* includes the Scandinavian languages of Swedish and Danish (East Scandinavian), Norwegian, Icelandic, and Faeroese (West Scandinavian), and the older states of these languages, most notably the literary variety of Old Icelandic known as Old Norse – the language of the Icelandic sagas. *West Germanic* comprises English and Frisian (often grouped as Anglo-Frisian), and German, Yiddish, Netherlandic, or Dutch (including local, Flemish dialects in Belgium), and Afrikaans (often grouped as Netherlandic–German). Dialect similarities often blur the distinctions suggested by these labels (§§8, 47).

GREEK

This branch of Indo-European consists of a single language, represented in many dialects, and attested from around the 14th century BC. The earliest evidence of the language is found in the inscriptions discovered at Knossos and other centres in Crete, written mainly on clay tablets in a syllabic script known as Linear B, and discovered to be Greek only as recently as 1952 (p. 201). This period of the language is referred to as Mycenaean Greek, to be distinguished from the later, classical Greek, dating from the 8th century BC, when texts came to be written in the Greek alphabet (p. 202) – notably the epic poems, *Iliad* and *Odyssey*. The great period of classical drama, history, philosophy, and poetry ended in the 4th century BC. A later variety of Greek, known as *koine* (or ‘common’) Greek, was spoken throughout the eastern Mediterranean from around the 4th century BC for nearly a thousand years. In its written form, it was the language of the New Testament (p. 384). The modern varieties of Greek, spoken in Greece, Cyprus, Turkey, the United States, and other localities, derive from this *koine* (p. 43).

INDO-IRANIAN

This branch of Indo-European comprises two large groups, known as Indo-Aryan (or Indic) and Iranian. There are over 500 Indo-Aryan languages, spoken by around 500 million people in the northern and central parts of the Indian subcontinent. They may be divided into several groups, on a broadly geographical basis: the *Midland* group mainly includes Hindi/Urdu (p. 284), the Bihari languages, and the Rajasthani languages; the *Eastern* group includes Assamese, Bengali, and Oriya; the *West* and *South-west* groups include Gujarati, Konkani, Maldivian, Marathi, and Sinhalese; and the *North-west* group includes Panjabi, Sindhi, Lahnda, the Dardic languages, and the Pahari languages. The Romany language of the gypsies is also a member of this family. The early forms of Indo-Aryan, dating from around 1000 BC, are collectively referred to as Sanskrit – the language in which the Vedas, the oldest sacred texts, are written (p. 384). Later forms, the Prakrits, lasted 1,000 years, and were the medium of Buddhist and Jain literature.

During the same period, the Iranian languages were being spoken in an area centred on modern Afghanistan and Iran – especially Old Persian and Avestan (the sacred language of the Zoroastrians), both of which have texts dating from the 6th century BC. The main modern Iranian languages, spoken by over 60 million people, are the closely related Persian (or Farsi) and Tadjik, as well as Pashto, Ossetic, Kurdish, and Baluchi, but there are many other languages, and innumerable dialects, which have so far received no definite classification.

ITALIC

The main language of this family is Latin, the language of Rome and of its surrounding provinces, preserved in inscriptions from the 6th century BC, and most systematically in literature from the 3rd century BC. Other languages of the period include Faliscan, Oscan, Umbrian, and Venetic, spoken in and to the north-east of modern Italy. From the spoken, or ‘vulgar’ form of Latin, used throughout the Roman Empire, developed the *Romance* languages – French, Spanish, Portuguese, Italian, and Romanian, along with Sardinian, Occitan (in southern France), Rhaetian (various dialects in northern Italy and Switzerland), and Catalan (predominantly in north-east Spain). A Romance language known as Dalmatian, spoken along the Yugoslavian coast, became extinct when its last-known speaker died in 1898. But the main Romance languages have spread, as a result of colonialism, throughout the world, so that today over 500 million people speak a Romance language, or one of the creoles based on French, Spanish, or Portuguese (pp. 334–9).

TOCHARIAN

This language, now extinct, was spoken in the northern part of Chinese Turkistan during the 1st millennium AD. The first evidence of Tocharian was discovered only in the 1890s, in the form of various commercial and Buddhist religious documents, dating from around the 7th century, and on the basis of these discoveries, two dialects were established – an eastern variety, from the Turfan region, which was labelled Tocharian A, and a western variety, from the Kucha region, which was labelled Tocharian B. The functions of these dialects, and the identity of their speakers, have been sources of controversy in comparative philology, as has the very name of the language (based on that of the Tochari people, who lived further east, and who were probably speakers of an Iranian language). But the status of Tocharian as an independent Indo-European language is not in doubt.

For Celtic, see pp. 302–3.

The history of one Indo-European family: Celtic

EARLY CELTIC

The Celts were the first Indo-European people to spread across Europe. Known to the Greeks as *Keltoi*, they emerged in south-central Europe around the 5th century BC, speaking a language which has been reconstructed under the name of Common (or Proto-) Celtic. In a series of waves they spread throughout most of Europe, reaching as far as the Black Sea and Asia Minor, south-west Spain, central Italy, and the whole of Britain. Their culture is known as La Tène (after the Swiss archaeological site of that name).

The main migration was by the Galli, or Gauls, into France, northern Italy, and the north of Europe. Evidence of the Gaulish language is found throughout this area in place names and inscriptions. In other places, the language goes under different names. The Celts who went into the Balkans and Asia Minor were called *Galatae* by the Greeks, and Galatian remained in use until around the 5th century AD. The Celts who went into Spain were known as *Celtiberi*, and Celtiberian is found in inscriptions (only partly decipherable), especially in the north and east. Some 2nd-century BC inscriptions in Switzerland are often referred to as Lepontic.

The range of Celtic dialects spoken on the Continent of Europe has been labelled Continental Celtic. Insular Celtic refers to the dialects which came to be spoken in the British Isles and Brittany, and almost all our information about the Celtic languages comes from this area. There seem to have been two waves of invasion: the first, into Ireland in the 4th century BC, led to a type of Celtic known as Goidelic (or Gaelic) which later reached Scotland and the Isle of Man; the second, into southern England and Wales, and later over to Brittany, produced a type of Celtic known as Brythonic (or, simply, British). Linguistically, the first language group is known as Q-Celtic, because it retained the /kw-/ sound of Proto-Indo-European, writing it as *q*, later *c*; the second group is referred to as P-Celtic, because /kw-/ developed into /p-/. The contrast can be seen in such pairs of words as modern Irish Gaelic *ceathair*, Welsh *pedwar* 'four'.

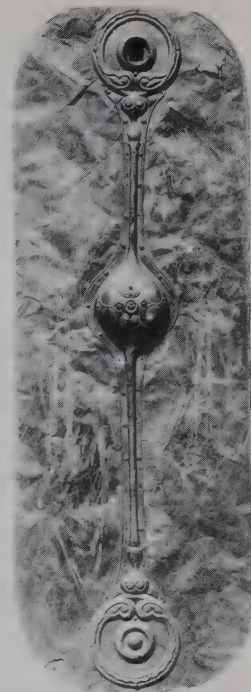
THE FORTUNES OF INSULAR CELTIC

The Anglo-Saxon invasions in the 5th century AD pushed the British Celts westward and northward, so that the various dialects quickly became distinct. In the area now known as Cornwall and Devon, the language developed into Cornish; in Wales, into Welsh; and in Cumbria and parts of Scotland into Cumbric. There was a movement into Brittany from southern England, around the 5th century AD, which led to the development of Breton. In its early period, Breton was very similar to Cornish,

and it is said that the two languages were mutually intelligible until the 15th century.

The movement of Goidelic peoples continued from Ireland into the Isle of Man, and by the 10th century they were also found throughout Scotland. The geographical boundaries led quickly to distinct dialects of the original languages, known as (Common) Gaelic. From about the 10th century, there is evidence of the distinction between Irish and Scottish Gaelic (until recently often called Erse), and doubtless Manx Gaelic began to diverge at this time too. It is not clear how long these dialects stayed mutually intelligible, but the development of different cultural and literary traditions in the middle ages persuades most writers to take them as different languages from this time.

In recent times, Celtic languages have spread outside Britain on two occasions. In 1865, 150 Welsh settled in Patagonia (in Argentina) and by the early 1900s their numbers had increased so that there were nearly 3,000 speakers of Patagonian Welsh. Nowadays, the language has largely disappeared, under the influence of Spanish. In the 18th century, many Gaels emigrated to Cape Breton Island, Nova Scotia; there were an estimated 30,000 speakers of Cape Breton Gaelic in the 1930s, but only a few are left today.



This bronze shield is a product of the La Tène culture of the 1st century BC. Its height is 77.5 cm.



In Europe, the most noticeable modern characteristic of this language family is its dramatic decline, under the influence of its powerful linguistic neighbours, English and French. But equally dramatic is the 20th-century revival of interest in Celtic languages, as symbols of nationalistic unity, and as keys to earlier periods of cultural and literary brilliance.

PERIODS OF DEVELOPMENT

Early (5th–9th c)

A few names and inscriptions in Irish Gaelic, Welsh, Breton, and Cornish. The language of the early Irish period is preserved in a writing system known as Ogam (p. 203).

Old (9th–12th c)

Old Welsh, Cornish, and Breton can be distinguished, on the basis of glosses and vocabulary lists. Because of the work of Christian missionaries, there is far more available for Old Irish, and it is difficult to draw a line between Irish literature of the Old and Middle periods.

Middle (12th–15th c)

An extensive literature in Welsh and Irish, several plays in Cornish, and verse fragments and plays in Breton. There is no Scots Gaelic literature, as the earliest Scots Gaels wrote in Irish.

Modern (16th–20th c)

Cornish Little further development, the language dying out at the beginning of the 19th century. A recent revival of interest is based on the Middle Cornish period.

Manx A largely religious literature (the Book of Common Prayer was translated in the early 17th century), some ballads and carols. The Isle of Man was wholly Manx-speaking until the 18th century, and the laws of the island are still promulgated in Manx. There were still some 5,000 speakers at the beginning of the 20th century, but the last mother-tongue speakers died in the late 1940s.

Breton A major period of growth, from the mid-17th century, led to a new orthography, several grammars, and a large literature of plays, legends and ballads. A strong nationalistic movement began in the 1890s, and Breton was recognized as a school subject in the 1950s. There are no official figures, but it has been suggested that there were around a million speakers in the 1940s and that this figure is now more than halved.

Irish Gaelic Ireland was wholly Gaelic-speaking until the 17th century, but the dominance of English, and the effects of 19th-century famine and emigration, led to a sharp decline. In the 1981 census, over 5,000 people claimed to be monolingual in Irish, and over a million to be speakers of Irish

ceud
mile
fáilte

Traditional Gaelic script A semi-uncial form of medieval writing (p. 186). The sign expresses the traditional greeting: 'a hundred thousand welcomes'.

and English (without specifying level of proficiency). The constitution makes Irish the first official language. Gaelic has been taught in schools since 1922, and a standard grammar has been developed, along with a movement for reform of the complex spelling system. There is now a marked resurgence of interest in the language and its literature.

Scottish Gaelic There was a major period of poetic literature in the 18th century, but a standard written language did not develop until the Bible translation of 1801. It is still spoken in the west, especially in the Isles and parts of the Highlands, and it now attracts a strong nationalistic interest; but the decline in numbers has been steady in the present century (from over 250,000 in 1891 to fewer than 80,000 in the 1980s).

Welsh Wales was monoglot until the 16th century, when the Act of Union with England (1536) led to a rapid decline in numbers of Welsh speakers. Revivals in the 18th and 19th centuries led to Welsh being taught in schools, and the present century has seen this revival continue on an unprecedented scale, with the language now given official status. It is too soon to say whether this interest has come too late to stem the steady decline in the number of speakers – from just under a million in 1900 to around half a million in the 1981 census – but fresh factors are now operative, not least in the form of a new Welsh-speaking television channel, and these may well alter the census trend.



Sign of the times Road signs in Wales are these days printed in both Welsh and English – a policy which does not satisfy some nationalists.

52 Other families

Uralic

The Uralic family consists of those languages which have descended from an ancestor, called Proto-Uralic, spoken in the region of the north Ural Mountains in the USSR over 7,000 years ago. Uralic languages are attested in written form from the 13th century. The most noticeable trend in the 20th century has been the decline of many of the languages, under the influence of dominant neighbours, especially Russian. Also, several of these languages have more than one name – an earlier derogatory name, used by outsiders, has often been replaced by a form more acceptable to the people.

Two main branches of the family are represented today: *Finno-Ugric* and *Samoyedic*. The Finno-Ugric group of languages is found in one part of central Europe, and in those northern territories where Europe and Asia meet. In the north, the 'Finnic' branch of the family is located in the region between northern Norway and the White Sea, the whole of Finland, and parts of adjacent Soviet territory. The main language of the group is Finnish, with over 5 million speakers in Finland, Sweden, the USSR, and (through emigration) the USA. Estonian has around 1 million, mainly in the Estonian SSR. There are only around 30,000 speakers of Lapp (or Lappish), but they are spread throughout the whole of the north.

Curiously isolated from the rest of the family is the main language of the 'Ugric' branch – Hungarian (or Magyar). This is spoken by around 11 million people as a national language in Hungary,

and by a further 3 million in surrounding areas, and through emigration in many parts of the world. Two other Ugric languages are found to the east of the Urals, around the River Ob, and are known as Ob-Ugric. They are Khanty (or Ostyak), with around 15,000 speakers, and Mansi (or Vogul), with around 4,000.

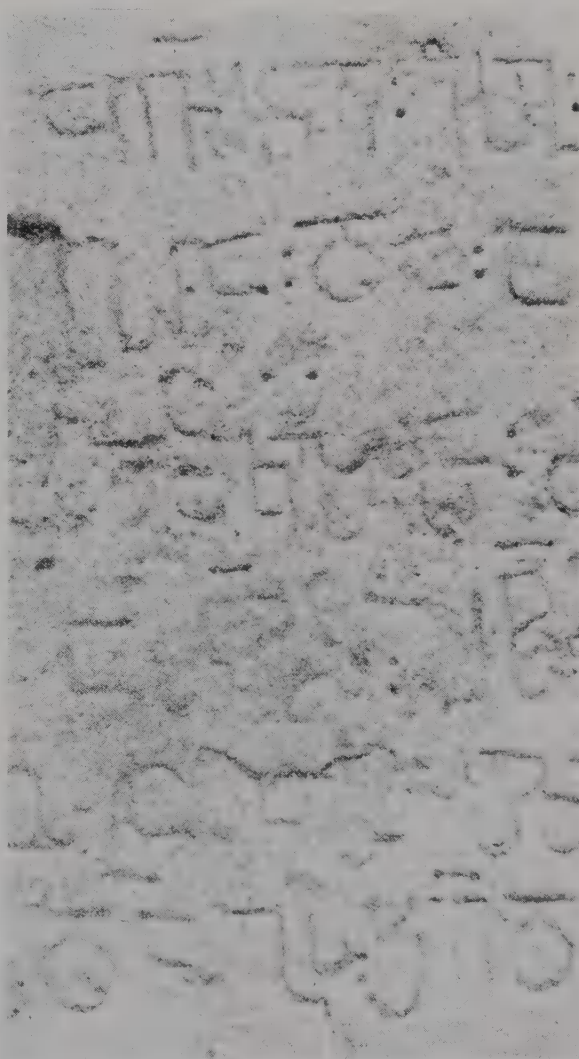
The remaining Finno-Ugric languages are spoken within the Soviet Union. One group is found in the Kola Peninsula in the north, and southwards towards the Gulf of Riga. Some of these languages (Ingrian, Livonian, and Votic) have very few speakers, and may not survive for long. Karelian, the most widespread, has over 100,000 speakers. Veps has fewer than 10,000. A second group is found further into the Soviet Union, scattered around the central Volga. The most widely used languages are Mordvin, with around 1 million speakers; Mari (or Cheremis) and Udmurt (or Votyak), both with around 500,000; and Komi (or Zyryan), with around 400,000.

The other branch of the Uralic family is spoken by the Samoyeds – fewer than 30,000 people scattered throughout a vast area in Siberia and the Arctic USSR, whose economy is largely based on reindeer hunting and breeding. The most widely spoken language is Nenets (or Yurak), with around 25,000 speakers. Selkup (or Ostyak Samoyed) has around 3,000. The other languages still spoken are Nganasan (Tavgi, or Aram) and Enets (or Yenisey), with only a few hundred speakers each. The last of a group of languages once spoken in the Sayan Mountain area seems to have recently died out.





The inscription on this fragment of an engraved cross is written in Khutsuri, an ecclesiastical script of 38 letters used in Old Georgian. The palaeographic evidence (p. 187) suggests that the date is 11th century. The cross is preserved in the grounds of the new Church of the Transfiguration in Akhalaki, some 30 miles north west of Tiflis.



Caucasian

The area between the Black Sea and the Caspian Sea, surrounding the Caucasus Mountains, is relatively small and compact – not quite twice the size of the United Kingdom – but it contains one of the highest concentrations of languages in the world. Leaving aside the Indo-European, Semitic, and Altaic languages which have infiltrated the area in the past 3,000 years, there are about 40 languages which are recognized as belonging to a single Caucasian family. They are classified into three types: the *Abkhazo-Adyghian* group, found in the north-west of the region; the *Nakho-Dagestanian* group, found in the north-east; and the *Kartvelian* (or *Iberian*) group, found in the south.

The family as a whole is represented by around 5 million speakers, almost all to be found in the Caucasus region. Over 3 million of these live in the Georgian SSR, speaking a Kartvelian language – mainly one of the dialects of Georgian, which is the state language, used throughout the area. Other languages of the south are Zan (including Mingrelian and Laz) and Svan. Only Georgian has a written form, which dates from the 5th century AD.

In the north-west, the main languages are Kabardian (or Circassian), with over 300,000 speakers, Adyghe (around 100,000) and Abkhaz (around 80,000). There are around 25,000 speakers of Abaza. In the 1970s, only a handful of people were known to speak Ubykh – a language whose large number of consonants (80) assures it a special place in phonological studies (§28).

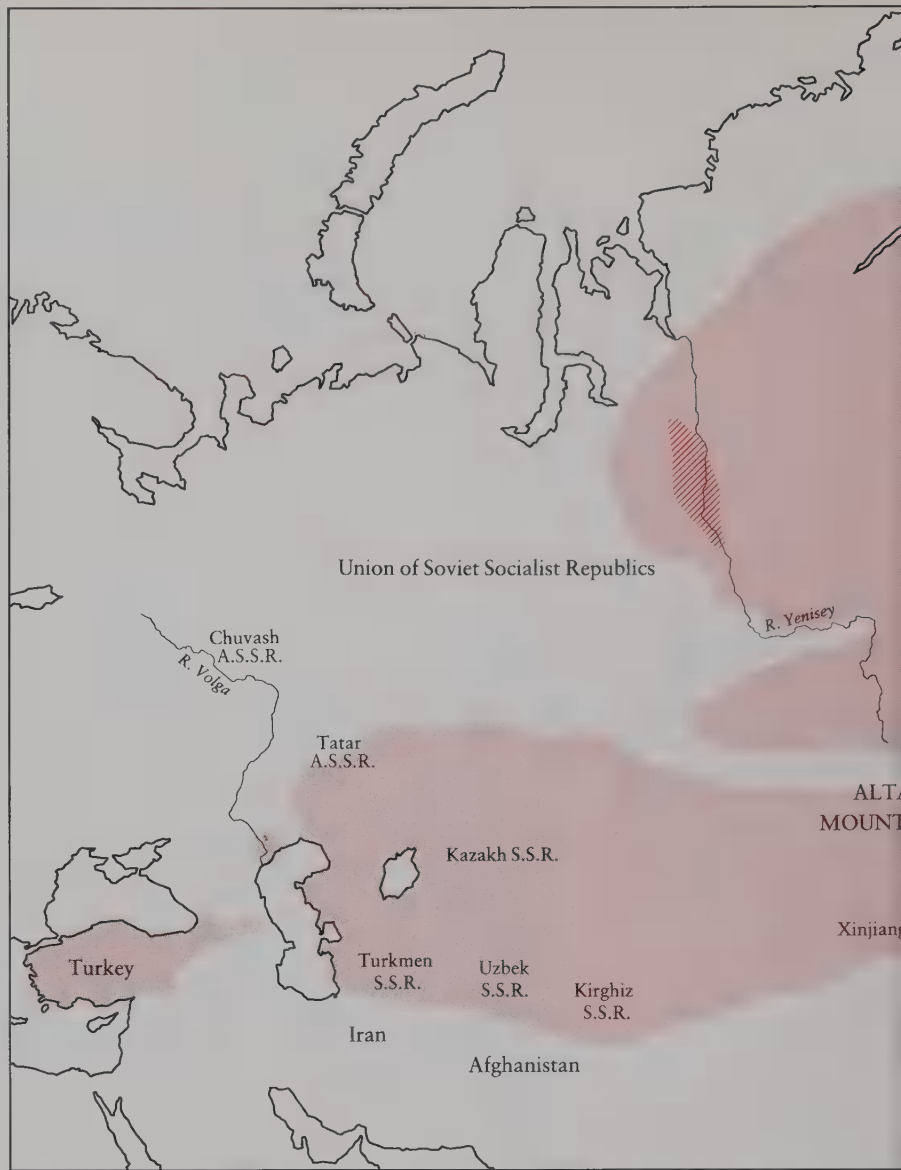
Most of the languages of the north-east belong to the Dagestanian group. The main languages are Avar (around 400,000), Lezghian or Kuri (around 300,000), Dargwa or Khjurkili (over 200,000), Lakk (over 80,000), and Tabasaran (over 50,000). Several other languages are spoken by 10,000 or fewer. Also in the north-east, the Nakh group of languages comprises Chechen (over 600,000), Ingush (around 150,000) and Bats (around 3,000), found in a single village in the Georgian SSR. The linguistic profile of this area is complicated by the difficulty of drawing a clear line between language and dialect (p. 284), and this has led to several different estimates of the number of languages in the Caucasian family.

Several of the northern languages have a written form, based on the Cyrillic alphabet (p. 202), and are used as state languages. There is much evidence of the influence of previous periods of contact with adjacent families (such as Arabic and Persian). Today, the most noticeable influence on the family, especially in the area of vocabulary, is Russian.

Palaeosiberian

The once-extensive Palaeosiberian culture is now represented by only a few thousand people scattered throughout north-eastern Siberia. The languages they speak have been classified into four groups, and since the 19th century these have been studied together under the 'Palaeosiberian' heading; but the groups are not genetically related to each other, and therefore they do not constitute a family in the linguistic sense. Nor are the links with other families any clearer, though several attempts have been made to trace connections with other families found in the region.

The *Luorawetlan* group is the best-represented, in the far north-east, consisting of Chukchi (about 12,000), Koryak (or Nymylan, 8,000), and Kamchadal (or Itelmen), Aliutor and Kerek, with only a few hundred speakers between them. To the west, the *Yukaghir* group is now represented by just a single language (Yukaghir, or Odul), spoken by around 500 people. Further west again, along the Yenisey River, about 1,000 people speak the only surviving member of the *Yeniseian* group – Ket (or Yenisey-Ostyak). And to the south, about 3,000 speak Gilyak (or Nivkhi), which has no known relatives. Since the earlier part of this century, each of these languages has been given a written form, based on the Cyrillic alphabet (p. 202).



Korean and Japanese

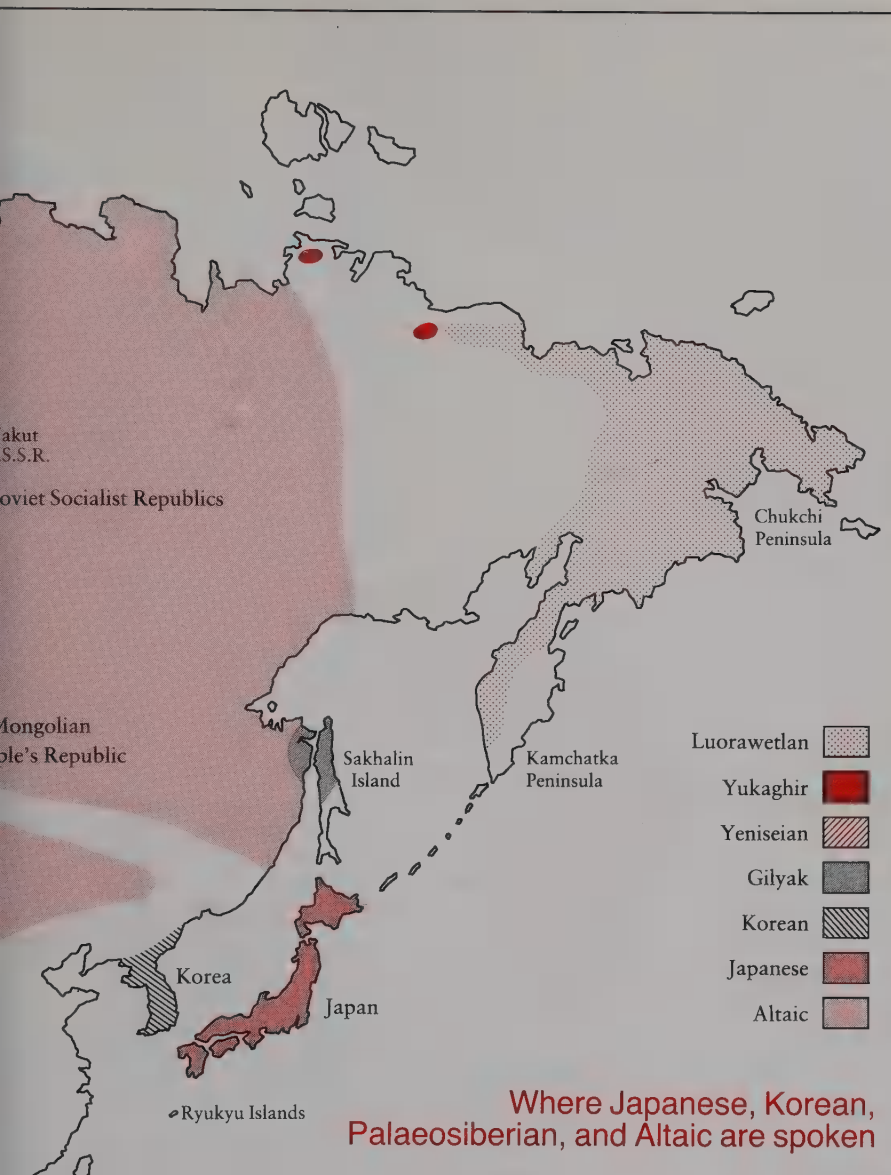
Korean There are evident similarities between the Korean language and the Altaic family, but it is not clear whether these can best be explained by a hypothesis of common descent or one of influence through contact. Thus in some classifications the language is placed within the Altaic family, and in others it is left isolated. A relationship with Japanese has also been suggested.

Korean is spoken by well over 50 million people in North and South Korea (where it is an official language), China, Japan, and the USSR. The language has been much influenced by Chinese: more than half its vocabulary is of Chinese origin, and the earliest records of the language, dating from before the 12th century, are written in Chinese characters.

Japanese The genetic relationship between Japanese and other languages has not been clearly established. It is most often considered to be a member of the Altaic family, but resemblances with other language families of the region have also been noted. There are several dialects, those in the south (and especially in the Ryukyu Islands) displaying major differences from the standard language based on the Tokyo dialect.

Japanese is spoken by around 118 million people on the islands of Japan, and by a further 2 million in other parts of the world, especially in Brazil and the United States. Apart from a few isolated forms, the first written records of Japanese date from the early 8th century, using Chinese characters, or *kanji* (p. 313).





Japan is one of the world's leading publishers of books, magazines and, especially, newspapers. The major papers appear in morning and evening editions. In 1984, the largest paper, published by Yomiuri, had a morning circulation of nearly 9 million, and an evening circulation of nearly 5 million – the highest in the world. It has been estimated that on average each Japanese household reads two papers a day.

Altaic

The Altaic family of languages cover a vast area, from the Balkan peninsula to the north-east of Asia – an area which includes the Altai mountain region of central Asia, from which the family receives its name. It comprises about 40 languages, classified into three groups: *Turkic*, *Mongolian*, and *Manchu-Tungus*. The common ancestry of these groups is maintained by many scholars; but this hypothesis is contested by those who feel that the linguistic similarities could be explained in other ways – such as the mutual influences displayed when languages are in contact with each other (p. 33).

As the name 'Turkic' suggests, the best-known language of this group is Turkish, spoken by around 45 million people in Turkey and surrounding territories. Other main languages of the south-west are Azerbaijani (12 million) and Turkmen (around 3 million), both spoken mainly in the USSR, Iran, and Afghanistan. In the south-east,

there is Uzbek (over 10 million), spoken mainly in the Uzbek SSR, and Uighur (around 6 million), mainly found in China (Xinjiang) and nearby USSR. In the north-west, the main languages are Tatar and Kazakh (both around 6 million), Kirghiz (around 2 million), and Bashkir (around 1 million), found largely in the USSR, with some speakers in China and nearby territories. In the north-east, languages are spoken by smaller numbers. There are around 300,000 speakers of the geographically isolated language, Yakut, and 150,000 speakers of Tuvian, but other languages number only tens of thousands (including one named Altaic – formerly, Oirat – which should not be confused with Altaic, the name of the family as a whole). Chuvash, spoken by over 1½ million in the middle Volga region, is usually listed along with other Turkic languages, but many consider it to be a separate branch within the Altaic family.

The main Mongolian language is known as Mongol (or Khalka), spoken by around 4 million people in the Mongolian People's Republic and nearby China. Related languages in the same region are Buryat (around 300,000), Santa (around 200,000), Dagur, and Monguor (both fewer than 100,000). Further west, the group is represented by Oirat (or Oyrat), Kalmyk (or Kalmuk) (both around 140,000), and Mogol (around 50,000). There are many uncertainties of classification in this area, due principally to problems of applying the distinction between language and dialect (p. 284).

The Manchu-Tungus group is spoken in a large number of dialects over a wide area. Evenki (formerly Tungus) may have as many as 30,000 speakers; but the other languages have fewer than 10,000 – Lamut (or Even), Nanai, and Manchu. The Manchu people of north-east China number over 3 million, but very few now speak the once-important Manchu language – a lingua franca between China and the outside world for over 200 years.

There is little evidence of the early development of the Altaic family. Written remains of Turkic are found in a runic script dating from the 8th century AD; but Mongolian script dates only from the 13th century; and the earliest Manchu records are even more recent – mid-17th century. Several writing systems seem to have been used throughout the early period.

In the 20th century, the most notable developments have come from the major political changes which have affected the area since the First World War. There has been a considerable effort to modernize the languages, especially by promoting fresh vocabulary. Several new literary languages have emerged, based on local languages (as in the case of Uzbek), and some of the older written languages have been reformed (seen most dramatically in the case of Turkish, which in 1929 replaced Arabic by Latin script).

Dravidian

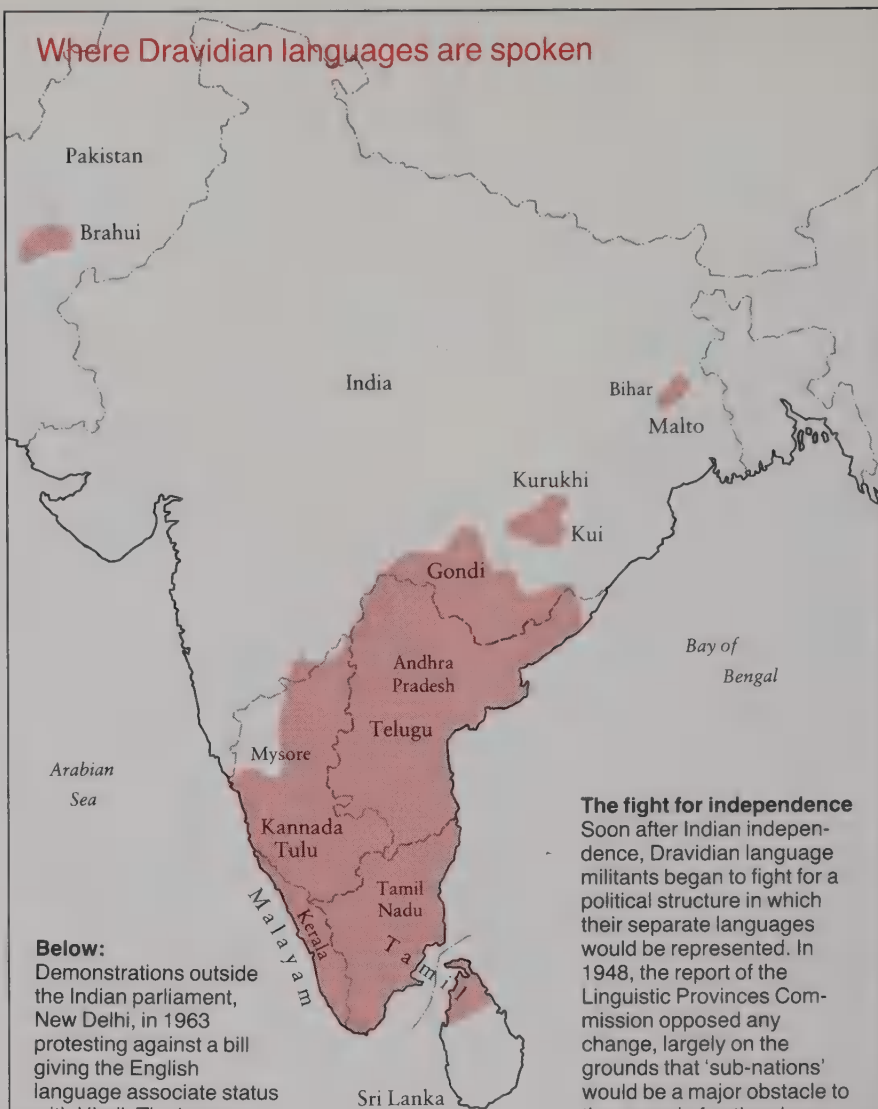
The Dravidian family is a group of over 20 languages, most of which are found close together in the southern and eastern areas of India – though one language (Brahui) is curiously isolated, being spoken 1,000 miles away from the main family, in the north of Pakistan. Through emigration, speakers of the main Dravidian languages are today found throughout South-east Asia, in eastern and southern regions of Africa, and in cities in many parts of the world.

The name given to the family comes from a Sanskrit word, *drāvida*, which is used in an early text with apparent reference to one of the languages, Tamil. Tamil has the oldest written records of this family, dating from the 3rd century BC, and scholars believe it to be close to the ancestor language, known as Proto-Dravidian. But, despite the historical records and associated reconstruction, there is little agreement about the origins of the language, or its speakers. One tradition speaks of migration from lands to the south, now submerged; other views suggest a movement from Asia, via the north-west, perhaps around 4000 BC. A relationship has been proposed with both the Uralic and the Altaic language families, but the hypothesis is controversial. There is, however, strong support for the view that Dravidian languages were once spoken in the north of India, and were gradually displaced by the arrival of the Indo-European invaders (§51).

The four main languages of the family are Telugu, Tamil (both with around 50 million speakers), Kannada (also known as Kanarese), and Malayalam (both with around 25 million speakers). Each language can be identified with a state in southern India – Andhra Pradesh, Tamil Nadu, Mysore, and Kerala, respectively. Of the four, Tamil has the greatest geographical spread, including several million speakers in Sri Lanka, Malaysia, Indonesia, Vietnam, parts of East and South Africa, and many islands in the Indian and South Pacific Oceans. The other languages are not so widely used outside India, though both Telugu and Malayalam have some currency. Written records date from the 5th century AD for Kannada, the 7th century for Telugu, and the 9th century for Malayalam.

Other languages with over a million speakers include Gondi, Kurukhi (or Oraoni), and Tulu. Brahui and Kui may have as many as half a million. Malto, isolated from the other languages in the north-east, is spoken by around 90,000 people. The remaining languages of the family have many fewer speakers, sometimes numbering only a few thousand – but it is not always obvious how to draw the line between language and dialect (p. 284). New languages continue to be reported – Naiki, Pengo, and Manda have been identified only since the early 1960s.

Where Dravidian languages are spoken



Below:

Demonstrations outside the Indian parliament, New Delhi, in 1963 protesting against a bill giving the English language associate status with Hindi. The banners read 'Death to English' and 'Long live the mother tongue'.



The fight for independence

Soon after Indian independence, Dravidian language militants began to fight for a political structure in which their separate languages would be represented. In 1948, the report of the Linguistic Provinces Commission opposed any change, largely on the grounds that 'sub-nations' would be a major obstacle to the spread of national consciousness in the new India. Further pressure led to a second committee of enquiry, which reached the same conclusion, but accepted that, if the demand continued to be insistent, the matter should be reopened. Many people saw in this the first real chance of success, and from 1949 the campaign intensified, especially among the Telugu speakers in Madras. The climax came in December 1952, with the death of Potti Sriramulu, who had chosen a hunger strike, the time-honoured method of Gandhi, to make his point. Prime Minister Nehru backed down, and the first of the language-based states, Andhra Pradesh (for Telugu) was inaugurated in October 1953. Three years later, the whole of south India was reorganized on the basis of linguistic regions.

Austro-Asiatic

Most of the languages of this family are spoken in South-east Asia, in the countries between China and Indonesia; but a few are found further west, in the Nicobar Islands and in parts of India. The membership of the family, and its main subdivisions, are not entirely clear. Few of the languages have a written history, and classification has been based on other methods (p. 293). Links between this and other families (in particular, the Austronesian family) have been proposed, but are uncertain.

Three main branches of the family are generally recognized. The largest branch is the *Mon-Khmer* group of languages, spoken throughout the south-eastern mainland, mainly in North and South Vietnam, Laos, Kampuchea (before 1976, Cambodia), and parts of Burma and Malaysia. It has three main languages. Mon (or Talaing) is spoken in Burma and Thailand by over half a million; Khmer (or Cambodian), the official language of Kampuchea, is spoken by over 5 million people. Inscriptions in both languages date from the 6th–7th centuries AD.

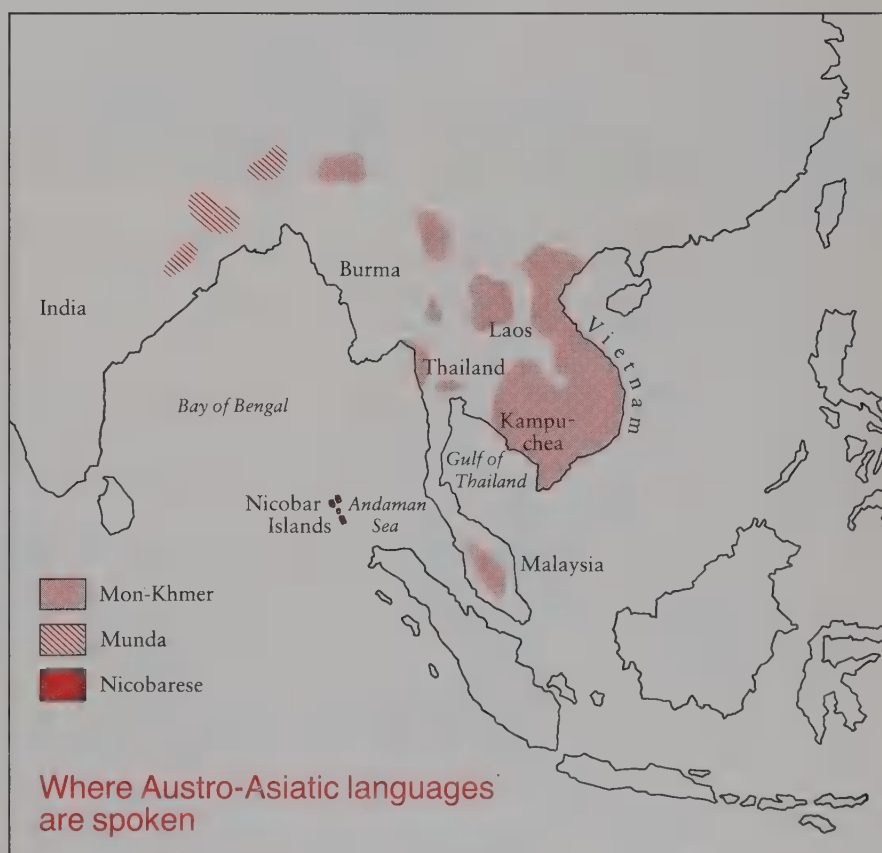
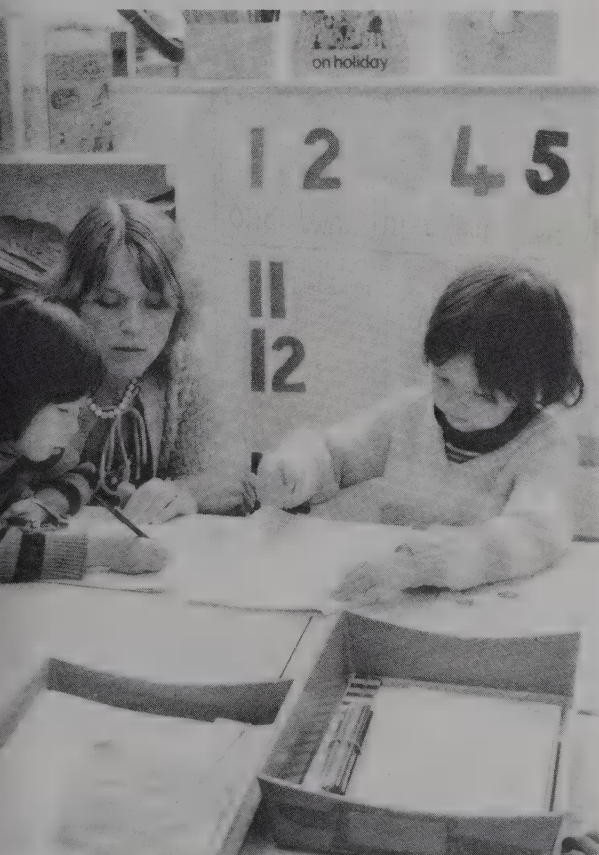
The main language of the group, Vietnamese, poses something of a problem. This language is spoken by around 50 million people in North and South Vietnam, Laos, and Kampuchea, and in recent years small groups of emigrants have taken it to many parts of the world. Its status in the Mon-Khmer group has, however, been disputed: some scholars see it as a marginal member, while some

relate it to the Tai family (p. 310). Its early history is obscured by the use of Chinese throughout South-east Asia – the result of over 1,000 years of rule by China, which lasted until the 10th century AD. The modern Latin-based alphabet, known as Quoc-ngu ('national language'), was introduced only in the 17th century.

The other two language groups are clearly separated geographically from the Mon-Khmer. The *Munda* group of languages is spoken in several parts of India, mainly in the north-east, but also in a few central areas. Mundari (around 1½ million) and Santali (perhaps 5 million) are the most widely used languages. Lastly, a tiny group of languages is spoken by around 10,000 people on the Nicobar Islands in the Bay of Bengal. These constitute a separate, *Nicobarese* branch of the Austro-Asiatic family.

There are well over 100 Austro-Asiatic languages. Exactly how many depends on the distinction drawn between language and dialect (p. 284), and on the criteria used to demonstrate structural similarities (p. 293). A few other languages spoken in Malaysia and India have at times been proposed as members of the family. Nothing is known about the early movements of the peoples involved. It is possible that the various groups of languages which make up the Mon-Khmer branch began to split up in the second millennium BC, but where the Austro-Asiatic peoples came from, and when they migrated, remains pure guesswork.

A group of Vietnamese children learning English.



Tai

The Tai family of languages are all found in South-east Asia, in an area centred on Thailand, and extending north-eastwards into Laos, North Vietnam, and China, and north-westwards into Burma and India. The spelling 'Tai' is used to avoid confusion with the main language of the family, Thai (or Siamese), which is the official language of Thailand.

The 40 or so Tai languages are usually divided into three groups: *south-western*, *central*, and *northern*. Most speakers belong to the south-western group, which includes Thai, spoken by around 30 million people in a wide range of dialects, and Lao (or Laotian), widely spoken in Thailand, and the official language of Laos (10 million). Shan (mainly in Burma), and Yuan (Thailand), both have over 2 million speakers. Other languages of this group have relatively few: of the central and northern groups, only Nung and Tho have over 100,000 speakers. But in this part of the world, such estimates are very approximate.

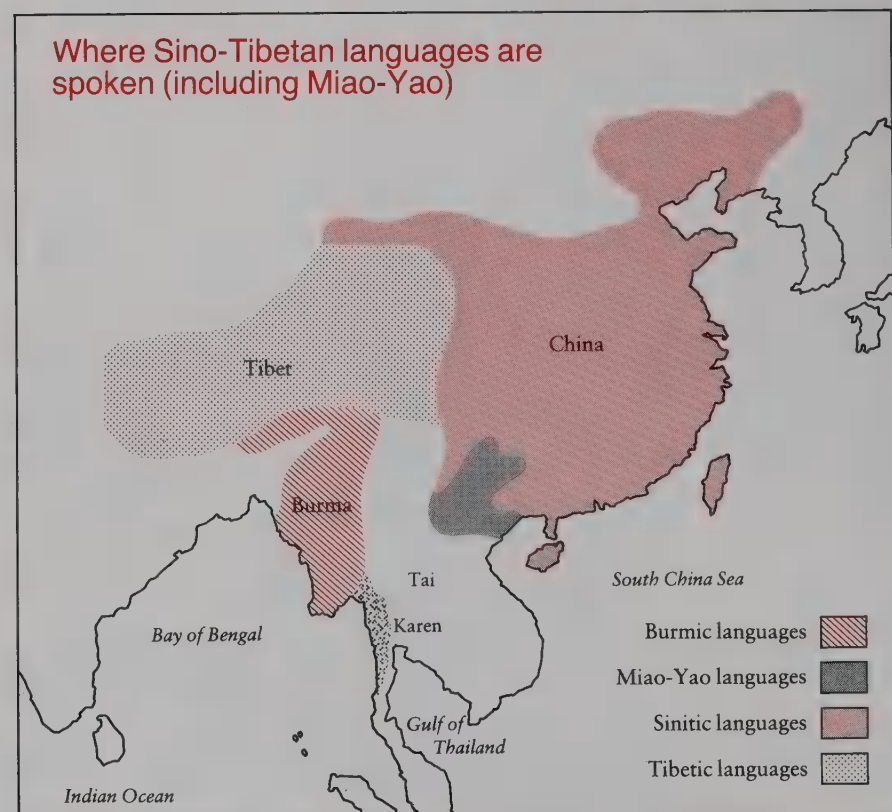
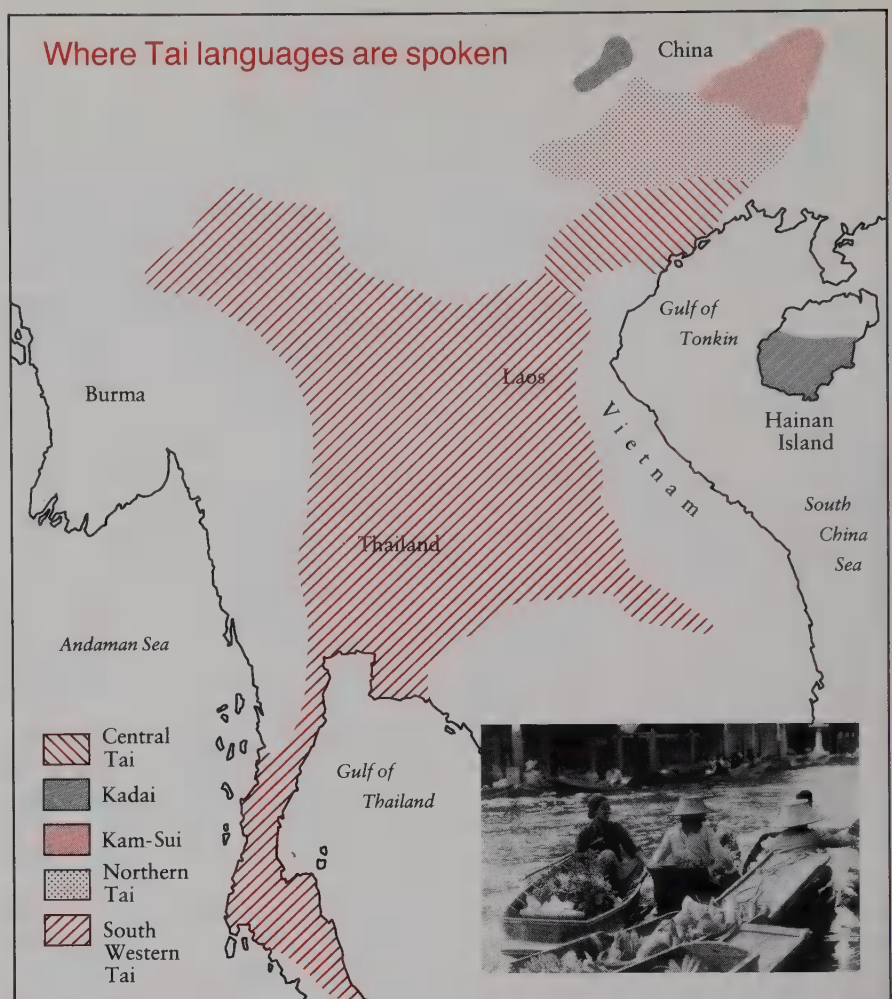
The relationship between the Tai family and other languages is unclear. Written remains of the south-western group date from around the 13th century. Links have been proposed both with the Sino-Tibetan and the Austronesian families. In particular, several languages of south-west China, belonging to the Kadai and Kam-Sui groups, display interesting similarities to Tai.

Sino-Tibetan

The membership and classification of the Sino-Tibetan family of languages is highly controversial. The 'Sinitic' part of the name refers to the various Chinese languages (often referred to as 'dialects'); the 'Tibetan' part refers to several languages found mainly in Tibet, Burma, and nearby territories. But as there are notable similarities with many other languages of the region, some scholars adopt a much broader view of the family, so as to include the Tai and Miao-Yao groups (p. 311).

The *Sinitic* languages (see p. 312) are spoken by over 1,000 million people. The vast majority of these are in China (over 980 million) and Taiwan (19 million), but substantial numbers are to be found throughout the whole of South-east Asia, especially in Hong Kong, Indonesia, Malaysia, Thailand, and Singapore. Important Chinese-speaking communities are also found in many other parts of the world, especially in the USA.

There are nearly 300 languages in the *Tibeto-Burman* family, and these have been classified in several different ways. It is possible to identify 'clusters' of languages which have certain features in common, such as the 50 or so Lolo languages, spoken by around 3 million people in parts of Burma, Thailand, Vietnam, Laos, and China. The 80 or so Naga, Kuki, and Chin languages, spoken





Biggest book The whole Buddhist canon is carved on stone slabs housed in 729 stupas in the Kuthodaw Pagoda in Burma. The achievement, sometimes called the 'world's largest book', was created by King Mindon in 1872, with the help of 2,400 monks.

Facing page:
Thai traders in Bangkok's
Floating Market.

in Burma and India, comprise another group. But groupings of this kind display many differences as well as similarities, and it has not yet proved possible to find a neat way of classifying these, and the other groups thought to belong to the same family, into two or three types. It is by no means clear, for example, whether the small group of Karen languages, spoken by around 2 million people in Burma, should be included or excluded from the Sino-Tibetan family.

After Chinese, Burmese and Tibetan are the two main languages of this family. Burmese is spoken by over 25 million people in Burma as a mother tongue, and several million more use it as a second language throughout the region. It has written records dating from the 11th century. Speaker estimates for Tibetan are very uncertain, largely because of the influence of Chinese in recent years; but a figure of 3–4 million seems likely. There are several major dialects, which are sometimes viewed as separate languages. Written records date from the 8th century AD, treating largely of Buddhist

religious subjects. The alphabet of this period, which reflects the pronunciation of the time, is still in use today, with the result that there is considerable divergence between spelling and modern Tibetan speech.

Miao-Yao

This is a small group of languages spoken in southern China and adjacent parts of South-east Asia – especially northern Laos, Thailand, and Vietnam. The two chief languages, which give the group its name, are Miao (also called Hmong, or Meo), spoken by over 2½ million people, and Yao (also called Man), spoken by nearly a million. The sub-classification of the group into languages and dialects is controversial, as indeed is its status as a separate language family. Links with Tai, Mon-Khmer, and Sino-Tibetan have been suggested, and it is within the latter family that Miao-Yao languages are most often placed.

The languages of China

Because there has long been a single method for writing Chinese, and a common literary and cultural history, a tradition has grown up of referring to the eight main varieties of speech in China as 'dialects'. But in fact they are as different from each other (mainly in pronunciation and vocabulary) as French or Spanish is from Italian, the dialects of the south-east being linguistically the furthest apart. The mutual unintelligibility of the varieties is the main ground for referring to them as separate languages. However, it must also be recognized that each variety consists of a large number of dialects, many of which may themselves be referred to as languages. The boundaries between one so-called language and the next are not always easy to define.

The Chinese refer to themselves and their language, in any of the forms below, as *Han* – a name which derives from the Han dynasty (202 BC–AD 220). Han Chinese is thus to be distinguished from the non-Han minority languages used in China. There are over 50 of these languages (such as Tibetan, Russian, Uighur, Kazakh, Mongolian, and Korean), spoken by around 6% of the population.

THE CHINESE LINGUISTIC REVOLUTION

The 20th-century movement for language reform in China has resulted in the most ambitious programme of language planning (§61) the world has ever seen. The programme has three aims:

- (i) to simplify the characters of classical written Chinese, by cutting down on their number, and reducing the number of strokes it takes to write a character;
- (ii) to provide a single means of spoken communication throughout the whole of China, by popularizing the Beijing-based variety, which has been chosen as a standard;
- (iii) to introduce a phonetic alphabet, which would gradually replace the Chinese characters in everyday use.

'Dialect'	Where spoken
Cantonese (Yüeh)	In the south, mainly Guangdong, southern Guangxi, Macau, Hong Kong.
Hakka	Widespread, especially between Fujian and Guangxi.
Hsiang (Hunan)	South central region, in Hunan.
Kan	Shanxi and south-west Hebei.
Mandarin	A wide range of dialects in the northern, central and western regions. North Mandarin, as found in Beijing, is the basis of the modern standard language.
Northern Min (Min Pei)	North-west Fujian.
Southern Min (Min Nan)	The south-east, mainly in parts of Zhejiang, Fujian, Hainan Island and Taiwan.
Wu	Parts of Anhui, Zhejiang, and Jiangsu.



An oracle bone This remnant of China's Bronze Age, from the Shang dynasty of the 2nd millennium BC, was found in the Anyang district of Henan. Shang kings had questions inscribed on polished ox bones or tortoise shells. A pattern of holes was drilled in them, and they were then heated until they cracked. The pattern of cracks produced by this process was interpreted as the ancestral spirits' way of answering the questions. Thousands of oracle bones have now been discovered, and the study of their inscriptions has now become a new branch of Chinese linguistic studies, known as *jiǎ gǔ shū*.

There have been moves to reform the language from as early as the 2nd century BC, but there has been nothing to equal the complexity of the present-day programme, in which frequent reference is made to the names of several different varieties of the Chinese language.

Wén-yán ('literary speech' or 'body of classical writing'). The cultivated literary language, recorded from around 1,500 BC, and the traditional unifying medium for all varieties of Chinese. Its complex system of characters is explained on p. 200. It differs greatly from everyday speech, especially in its terse grammatical style and specialized literary vocabulary. It is now less widely used, because of the success of the current reform movement for written Chinese.

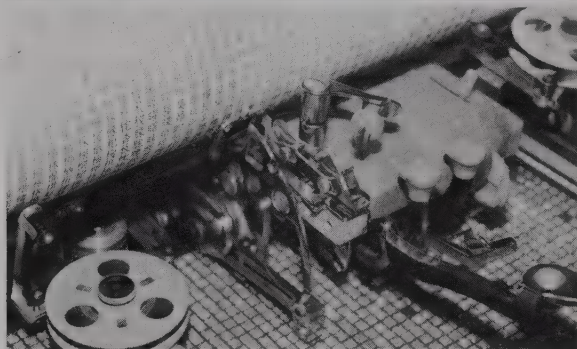
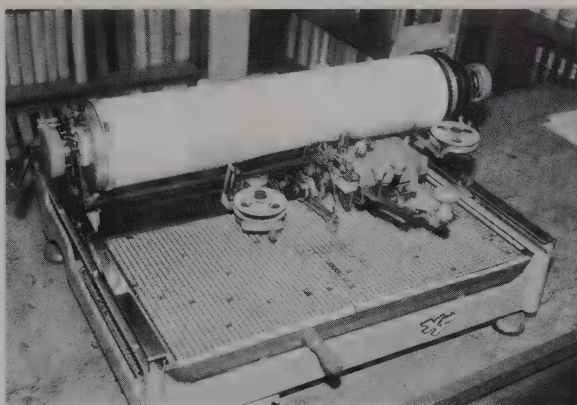


Bái-huà ('colloquial language'). A simplified, vernacular style of writing, introduced by the literary reformer Hu Shih in 1917, to make the language more widely known to the public, and to permit the expression of new ideas. A style of writing which reflected everyday speech had developed as early as the Sung dynasty (AD 960–1279), but had made little impact on the dominant *wén-yán*. However, the 'May Fourth Movement' (which originated in political demonstrations on 4 May 1919 after the Paris Peace Conference) adopted Hu Shih's ideas, and *bái-huà* was recognized as the national language in 1922.

Pǔtōnghuà ('common language'). The variety later chosen as a standard for the whole of China, and widely promulgated under this name after the establishment of the People's Republic of China in 1949. (In Taiwan, it goes under the name of *guó yǔ*, or 'national speech'; in the West, it is generally referred to simply as 'Mandarin'.) It embodies the pronunciation of Beijing, the grammar of the Mandarin dialects, and the vocabulary of colloquial Chinese literature. In 1956, it became the medium of instruction in all schools, and a policy of promoting its use began (p. 365). It is now the most widely used form of spoken Chinese, and is the normal written medium for almost all kinds of publication.

Pīn-yīn ('phonetic spelling'). After several previous attempts to write Chinese using the letters of the roman alphabet, this 58-symbol writing system was finally adopted in 1958. Its main aims are to facilitate the spread of *pǔtōnghuà*, and the learning of Chinese characters. *Pīn-yīn* is now in widespread use. In the 1970s, for example, a new map of China was published using the alphabet, and a list of standard spellings for Chinese place names was compiled. New codes were devised for such diverse uses as telegraphy, flag signals, braille, and deaf finger-spelling (p. 225).

The future of the reform programme is not entirely clear. It may be that *pīn-yīn* will ultimately supplant the general use of characters, or there may be a reaction to preserve the traditional written language. With *pǔtōnghuà*, new varieties of regional pronunciation are certain to develop (for



Chinese typewriter

The complexity of classical writing is well illustrated by this device – a Chinese typewriter. The tray contains over 2,000 characters, with several thousand more being available on other trays. The typist first aligns the tray, then presses a key, which makes an arm pick up the required character and strike it against the paper. The machine can type vertically and horizontally. It is a slow process, with good typists averaging at most 20 characters a minute.

instance, Mao Zédōng spoke it with a marked Hunan accent), which may lead to problems of intelligibility. And if *pǔtōnghuà* is to succeed as a popular means of communication, it needs to anticipate the potential conflict with local regional dialects (for example, whether local words should be used). Much will depend on how flexibly the authorities interpret the notion of standard, and whether they are able to achieve a balance between the competing pressures of respecting popular usage (where there is a strong case for variety) and the need for national communication (which could lead to a form of centralized laying down of prescriptive linguistic rules).

Romanizing Chinese

Several systems of romanization for Chinese have been invented. The oldest in current use is known as Wade–Giles, introduced by Sir Thomas Wade in 1859, and developed by his successor in Chinese Studies at Cambridge University, Herbert Giles. This is the system which is most familiar to western eyes. In the 1930s, a system known as *gwoyeu romatzyh* ('national romanization') was devised by Lin Yu-t'ang and Chao Yuen-ren. During the Second World War, Yale University introduced an intensive programme of Chinese training for Air Force pilots, and introduced a new system, related more clearly to American pronunciation. But *pīn-yīn* has now become the dominant system. The name for China illustrates some of the differences between these systems:

中國

Chinese characters

Wade–Giles	Chūngkuo
Gwoyeu	
romatzyh	Jonhhwo
Yale	Jūnggwo
Pīn-yīn	Zhōngguó

Some familiar spellings, with their *pīn-yīn* equivalents:

Peking	Běijīng
Canton	Guǎngzhōu
Mao Tse-tung	Mao Zédōng

'Tigers do not breed dogs'

These phrases, usually of four characters, illustrate the telegraphic literary style of *wén-yán*. The nearest equivalent to this proverb in English is perhaps 'Like father, like son.' Mao Zédōng was particularly adept at incorporating classical features of this kind into his political speeches.

虎	父	無	犬	子	禍	不	單	行
hǔ	fǔ	wú	quǎn	zǐ	huò	bù	dān	xíng
(tiger)	(father)	(no)	(dog)	(son)	(calamity)	(no)	(single)	(act)

'Calamities do not occur singly'

The equivalent phrase in English is 'It never rains but it pours.'

The languages of Africa

Africa contains more languages than any other continent – around 1,300, spoken by over 400 million people. The language total is uncertain, because many areas are inaccessible, and many dialect groups have not been well investigated, but it is probably an underestimate. Very few of these languages are spoken by large numbers: less than 5% have more than a million speakers. As a consequence, Africa is a continent of *lingua francas*. Arabic is used throughout the north and north-east; Swahili is used throughout most of East Africa; English and French are widespread, often as official languages, in former colonial territories; and, especially in West and Central Africa, several languages have come to be used as ways of fostering communication between different tribes (such as Hausa, Bambara-Malinka, Wolof, Kongo, Lingala, and various pidgins and creoles, such as Pidgin English, Krio, and Sango).

The most widely accepted classification of African languages recognizes four main families, though there is considerable difference of opinion about the boundaries between them, and about several of the language groups which they subsume. There is little historical evidence available to aid classification. Written records of most African languages have existed only since missionary activities began on the continent, less than 150 years ago. As a consequence, the field of African languages has proved to be one of the most controversial areas within the domain of comparative linguistics.

NIGER-CONGO

This is the largest African family, with around 1,000 languages, and several thousand dialects, whose status is often difficult to determine. The family spreads across the whole of sub-Saharan Africa, west of the River Nile, and extends along the eastern half of the continent as far north as the Horn of Africa. It is usually divided into six groups of languages, which are estimated to have diverged well over 5,000 years ago.

The largest group is the *Benue-Congo* – around 700 languages spoken throughout central and southern Africa, over 500 of them belonging to the Bantu sub-group. The main Bantu languages are Swahili (4 million native speakers, but used by about 30 million speakers as a *lingua franca*), Kongo (7 million), Rwanda (15 million), Makua (6 million), Xhosa and Zulu (sometimes considered dialects of the same language, but considered by their speakers to be different languages – both over 5 million). The largest non-Bantu languages are found in Nigeria, Efik (4 million), and Tiv (2 million).

The *Adamawa-Eastern* group of around 90 languages is spoken in the remote, northern part of central Africa. Its main members are Sango, a pidginized language used throughout the Central African Republic (1½ million) and Gbaya (300,000). Several other pidgins are spoken in the area.

The *Kwa* group of over 800 languages is spoken in the southern part of the bulge of West Africa. It contains several important members, especially Yoruba (17 million), Igbo (13 million), Akan (8 million), Ewe (2 million), and Ijò (1¼ million). English or French are official languages in the area.

The *Voltaic* (or *Gur*) group consists of over 70 languages spoken in a broad area around the Upper Volta River. Its main member is Mossi, spoken by around 4 million.

The *West Atlantic* group, as its name suggests, consists of over 40 languages spoken in the extreme western part of the African bulge. Fulani is the most widespread language, spoken by around 15 million.

The *Mande* group of over 20 languages is also spoken in the western part of the bulge. Its main members are Bambara (2 million), Malinka (3 million), Dyula, and Mende (each over 1 million).

NILO-SAHARAN

The major group of languages in this family is spoken in two areas around the upper parts of the Chari and Nile rivers, and is generally referred to by the name *Chari-Nile*. It contains around 100 languages, whose sub-classification has given rise to much controversy. In particular, scholars have argued for over 100 years about the best way of classifying the languages spoken along the Nile, in Sudan, Uganda, and nearby territories (the so-called *Nilotic* group). A postulated western branch includes such languages as Luo (2½ million), Dinka (2 million), Akoli, and Lango (both with over half a million speakers). The larger languages of the eastern, or *Nilo-Hamitic* branch, are Nandi, Bari, and Masai, all with around half a million speakers. But the closeness of the relationship between the two branches is disputed, as is the implication of relatedness to the Hamitic group of languages. Other languages in the area with over 100,000 speakers are Lendu, Mangbetu, Lugbara, Madi, and Gambai. Nubian, spoken in Sudan and Egypt, has around a million speakers. It is the only language of this group to have a long written history, with manuscripts in a modified Coptic alphabet dating from the 8th century AD (Old Nubian).

Argument also surrounds the relationship between the Chari-Nile languages and the 20 or so other languages which have been grouped into the Nilo-Saharan family. Particularly unclear is the status of Songhai, spoken by over a million people in a wide area between Mali and Nigeria. Fur is another isolated language, spoken by around 400,000 in the Sudan and Chad. The remaining languages have been classified into small groups: *Saharan*, *Maban*, and *Koman*. The Saharan language, Kanuri, is the largest, with over 3 million speakers.

There is often no clear correlation between language groups and racial or cultural groups in Africa. The Pygmies, who live in the central forests, have no single language, but use the languages of neighbouring peoples. By contrast, the Khoisan of South Africa do form a homogeneous linguistic and racial group. The picture shows a group of Khoisan tribesmen cutting up a hartebeest.



KHOISAN

This is the smallest language family in Africa, consisting of fewer than 50 languages; but they are a well-known group because of their use of click consonants (p. 126). They are spoken in the southern part of Africa, in an area around the Kalahari Desert extending from Angola to South Africa, though two click languages are spoken as far north as Tanzania (Sandawe and Hatsa). 'Khoisan' derives from the name of the largest Hottentot group (the Khoi-Khoin) and that of the Bushmen in the Nama region of Namibia (San). Few of these languages have more than 1,000 speakers – only Kwadi and Sandawe (spoken in Tanzania) have over 10,000. The numbers are diminishing, and several languages are known to have become extinct. About half of the languages have been given a written form by missionaries and others.

AFRO-ASIATIC

This family, also known as Hamito-Semitic, is the major family to be found in North Africa, the east-horn of Africa and south-west Asia. It contains over 200 languages, spoken by nearly 200 million people. There are six major divisions which are thought to have derived from a parent language that existed around the 7th millennium BC.

The *Semitic* languages have the longest history and the largest number of speakers. They are found throughout south-west Asia, including the whole of the Saudi Arabian peninsula, and across the whole of North Africa, from the Atlantic to the Red Sea. The oldest languages of the group, now extinct, date from the 3rd millennium BC; they include Akkadian, Amorite, Moabite, and Phoenician, all once spoken in and around the Middle East. There was a vast literature in Akkadian, written in cuneiform script (p. 198). Hebrew dates from the 2nd millennium BC; its classical form was preserved as the written language of Judaism; its modern spoken and written form is used by around 4 million people in Israel and throughout the world. Old Aramaic, the language of Jesus and the Apostles, also dates from this period. Aramaic dialects are still spoken by tiny groups in the Middle East. A modern form of one of these dialects – Syriac (or Assyrian) – is spoken by as many as a million people in and around the Middle East, and in the USA.

The major language of the group is Arabic, spoken by over 150 million people as a mother tongue, and used by several million more as a second language. It exists in both classical and colloquial forms. Classical (or literary) Arabic is the sacred language of Islam, and is used as a lingua franca of educated people throughout the Arabic-speaking world. Colloquial Arabic exists in many modern dialects, not all of which are mutually intelligible – they include Algerian, Moroccan, Egyptian, Syrian, Iraqi, and several dialects of Arabia and the Sahara. Maltese, spoken by over 300,000 people on the island of Malta, is also a development from Arabic.

In the south of the region, in Ethiopia, there are several Semitic languages, notably Tigrinya (3½ million), Amharic (the official language of Ethiopia, used by around 13 million), and Gurage (around 1 million).

The remaining branches are less widespread. *Egyptian* is now extinct: its history dates from before the 3rd millennium BC, preserved in many hieroglyphic inscriptions and papyrus manuscripts (p. 199). Around the 2nd century AD, it developed into a language known as Coptic. Coptic may still have been used as late as the early 19th century, and is still used as a religious language by Monophysite Christians in Egypt.

There are over 20 *Berber* languages spoken throughout North Africa by around 12 million people, mainly in Algeria and Morocco. They include Riff, Kabyle, Shluh, and Tamashek, the widely scattered language of the Tuareg nomads. There are about 30 *Cushitic* languages, spoken by around 13 million people. The largest is Oromo (or Galla), several dialects of which are spoken in Ethiopia and Kenya by over 10 million people; and Somali, spoken in Ethiopia, Somalia and Kenya by nearly 5 million. There are over 20 *Omotic* languages, spoken by nearly 2 million people in western Ethiopia and northern Kenya. About half of these are speakers of Walamo. Omotic is sometimes classified as a western branch of Cushitic. Lastly, there are over 100 *Chadic* languages, whose status within the Afro-Asiatic family is less clear. These languages are spoken by over 25 million people in an area extending from northern Ghana to the Central African Republic. Hausa is undoubtedly the most important language of this group, spoken by around 25 million people as a mother tongue, and by several million more as a second language throughout the region. It is the only Chadic language to have a written form – a roman alphabet now being used in place of the Arabic script introduced in the 16th century.

Tifinagh Below left: The Tuareg tribesmen have preserved a unique form of writing, known as *tifinagh* ('characters'). It derives from Numidian, an ancient Libyan script used in Roman times. The system consisted only of consonants, usually written right to left.

Below: Maltese is the only form of Arabic to be written in the Latin alphabet. It is related to the western Arabic dialects, but it also shows the marked influence of the Romance languages (via Sicily). This holiday advertisement shows some of the symbols needed to cope with the Semitic sounds.



: + □ | | : □ | □ □ : √ □ √

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Austronesian

The Austronesian language family covers a vast geographical area, from Madagascar to Easter Island, and from Taiwan and Hawaii to New Zealand – a territorial range which is reflected in an alternative name often given to the family: Malayo-Polynesian. It is one of the largest families, in terms of both number of speakers (around 200 million) and number of languages (at least 500, and perhaps as many as 700).

In this part of the world, it is particularly difficult to establish language identities. Apart from the usual problems of distinguishing dialects from languages (p. 284), several different names may be used with reference to the speakers in an area, and it is never obvious whether these names refer to different languages, or are simply alternative names for the same languages. For example, over 70 names have been recorded for the various dialects of the Dayak language of north-western Borneo and south Sarawak, but it is possible that research will show several of these to be so different that they could legitimately be counted as distinct languages. The linguistic picture is also complicated by the existence of many pidgins and creoles (§55) which have grown up as the result of trade contacts in the area. Moreover, several languages have come to be extensively used as *lingua francas* – notably Bahasa Indonesian, Bazaar Malay, Chinese, English, and French.

The Austronesian family is usually divided into two main groups, the boundary falling within the island of New Guinea. The *Western* group contains perhaps 400 languages, spoken in Madagascar, Malaysia, the Indonesian Islands, the Philippines, Taiwan, parts of Vietnam and Kampuchea, and the western end of New Guinea. Two languages of Micronesia (Chamorro and Palauan) are also included. The *Eastern* group, usually referred to as Oceanic, contains around 300 languages, spoken over most of New Guinea, and throughout the 10,000 or more islands of Melanesia, Micronesia, and Polynesia. Despite its geographical and linguistic diversity, only a small minority of speakers (under 2 million) belongs to the eastern group.

Because of the many structural differences between the languages, it is estimated that the Austronesian family has a history of development of over 4,000 years, with archaeological and linguistic evidence suggesting a probable geographical origin in the New Guinea area. But despite extensive research into Austronesian languages in recent years, the early history of this family remains obscure and controversial, and several competing linguistic sub-classifications have been proposed.

Indo-Pacific

There are over 600 languages spoken in New Guinea, and about a further 100 spoken in the islands to the immediate east and west, which do not belong to the Austronesian family. Two small language groups lie much further away from those spoken in the New Guinea region, and some scholars believe that there is enough evidence to justify their placement within this group: Andamanese, from the Andaman Islands in the Bay of Bengal; and Tasmanian, now extinct, from the island of Tasmania, to the south of Australia (p. 319). Fewer than 3 million speakers are involved.

Over half of the Indo-Pacific languages have been shown to be related, especially many of those in central New Guinea. But the linguistic picture is by no means certain: in the more inaccessible parts of New Guinea, there are still tribes who have not been contacted, and whose languages are not known; and data are sparse on many others, which may have only tens or hundreds of speakers. Many different classifications have been proposed, some of which recognize over 100 sub-families. Other names for the family, such as Papuan, are also in use.

There is nowhere to compare with the multilingual diversity of New Guinea – so many languages crammed into an area of only 300,000 square miles, and containing a total population of only around 6 million. A sense of this complexity can be obtained by ‘translating’ these figures into British terms: Britain, one third of the size, would find itself containing nearly 200 languages, separated from each other by distances of only 20 miles.

The Easter Island inscriptions (illustrated here on a carved wooden gorget) are pictures with magical significance, and not a form of writing. The literature of Oceania is oral, consisting of many memorized passages for use in social events, and also lengthy myths about events and places, which would be formally recited. The language was held in special esteem: the recitation of a myth belonging to some other clan was considered theft.



A map of the area covered by the Indo-Pacific and Austronesian families, and more detailed information about some of the languages, is provided on pp. 318–319.

Andamanese A tiny number of people speak various dialects of Andamanese, on the Andaman Islands in the Bay of Bengal. There were around 500 speakers in the 1950s, but this figure had been more than halved by the early 1980s. The language is not clearly related to any of the others in the region, but a tentative placement alongside other Indo-Pacific languages has been proposed.

Pilipino Pilipino is the name given to the national language of the Philippines, when the country became independent in 1946. It is a standardized form of Tagalog, an indigenous language spoken in central and south-western parts of the island of Luzon, which includes the capital, Manila. There are around 12 million native speakers of Tagalog, but over 30 million now speak Pilipino, which along with English is the medium of instruction in schools. There is an extensive literature of folklore and mythology in Tagalog, and also in the other major indigenous languages of the Philippines, Cebuano (over 10 million speakers throughout the south) and Ilocano (over 5 million speakers in the north). A movement for a new national language, Filipino, began in the 1970s.

Malay Malay is extensively spoken throughout Malaysia and Indonesia as a second language, and is the mother tongue for around 10 million people. The dialect of the south Malay Peninsula has become the standard language, and under the name of Bahasa Indonesian (*bahasa* = 'language') has been the official language of Indonesia since 1949; it is often referred to simply as Indonesian. A pidginized form of Malay, known as Bazaar Malay, is widely used as a lingua franca throughout the Indonesian archipelago. Its use long predates the time of contact with European languages, in the 17th century. Another form, known as Baba Malay, is used by Chinese communities in Malaysia. Written records of Malay date from the 7th century AD, consisting of various inscriptions found on Sumatra. The modern standard language alphabet is now different from that of the older, literary Malay, because of the introduction of spelling reforms.

Malagasy Indonesian traders migrated to the uninhabited island of Madagascar during the 1st millennium AD, the linguistic differences with other Austronesian languages suggesting that the separation took place towards the beginning of the period. Despite its closeness to Africa, the language shows only the occasional influence of African languages and Arabic. There are now around 9 million speakers. The standard language is based on the dialect of the largest ethnic group, the Merina ('elevated people' – those who lived on the plateau), who were dominant in the 19th century. Various dialects of Malagasy are also used on several of the islands in the region around Madagascar.

Tok Pisin This pidgin language is widely used within Papua New Guinea, especially in the north of the country. It is spoken by over 750,000 people – by many, as a mother tongue (§55).

Sundanese There are around 20 million speakers of Sundanese, found throughout the western part of Java. Written records date from the 14th century.

Javanese Javanese has the largest number of mother-tongue speakers in the area – well over 60 million. It is spoken throughout the island of Java, and to some extent in Malaysia. It has a strong written literary tradition, dating from the 8th century, which continues to flourish, although somewhat eclipsed these days by the influence of the standard language, Bahasa Indonesian.



Shadow-puppet plays are found in many parts of South-east Asia, originating in Java 1,000 years ago. Carved or leather puppets, fixed on sticks, represent mythological figures. Light from a flame lamp passes through holes in the puppets onto a cloth screen, to produce a spectacle of flickering shadows which symbolize a mystical world. The narrator follows a basic scenario, using stock phases to introduce heroes and events; but there is much improvisation, adding music, satire, and local details, and introducing many voice qualities. The plays often last all night long.



Hanuman the monkey god, comes to the aid of Sita in the *Ketyak* dance, in Ubud, Bali. This dance makes a ritual use of male voices. A large number of men sit concentrically around a lamp, chanting rhythmical sets of heavily emphasized syllables. The men in their trance-like states are thought to be possessed by monkey spirits.

Motu Motu is spoken by around 10,000 in the central part of Papua New Guinea. A pidginized variety (once known as Police Motu, because it became the language of the multilingual police force) developed as a trade language between speakers of Austronesian and Indo-Pacific languages; it is now called Hiri Motu. It is spoken by around 150,000 throughout the country, where it has official status.

Chamorro One of the two languages in Micronesia (the other being Palauan) which belong to the western branch of Austronesian. It is spoken by around 50,000 people, mainly on the island of Guam, where the official language is English.

Tasmanian There were five main dialects spoken in Tasmania, and these have now been classified as two languages. There is little information available about them: the last known speakers died towards the end of the 19th century. Tasmanian is not clearly related to any other language, but some scholars feel that a placement within the Indo-Pacific family is justified.

Maori The Maori population has been steadily increasing during the 20th century, and there has been a revival in the language and culture. Maori is now an optional second language in schools. There are around 100,000 speakers, all of whom are bilingual in English. Maori is still to be heard, in the form of songs, speeches, and ritual challenges, at special gatherings, and when official visitors to New Zealand are being formally received (p. 49).

Gilbertese This has the largest number of speakers of all the languages of the eastern Austronesian branch in Micronesia. It is spoken on the 16 coral atolls which constitute the Gilbert Islands, named after the Englishman Thomas Gilbert, who arrived there in 1788.

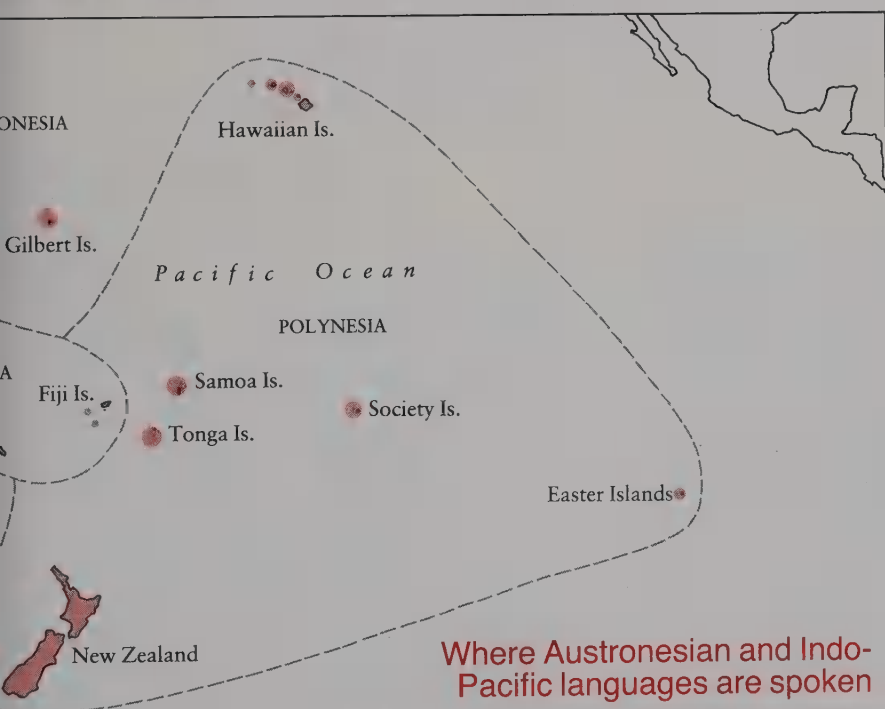
Tahitian Tahitian is widely used as a lingua franca throughout French Polynesia, and is the native language of the Society Islands. There are perhaps 70,000 speakers in all. It does not, however, have official status.

Tongan This is the national language of the Kingdom of Tonga, also known as the Friendly Islands. It is spoken by around 80,000 people.

Samoa There are around 200,000 speakers of Samoan in Western Samoa (where it is an official language, along with English) and American Samoa. Several sizeable communities now live in New Zealand and the USA.

Fijian Over 200,000 people speak Fijian as a first or second language of the Fiji Islands. This is less than half the population of the islands, the remainder being Indian, Chinese, and other immigrants. The standard form, based on the Bauan dialect, is used in broadcasting and in the press, along with Hindi and English.

Easter Island One of the first islands to be settled in Polynesia. Only a small number of its tiny population of 1,800 speak the language, which is also known as Rapanui or Pascuanese.



The languages of the Americas

NORTH AMERICAN INDIAN LANGUAGES

There were originally around 300 languages spoken by the indigenous American Indian (or Amerindian) tribes, but this number had more than halved by the 1970s. Many of the languages are now spoken by only a few old people. Only about 50 of the languages have more than 1,000 speakers; only a handful have more than 10,000. In the mid-1970s, the total number of speakers was estimated at around 300,000.

The Amerindian languages have been classified into over 50 families, showing many kinds and degrees of interrelationship. However, this allows a great deal of scope for further classification, and Amerindian linguistics has thus proved to be a controversial field, generating many proposals about the links between and within families (see further, p. 322). It is not known whether the languages have a common origin. The peoples are thought to have migrated from Asia across the Bering Strait, perhaps in a series of waves, but the only North American languages which show any clear links with Asian languages are those belonging to the Eskimo-Aleut family.

Eskimo-Aleut is the name given to a small group of languages spoken in the far north, in Alaska, Canada, and Greenland, and stretching along the Aleutian Islands into Siberia. Eskimo is the main language, spoken in many dialects by around 90,000. Its two main branches – Yupik in Alaska and Siberia, Inupiaq (Inuit, or Inuktitut) elsewhere – are sometimes classified as separate languages. Greenlandic Eskimo has official status in Greenland, alongside Danish. A standard written form dates from the mid-19th century. There are also a few hundred speakers remaining of Aleut.

Further south, the *Na-Dené* group consists of over 30 languages, spoken in two main areas: Alaska and north-west Canada, and south-west-central USA. Most of the languages belong to the Athabaskan family, whose best-known member is Navaho, with around 120,000 speakers – one of the few Amerindian languages which has actually increased in size in recent years. The various dialects of Apache are closely related to Navaho.

The *Algonquian* family is geographically the most widespread, with over 30 languages covering a broad area across central and eastern Canada, and down through central and southern USA. Many well-known tribes are represented – the Arapaho, Blackfoot, Cheyenne, Cree, Fox, Micmac, Mohican, Ojibwa, Potawatomi, and Shawnee – though only Cree and Ojibwa have substantial numbers of speakers (around 50,000). Several other languages spoken mainly in the south-east USA have now been grouped along with Algonquian into a Macro-Algonquian family – most notably the Muskogean group, which includes Choctaw and Muskogee.



The *Macro-Siouan* family consists of 26 languages, spoken in a broad swathe from Canada down through central USA, and in two areas further east. The best-known members are Cherokee, Dakota (Sioux), Crow, Mohawk, and Pawnee, but only the first two have over 10,000 speakers.

A Jicarilla Apache chief and his family, from the North American Plains.

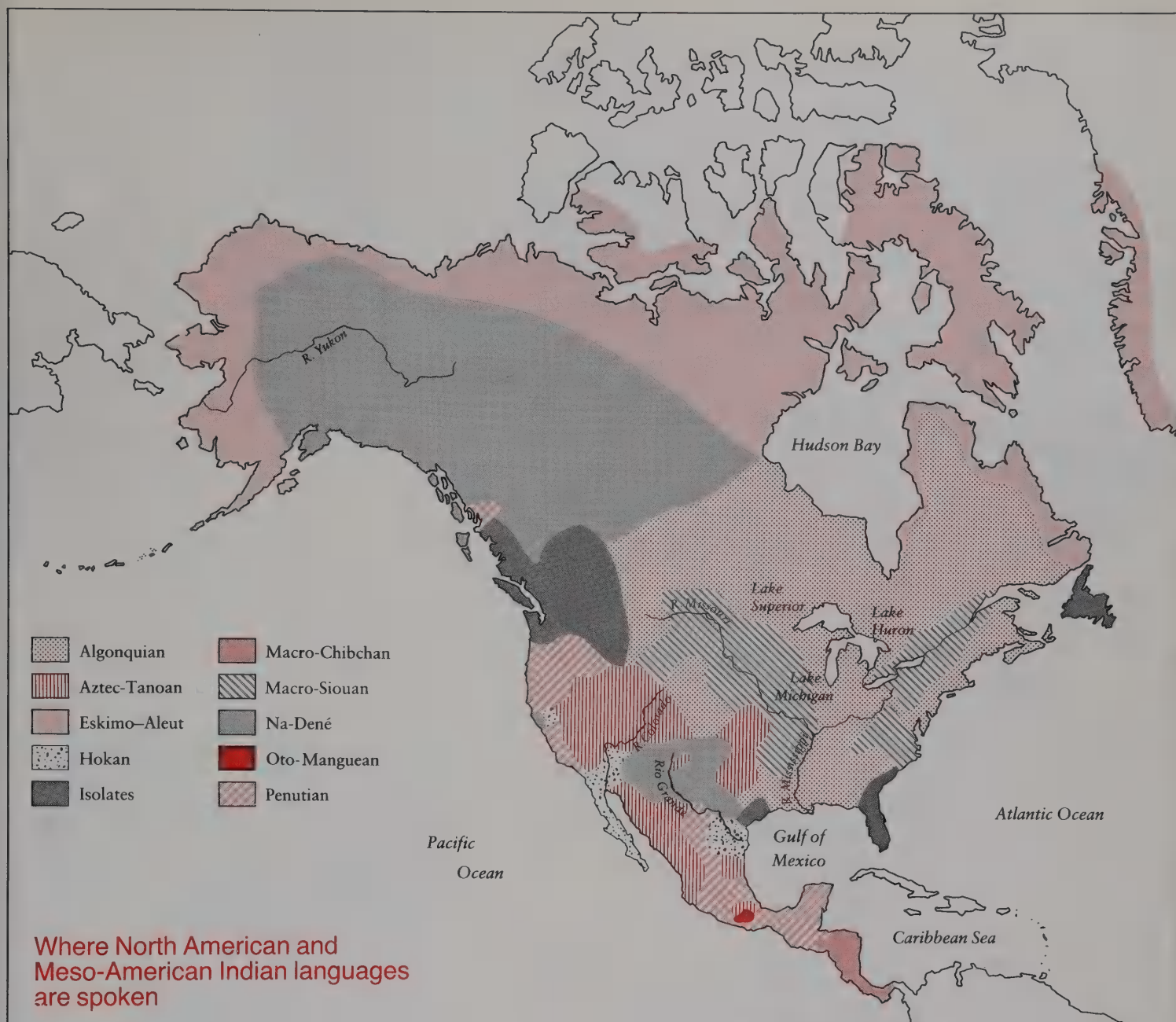
Isolates

There are over 30 languages whose relationship to the main language groups in North America has not so far been determined. Over 20 of these are the Salish languages, spoken along the Canadian/USA Pacific coastline, and some way inland. They include Bella Coola, Okanogan, Shuswap, and Squamish. These days, the numbers of speakers are very small – mostly fewer than 1,000 and in several cases fewer than 10. Pentlatch, spoken on Vancouver Island, was already extinct in the 1970s. The six languages of the Wakashan family, spoken on the British Columbia coast (notably, Nootka and Kwakiutl) constitute another isolated group.

FROM NORTH TO SOUTH

The main linguistic bridge between North and South America is formed by the (Macro-) *Penutian* group, which in its broadest interpretation consists of over 60 languages (many of these grouped into smaller families), spoken from south-west Canada down through the western states of the USA, throughout Mexico and Central America, and into south-west South America. In a narrower interpretation, only the 20 or so North American languages, none of which has many speakers, are subsumed under this heading.

The languages with most speakers belong to the Mayan family, spoken in Mexico and Central America – notably Maya (or Yucatan), Mam, Kekchi, Cakchiquel, and Quiché, all of which have over a quarter of a million speakers. In South America,



the main candidate for membership is Araucanian (or Mapuche), spoken mainly in Chile by around 200,000. Chipayan and Uru (spoken by a few hundred people in Bolivia) have also been proposed as belonging to Penutian.

The *Hokan* group of around 30 languages is spoken by small numbers in parts of western and south-west USA, and eastern Mexico. Tlapanec is the only language with over 20,000 speakers. Similarly, most of the 30 or so languages which belong to the *Aztec-Tanoan* group have few speakers today. The group includes the languages of such well-known tribes as the Comanche, Paiute, Shoshone – and also the Hopi (p. 15). Three Mexican languages are still widely spoken: Aztec, or Nahuatl (around a million speakers), Tarahumar (over 50,000), and Pima-Papago (nearly 20,000).



The Pueblo Indians of Arizona and New Mexico are linguistically very diverse – about 25,000 people speak languages belonging to no fewer than four families. In the east, they mainly speak Tewa (a member of the Tanoan family within the Aztec-Tanoan group) and Keresan (a language isolate); in the west, they speak Keresan, Zuni (a Penutian language) and Hopi (a Uto-Aztecan language, within the Aztec-Tanoan group). The picture shows part of a Hopi ceremony from 1916: a group of women, dressed as men, arrive bearing fruit.

CENTRAL AMERICA

The indigenous languages of Central America are generally known as Meso-American (or Middle American) Indian languages. In an area extending from Mexico to Nicaragua, about 70 languages are spoken by around 6 million people. Several of the languages belong to one of the North American families (Penutian, Hokan, Aztec-Tanoan); some belong to South American families (grouped under Macro-Chibchan). The only group which is restricted to this region is *Oto-Manguean*. Almost all Oto-Manguean languages are spoken within a small area centred on the state of Oaxaca, Mexico. The main languages are Otomí, Mixtec, and Zapotec, each spoken by around a quarter of a million people.

SOUTH AMERICAN INDIAN LANGUAGES

Indigenous Indian languages are used throughout the whole of the continent of South America, including the southern part of Central America and the Antilles group of islands. They are spoken by over 11 million people. In former times, as many as 2,000 languages may have been spoken in the area, but fewer than 600 of these have been attested. Despite the considerable efforts of ethnographers and missionaries, especially in the present century, few languages have been completely described. Many tribes consist of small numbers living in extremely remote jungle areas. Even in the more accessible cases, there is considerable uncertainty over the identity of the languages, and what kind of language/dialect boundaries operate (p. 284). Many are under threat of extinction as western civilization (in the linguistic shape of Spanish and Portuguese) opens up the area. It seems likely that over 1,000 tribes have become extinct before their languages could be recorded.

In spite of this decline, South America remains one of the most linguistically diversified areas of the world. Some accounts suggest that there are more than 100 language families on the continent. However, because of the difficulties in obtaining accurate information, classifications of the languages have tended to be very general, and there are many differences among the sub-groupings which have been proposed. At the most general level, three major groups have been suggested.

The *Macro-Chibchan* group is one of the most widespread, being found in Central America, Colombia, Venezuela, and south into Bolivia and Brazil. There are around 50 languages in the group, but only five (Guaymí, Cuna, Waica, Epera, Paez) have as many as 20,000 speakers, and several are on the verge of extinction.

The *Ge-Pano-Carib* group of nearly 200 languages is spoken east of the Andes along most of the length of the continent and along the Brazilian Amazon basin. It has a very small number of speakers (perhaps a million) for such a vast area. The Carib family, within this group, is one of the

largest in South America, containing over 80 languages spoken by tiny numbers throughout the whole northern region. Only Carib itself has as many as 5,000 speakers. *Macro-Panoan*, also within this group, is a family of about 70 languages spoken from Peru and Bolivia eastward to Brazil, and southward to Paraguay and Argentina. Mataco, spoken mainly in northern Argentina and Paraguay, is the only language with more than 10,000 speakers.

The *Andean-Equatorial* group consists of about 250 languages, and contains many sub-divisions. Within the Equatorial division, for example, there is the Arawakan group, which once extended into North America, and is still widespread, being spoken from Central America to southern Brazil. Goajiro (over 40,000) is its main member. Within the Andean division, the Quechumaran group is preeminent in the Andes highlands between Colombia and Argentina. Aymará was once a major language throughout the central Andes, but is now restricted to around 600,000 speakers in Bolivia and Peru. Quechua, the official language of the Incas, is now spoken by over 6 million from Colombia to Chile. It is widely used as a lingua franca, and its literary history dates from the 17th century. In the south, in Paraguay, the Indian language of Guaraní (a member of the Tupí family) is spoken by around a million people (mainly non-Indians), and is the majority language of that country – the only Indian language to achieve such a status. By contrast, over a dozen Tupian languages have become extinct in the first half of this century.

The South American Indians migrated from the north, but hardly any of the languages of the area are plausibly related to the language families of North and Middle America. The only links which have attracted support are under the heading of Penutian, where some scholars have placed Araucanian, Chipayan, and Uru. Others, however, see these languages as part of the Andean-Equatorial group.

A NEW CLASSIFICATION

In a fresh classification presented in 1985 by the American linguist Joseph Greenberg (1915–), *all* the languages of the New World are brought together, and grouped into three main families: Na Dené, Eskimo-Aleut, and Amerind. Eskimo-Aleut is seen as part of a 'Euroasiatic' family, whose other members include Indo-European, Altaic, Japanese, Korean, and several other languages. Amerind is an extremely large family, comprising 11 sub-families and, at a lower level of classification, nearly 200 groups of languages (a reanalysis of the languages included in the families listed on pp. 320–3). It covers the whole of North, Central, and South America, and incorporates several languages previously thought to be isolates (§53).

Where South American Indian languages are spoken

The Kayapo Indians live on the banks of Xingu River, in the east of Brazil's Amazon Basin. Only the older men now wear the lip discs, which were a traditional symbol of manhood. By contrast, tape recorders are now often seen in their villages. They are frequently used during ceremonies to record the singing and speeches, which are later studied at length.



Australian aboriginal languages

No clear relationship has yet been found between aboriginal languages and the rest of the world's languages. With no written records, historical discussion is largely speculation. In the 18th century, there may have been over 500 aboriginal languages in Australia, spoken by over 300,000 people. Today, about 250 languages are documented from many parts of Australia (but excluding Tasmania: see p. 319). Only five languages have more than 1,000 speakers; most have very few; and at least half are nearly extinct.

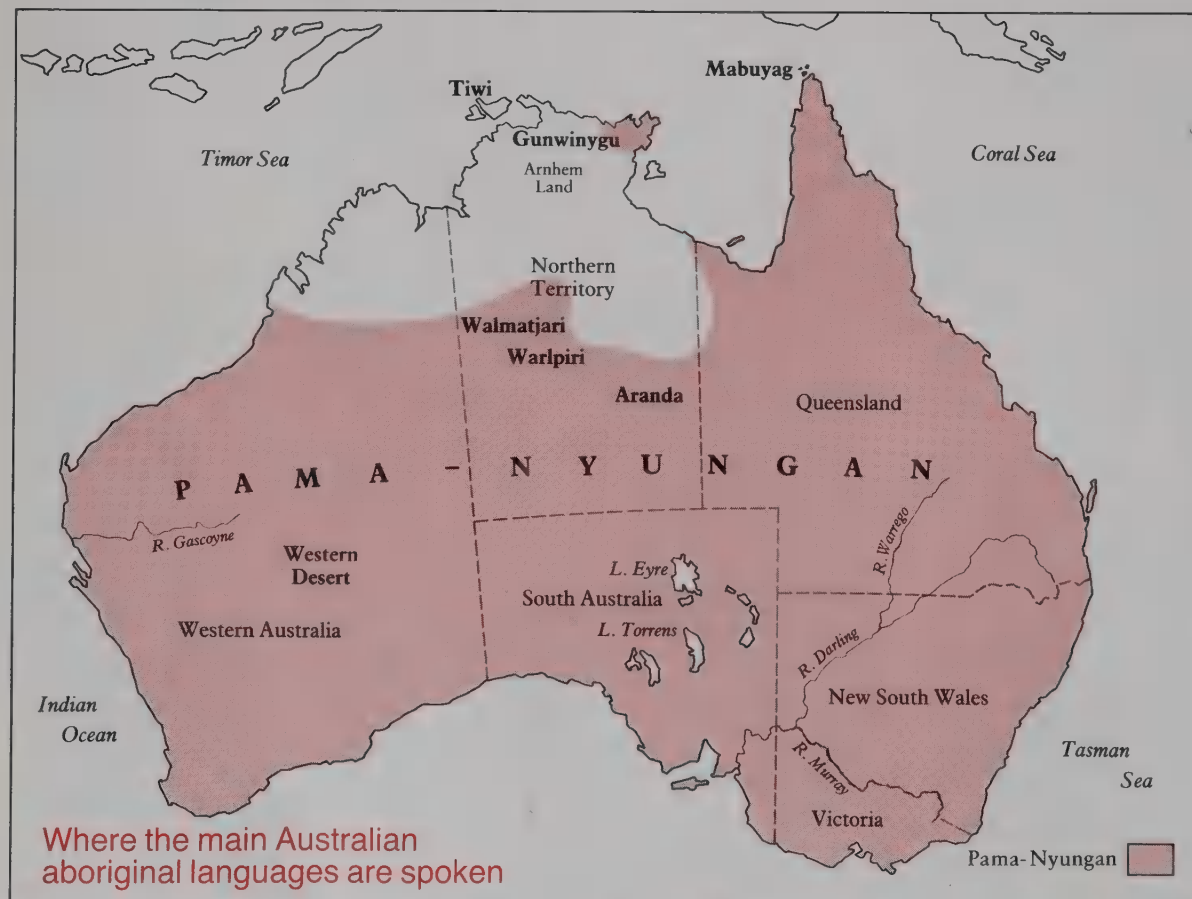
A frequently cited estimate is that fewer than 50,000 people speak the languages today, with different levels of ability. But, for many reasons, population estimates are difficult. Aboriginal people often live in isolated areas; most are bilingual to differing degrees; and it is not always easy to obtain accurate information from the speakers themselves, many of whom overestimate or underestimate their ability to use the language, for social or political reasons. By the same token, scepticism is sometimes expressed about the results of national surveys, which might be used as evidence for or against the provision of educational or social facilities for aboriginal groups.

Aboriginal languages have been grouped into 28 families, all of which are thought to be related. All but one of these are found in the northern parts

of Western Australia, Northern Territory, and Queensland, in an area comprising no more than one-eighth of the continent. Arnhem Land in particular shows a high concentration of these languages. By contrast, a single family, Pama-Nyungan, covers the remainder of the continent; about 175 languages once belonged to this family, but fewer than 50 are spoken today, most of these surviving in the north-west.

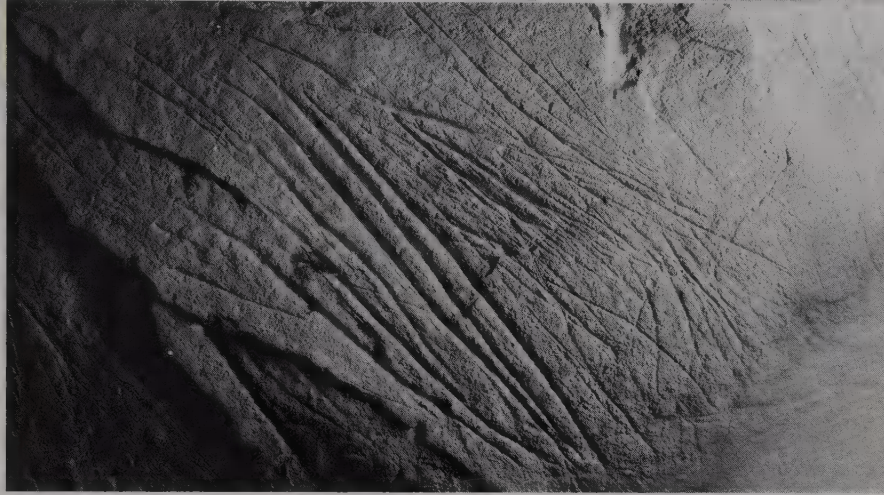
The languages with the largest number of speakers are Tiwi, Walmatjari, Warlpiri, Aranda, Mabuyag, and Western Desert – all but the first belonging to the Pama-Nyungan family. Several of the languages have come to be used as lingua francas. Gunwinygu is used in this way in much of north-west Arnhem Land, and Pitjantjatjara in much of northern Western Australia, partly as a church language. Warlpiri is one of the most vigorous of these languages, spoken in many central and southern parts of Northern Territory. Several pidgins and creoles (§55), related to English, have also developed in northern areas.

The future of aboriginal languages is uncertain, but several of the languages now have a written form, and bilingual school programmes have been devised. Organizations such as the Australian Institute of Aboriginal Studies promote the study of these languages, their history, and their contemporary social and political status. It therefore seems likely that a small number of these languages will remain vigorous for some time to come.





Below: A set of engraved tally marks found in Koonalda Cave on the Nullarbor Plain, Western Australia.



Above: An attempt to stop the destruction of a sacred site in Kimberley, Western Australia, in 1978. It is a symbolic reminder of the daily threat facing the aboriginal heritage, and thus its linguistic identity.

The Dreaming

No-one knows how long aborigines have been in Australia, but estimates of at least 40,000 years have been made. According to traditional aboriginal belief, life began during a mythological period known as the 'Dreaming' – a period which had a beginning but no end. During that beginning, the aboriginal world was formed by spirit beings, both animal and human in form. They moved across the land, which was believed to have been soft and malleable, creating the shape of the territory as they went, and thus leaving signs of their spiritual presence. Many physical features of the landscape were thought to be formed by these beings, and the sites are consequently held to be sacred.

Several of these sites are rocks, caves, and trees, often marked by carvings or paintings. Motifs include animal tracks, artefacts, humans, kangaroos, and other mammals. There are also many kinds of geometrical shapes, often in combinations. These are not an attempt at written language, but seem to be symbols representing the significant

places in the landscape. On the other hand, several sets of parallel lines have been found which seem to have been made by a finger dipped in an ochre paste. They are sometimes referred to as 'tally marks', because of the possibility that they may have been a register of people, periods of time, or events.

Aborigines thus see themselves as having a very close spiritual (as well as economic) relationship to the land, and to particular places in it. But today, many of the sacred sites are in danger – partly from natural erosion, but more particularly from industrial development and vandalism. Legislation is now available to protect them, but conflicts of interest can still occur. As one Nyungar aborigine, Ken Colbung, put it: 'I am sure that people who are not of aboriginal descent are unaware of the strong emotional feeling we have for a particular place. We see it as part of our spiritual background; and that is what is being consistently undermined. The problem is not simply one of mining and the royalties which, at least in part, should come to us. It is one of *land*.'

53 Language isolates

A language isolate is a language which has no known structural or historical relationship to any other language (p. 293). Most of the world's languages can be grouped into families using comparative linguistic techniques. But occasionally one encounters a language where resemblances to other languages are few or non-existent. Sometimes, the few points of contact are sufficient to motivate a tentative classification – thus some scholars place the Scots language Pictish within Celtic, the African languages Fur and Songhai within the Nilo-Saharan group, the Mexican language Huave within Penutian, and Tasmanian and Andamanese within Indo-Pacific. However, others see the differences as more important than the points of similarity, and list these languages as isolates.

Many languages have been classified as isolates simply because little is known about them, linguistically or historically. For example, preliminary research into South American Indian languages has brought to light several possible isolates, but further study may well indicate relationships with other languages – provided the cultures survive long enough for these studies to be carried out (p. 322). Examples are Callahuaya in Bolivia, and Aripacu, Baenna, Hixkaryana, Juma, and Natu, in Brazil. Then, from a historical point of view, there are several languages of ancient Asia Minor which are known only from passing references to them in classical Greek literature, or occasional place names and inscriptions – examples include Bithynian, Cappadocian, Carian, Cataonian, Cilician, Gergito-Salymeian, Hattic, Isaurian, Lyconian, Myriandynian, Ordek-Burnu, Paphlagonian, Pisdian, Pontic, and Sidetic. It is unlikely that their affiliations will ever be known.

The diagram gives some information about several of the languages which have been proposed as isolates. It includes languages which remain undeciphered, languages where there is insufficient material available to establish a family relationship, and languages where, despite a great deal of data, the relationship is undetermined. Two of the best-known isolated languages, Korean and Japanese, are discussed on p. 306.

1) Iberian This language was spoken in parts of southern and eastern Spain, especially around the Ebro River, in pre-Roman times. It may formerly have been used throughout a much wider area of western Europe. It is known mainly through inscriptions on stones and artefacts of the period, few of which can be interpreted. Its

28-letter alphabet shows the influence of both the Greek and the Phoenician alphabets, but for the most part its history is unclear.

2) Basque is the only language remaining of those which must have been spoken in south-west Europe before the advent of the Indo-European invasions. Esti-

mates of the number of speakers vary, from 500,000 to over 700,000. Most Basques live in a 4,000-square-mile area of northern Spain and south-west France, but many went into exile in the USA after the Spanish Civil War. Attempts have been made to show a relationship with Caucasian languages (p. 305), with North African languages, and also with Iberian, the now extinct language of many inscriptions found along the Mediterranean coasts; but none has been convincing. The written history of the language can be traced to Roman times, through various inscriptions. There is now intensive local concern to develop the language, and introduce it into primary education; but for many abroad, the language and culture are more associated with the violence of the political separatist movement, Euzkadi ta Azkatasuna (ETA). (*Euskara* is the Basque word for their language (p. 34).)

3) Etruscan The area of Tuscany in modern Italy is the site of the ancient country of Etruria, where the Etruscan civilization was at its height in the 6th century bc. The language is known from about 10,000 inscriptions, mainly short epitaphs and dedications, written in an alphabet probably derived from the Greek, and from which in due course came the Latin alphabet. The language may still have been spoken as late as the 4th century ad.

Only a few words of the language have been deciphered: no contemporary translations seem to have survived, and little progress

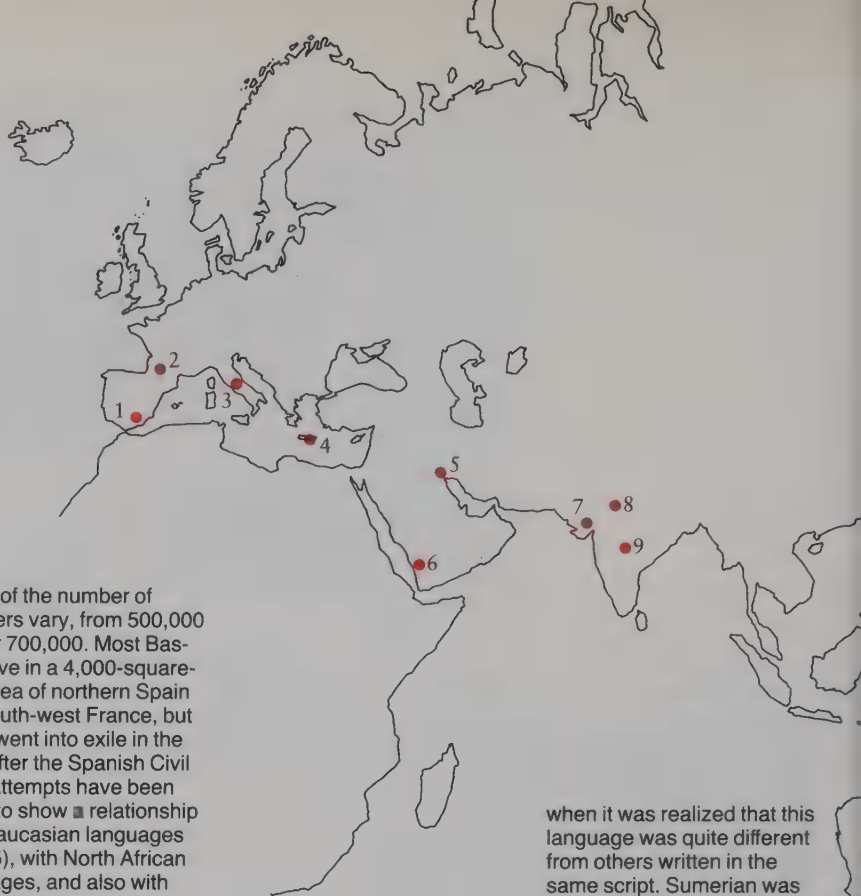
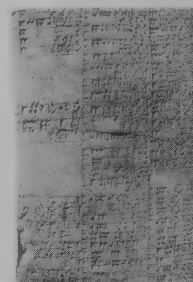
has been made using philological methods, because Etruscan seems to bear no relationship to any other language. There is no extant literature or historical record of the civilization. Why this should be so remains one of the great unanswered questions of classical studies.

4) Linear A This is the name given to a Cretan script used in the middle of the 2nd century bc. It has still not been deciphered, and the language it represents is therefore not known, though some believe it to be Minoan (or Eteocretan). The name refers to the way the script is written in lines, probably from left to right – a contrast with previous hieroglyphic writing. The label 'A' distinguishes the script from Linear B, which was used to write Greek later in the same millennium (p. 301).

5) Sumerian This is the oldest known language to be preserved in written form. Inscriptions date from around 3100 bc, written in cuneiform script (p. 198). The existence of Sumerian was not recognized until cuneiform was deciphered in the 19th century,

when it was realized that this language was quite different from others written in the same script. Sumerian was spoken in southern Mesopotamia (part of modern Iraq) until the 2nd millennium bc. It was then supplanted by a Semitic language (Akkadian) – though the written form of Sumerian continued to be used for nearly 2,000 years. There are many records of the language – business, legal, religious, administrative, and private texts and inscriptions. Literary work is preserved from the later period, in a range of forms including hymns, rituals, proverbs, and myths. Several dialect forms are known. Attempts have been made to relate the language to many other families, including Altaic and Dravidian, but none has been successful.

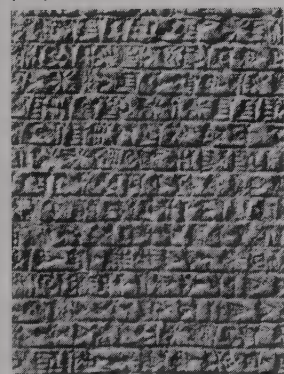
A Sumerian account listing livestock in the charge of a herdsman. The tablet comes from the ancient city of Ur, and is dated in the ninth year of King Shu-Sin, 2029 bc.





Mohenjo-Daro

6) Elamite This extinct language was spoken in the ancient country of Elam – an area now corresponding to Khuzistan in south-west Iran. The oldest writings are in the form of pictographic inscriptions from the 3rd millennium BC. Later writing is in cuneiform script. The language was still in use in the 1st millennium AD. A relationship with Dravidian has been proposed.



An Elamite inscription stamped on a baked clay brick, dating from the 12th century BC. It describes the rebuilding of the temple of the 'Great King' by King Shilhak-Inshushinak I.

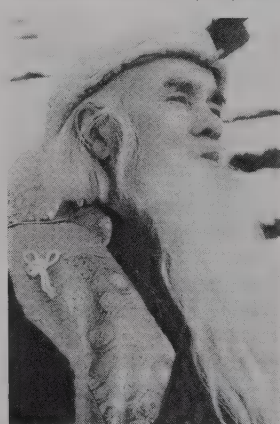
7) Mohenjo-Daro The name (which means 'the mound of the dead') refers to a group of mounds on the bank of the Indus River in Pakistan. Excavations at the site since the 1920s have brought to light the remains of a major city, dating from the 3rd millennium BC. The many finds contain evidence of a script, which so far is undeciphered.

8) Burushaski This language is spoken in north-west Kashmir, India, and in a small part of adjoining Pakistan, by over 20,000 people belonging to the Burusho tribe. It has no written form.

9) Nahali Fewer than 1,000 people speak this language, in a small area in south-west Madhya Pradesh, in India. Some scholars have related the language to the Munda group of Austro-Asiatic (p. 309), but most view it as independent.

10) Gilyak This language is spoken by 3,000 or more people in the north-east USSR, on the island of Sakhalin and on parts of the mainland opposite. Gilyak (or Nivkhi, the name used by the people themselves) is often listed along with the neighbouring Palaeosiberian languages (p. 306), but proposed links with these and other languages of the area (especially Korean and the Altaic languages (p. 307)) have not been accepted.

11) Ainu About 16,000 Ainu tribespeople speak this language in Hokkaido, Japan, and in the Sakhalin and Kuril Islands, USSR. Once, the Ainu lived on all the Japanese islands, but in recent years, the culture as well as the language has lost ground to the Japanese. The traditional Ainu are unlike the Japanese in physical appearance, and it is thought that they may be descendants of Caucasoid peoples



An Ainu tribesman

who were once spread throughout north Asia.

12) Kutenai There are many spellings and names for this language – Kootenay, Cootenais, Skalzi, Arcaplat, and Flatbow are some of those recorded. It is spoken by a North American Indian tribe, mainly in south-east British Columbia and Alberta, but also in northern parts of Idaho, Washington, and Montana. Their numbers are decreasing – fewer than 500 in the late 1970s. Some scholars have postulated relationships with other Amerindian languages (p. 320), but none of the proposals is generally accepted.

13) Keres Also known as Keresan, or Queres, this language is spoken in different dialects by several groups of Pueblo Indians in the New Mexico area. There were around 7,000 speakers in the late 1960s. Originally thought to be a member of the Hokan-Siouan family, it is now considered an isolate.

14) Tarasca This language was spoken by around 60,000 in the late 1960s, in parts of south-west-central Mexico. It goes under several names and spellings, including Tarascan, Porepecha, and Mechoacan. A relationship to other languages of the area has been proposed (under the general heading of Penutian, p. 320), but is unclear. In recent years, the number of speakers has been decreasing, with many Tarascan Indians becoming assimilated within the mixed European culture dominant in Mexico.

15) Het This South American Indian language, also known as Chechehet, became extinct at the end of the 18th century. It was spoken in Argentina, and is known from only a few words and place names.

16) Karankawa This language, also known as Clamcoets, was spoken by Indian tribes living along the Texan coastline in the 18th century. They seem to have died out by the mid-19th century, with the influx of white settlers into the area.

17) Calusa An extinct tribe of American Indians who lived in the south-west part of Florida until the end of the 18th century, and perhaps later. Many families emigrated to Cuba, to escape from the invasions of other tribes, and, ultimately, the British.

18) Beothuk This language, spoken by an Indian tribe on the island of Newfoundland, is now extinct. Its last known speaker died in 1829. Some scholars have argued that it should be classified as an Algonquian language, but the opinion is controversial. The Beothuk rubbed red ochre on their bodies – a practice which may well be the reason for the European name 'Red Indians'.

54 Language change

Languages are always in a state of flux. Change affects the way people speak as inevitably as it does any other area of human life. Language purists do not welcome it (p. 5), but they can do very little about it. Language would stand still only if society did. A world of unchanging linguistic excellence, based on the brilliance of earlier literary forms, exists only in fantasy.

During the greater part of the 19th century, linguistic scholarship used the comparative method (p. 292) to establish the facts of language change. What features of language have changed in the past? When did they change? How did they change? During the present century, especially as a consequence of recent trends in sociolinguistics (p. 333), the emphasis has shifted towards a search for explanations. *Why* do languages change?

What changes?

All aspects of language structure and use are subject to changes, but the most noticeable and frequent changes affect pronunciation and vocabulary, and it is these which have attracted most study. The science of comparative philology was at first entirely devoted to the study of sound change, and contemporary sociolinguistic studies have a similar emphasis.

SOUND CHANGE

From the earliest days of comparative philology, it was noted that the sounds of related languages corresponded to each other in apparently systematic ways – what were referred to as ‘sound shifts’. Later, on the basis of several studies, it was con-

cluded that these shifts operated in such a regular manner that they could be seen as sound ‘laws’. The first and most famous of these laws was worked out by Jakob Grimm in 1822, in his Germanic grammar, and it has since become known as ‘Grimm’s law’.

Grimm noticed that where a word in Sanskrit, Latin, or Greek began with [p], the Germanic languages usually used [f], as in:

<i>Latin</i>	<i>pater</i>	<i>English</i>	<i>father</i>
	<i>piscis</i>		<i>fish</i>

In a similar way, words beginning with [t] usually had [θ], as in:

<i>Latin</i>	<i>tres</i>	<i>English</i>	<i>three</i>
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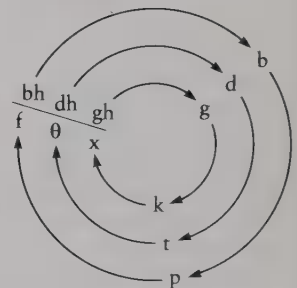
Altogether, nine sets of correspondences were noted, which fell into a clear phonetic pattern, suggesting that Germanic languages had diverged from Indo-European in a regular way. It was not possible to say exactly when the changes took place, but they were complete by the time the earliest Germanic texts came to be written (4th century AD Gothic).

However, Grimm’s law did not explain all the differences between Germanic and the other languages. There seemed to be several exceptions. For example, the word for ‘daughter’ was *dauhtar* in Gothic and *duhitā* in Sanskrit; but according to Grimm’s law, the Sanskrit form should have been **dhuhitā*. Or again, the word for ‘father’ was *fadar* in Gothic and *pitā* in Sanskrit. The change from [p] to [f] was regular, but why did the [t] become [d], when according to Grimm’s law it should have been [θ]?

Grimm’s law

Indo-European		Germanic	
		Voiced	Voiced
Voiced	plosives	aspirates*	plosives
		(unaspirated)	
bh	→	b	
dh	→	d	
gh	→	g	
		Voiced	Voiceless
plosives		(unaspirated)	plosives
b	→	p	
d	→	t	
g	→	k	
		Voiceless	Voiceless
plosives		aspirates*	
p	→	f	
t	→	θ	
k	→	x	

The ‘circular’ relationship between the correspondences is its major feature:



* Grimm’s term includes both aspirated plosives and fricatives (p. 157).

Verner’s law

Germanic	Germanic	Later
Voiceless	Voiced	forms
fricatives	fricatives	
(arising from Grimm’s law)		
f	→	v → b
θ	→	ð → d
x	→	ȝ → g

if

- the consonant is not initial
- the preceding and following sounds are voiced
- the preceding vowel is unstressed

Types of sound change

The processes which affect sound change are many and various. This list illustrates some of the types which regularly occur.

Assimilation. Probably the most important type of change, in which one sound is influenced by the pronunciation of a neighbouring sound (p. 164).

Example: Latin *noctem* (*night*), which became *notte* in Italian, the /k/ being assimilated to the following /t/.

Dissimilation. A sound moves away from the pronunciation of a neighbouring sound.

Example: German *Kartoffel*

(*potato*), earlier *Tartuffeln*, where the [k] dissimilated from [t] in the 17th century.

Merger or coalescence.

Two sounds become one. Example: Old English /e:/ and /æ:/, which became Modern English /i:/, as in *sweet* (OE *swēte*) and *clean* (OE *clæne*).

Split. One sound becomes two.

Example: Old English /s/, which was realized as [z] only between voiced sounds, as in *thousand* (OE *thūsend*); in Modern English, /z/ has split off from /s/, becoming a phoneme in its own right.

Loss. A sound disappears from the language.

Example: Old English velar fricative [x], which was a variant of /h/, as in *eahta* (*eight*); this sound had disappeared by early Modern English.

Haplology. The loss of a sound, because of its similarity to a neighbouring sound. Example: Modern English *England*, from Old English *Englaland* (*land of the Angles*).

Metathesis. Two sounds change places. Example: English *third*, from Anglo-Saxon *ðrida*.

Syncope. The loss of medial sounds.

Example: Latin *domina* becoming Italian *donna* (*lady*).

Apocope. The loss of final sounds.

Example: Modern English *help*, from Old English *helpe*.

Prothesis. The introduction of an extra initial sound. Example: Latin *schola* (*school*) becoming Spanish *escuela*, Old French *escole*, etc.

Epenthesis. The introduction of an extra medial sound.

Example: Old Icelandic *ofn*, alongside Old English *ofen*, Modern English *oven*.

There were several discrepancies of this kind. Many of them came to be resolved by examining the phonetic contexts in which the sounds occur. The German philologist, Hermann Grassmann (1809–77), worked out an explanation for the kind of case illustrated by **dhuhitā*. He argued that these forms all had a sequence of two aspirates in Indo-European, and that this was enough to block the application of Grimm's law. His formulation became known as 'Grassmann's law'. The Danish linguist, Karl Verner (1846–96), discovered a reason for cases such as *pitā*. He found that Grimm's law worked well whenever the stress fell on the root syllable of the Sanskrit word; but when it fell on another syllable, the consonants behaved differently. A further change took place: [p, t, k] did not stay as [f, θ, x], but became [b, d, g]. The precise formulation of this regularity became known as 'Verner's law'.

As a result of such explanations, philologists in the later part of the 19th century began to feel that *all* exceptions to sound laws could be explained, as long as proper attention was paid to the phonetic environment and to such matters as stress. The view was highly controversial, but it exercised a great deal of influence on the subsequent development of the comparative method, and of linguistic theory.

HOW DO WE KNOW WHAT OLD LANGUAGES SOUNDED LIKE?

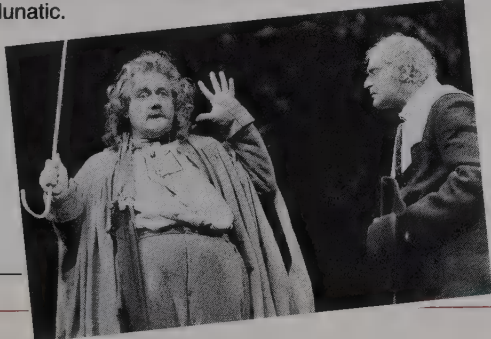
Contemporary accounts

Writers sometimes give an account of contemporary pronunciation features – often indirectly, in

'They have been at a great feast of languages and stol'n the scraps'

This is Moth, in *Love's Labour's Lost*, talking about a conversation between Holofernes, the schoolmaster, and Sir Nathaniel, the curate. Between the lines of Holofernes' description of Don Armado's pronunciation, valuable hints about contemporary speech styles and attitudes can be gleaned.

He draweth out the thread of his verbosity finer than the staple of his argument. I abhor such fanatical phantasies, such insociable and point-devise companions; such rackers of orthography, as to speak 'dout' fine, when he should say 'doubt'; 'det' when he should pronounce 'debt' – d, e, b, t, not d, e, t. He clepeth a calf 'cauf', half 'hauf'; neighbour vocatur 'nebour'; neigh abbreviated 'ne'. This is abominable – which he would call 'abbotinable'. It insinuateth me of insanity: he intellegis, domine? to make frantic, lunatic.



the form of a satirical comment or passage about a certain style of speech. For example, in *The Merry Wives of Windsor*, Falstaff reacts to the speech of the parson, Sir Hugh Evans, who has tried to pronounce the words *cheese* and *butter*: "'Seese" and "putter"? Have I lived to stand at the taunt of one that makes fritters of English?'. But more direct evidence comes from the detailed accounts made by *orthoepists*, specialists in the study of pronunciation. In 17th-century England, there were many such writers, including Bishop John Wilkins (1614–72) and the mathematician John Wallis (1616–1703). In the *Orthographie* of John Hart (d. 1574), for instance, which was published in 1569, we find detailed descriptions of the organs of speech and of sounds of 16th-century English.

Poetic evidence

The way in which early poets made words rhyme, or gave their lines a particular metrical pattern, provides a great deal of evidence about where the stress fell in a word, and the way vowels were pronounced. Puns, too, draw our attention to points of similarity between sounds. For example, we can infer from the way Chaucer rhymes *was* with the French *par cas* that its pronunciation must have been something like 'wass'. Such comparisons do not tell us exactly how the words were pronounced, nor whether these were normal pronunciations of the time; but they do provide the historical linguist with valuable clues.

Alphabetic evidence

When European languages first came to be written down, those who devised the alphabets borrowed symbols from alphabets already in use elsewhere – usually Latin. They would then modify or add to these symbols whenever they came across sounds which the older alphabet could not cope with. It is thus possible to use these changes as evidence of differences in the way the two languages were spoken. For example, when the Latin alphabet was used for Anglo-Saxon, the symbol *æ* was added – presumably because the missionaries felt that Latin *a* and *e* were inadequate to represent the sound they heard.

Comparative reconstruction

This procedure works backwards from languages whose pronunciations are known, using the comparative method to reconstruct earlier forms (p. 292). Most of our information about the oldest states of languages derives from this method. But the further back in history we travel, the less certain our phonetic deductions are likely to be. It may be clear that an early language contrasted two sounds, but quite unclear as to how this contrast was actually realized in speech.

Tape recordings

Historical linguists of the future will be able to rely on the records and tapes made in the present century, as the clearest evidence of all for linguistic change.

Why does Jaques laugh for an hour?

In *As You Like It*, the courtier Jaques reports meeting the court jester, Touchstone, in the forest.

And then he drew a dial from his poke,
And, looking on it with lack-lustre eye,
Says very wisely 'It is ten o'clock;
Thus ~~we~~ may see' quoth he
'how the world wags;
'Tis but an hour ago since it was nine;
And after one hour more 'twill be eleven;
And so, from hour to hour,
we ripe and ripe,
And then, from hour to hour,
we rot and rot;
And thereby hangs a tale.'
When I did hear
The motley fool thus moral on the time,
My lungs began to crow like chanticleer
That fools should be so deep contemplative;
And I did laugh sans intermission
An hour by this dial.

What was it that made Jaques laugh a whole hour? The bawdy pun involved can be appreciated only when we realize that *hour* and *where* were pronounced alike, at that time.

The Neogrammarians

This is the name given to the group of German philologists who claimed in the 1870s that 'sound laws have no exceptions'. They were called *Junggrammatiker*, somewhat scornfully, by their older colleagues, and this name, translated as 'neogrammarians', has continued to be used for them. The group included such men as August Leskien (1840–1916), who coined the above slogan, and Karl Brugmann (1849–1919). Brugmann's five-volume comparative grammar of Indo-Germanic languages (published in an enlarged second edition between 1897 and 1916) remains unsurpassed in its comprehensive coverage of the field.

GRAMMATICAL CHANGE

The most noticeable way in which grammatical systems change is known as *analogy*. In this process, irregular grammatical patterns are changed in accordance with the regular patterns which already exist in the language.

A well-studied case is the verb system in the history of English. Several of the irregular verbs of Anglo-Saxon have fallen under the influence of the regular verbs in the 1,000 years. For example, *helpan* (help) had *healp* as a past tense and *holpen* as a past participle; but by the 14th century, the verb had become regular, using the normal *-ed* ending – *helped*. During the early Middle English period, over 40 other verbs (including *walk*, *climb*, *burn*, and *step*) were influenced in the same way. Social factors, such as the development of the standard language, and the growth of printing, slowed the change down, so that present-day English still has many irregular verbs. But the force of analogy can still be heard, when people use non-standard forms (such as *knowed*), or when children, learning the language, experiment with such forms as *goned*. The tension between regular and irregular forms is also illustrated by problems of modern usage, such as the choice of *strove* vs *strived*, *chid* vs *chided*, or *sown* vs *sowed*.

Analogy does not operate only in word forms. Syntactic constructions can also be affected. In Anglo-Saxon, for example, the Subject–Verb–Object pattern applied only to main clauses; in subordinate clauses, the object preceded the verb. In Modern English, both clause types show the same order (§14).

Analogy does not create new grammatical patterns: it simply extends the range of a pattern which already exists in the language. Other processes of change have a more radical role, creating new patterns and eliminating old ones. For example, in Latin, the relationship between subject and object was shown by inflectional endings, and the order of the elements was not important; but in the modern Romance languages, these relations are expressed by word order. In early Indo-European, there were three grammatical genders for nouns – masculine, feminine, and neuter; these have been retained in modern German and Greek, but are reduced to two in modern Dutch (common vs neuter) and French (masculine vs feminine), and have been completely lost in modern English.

SEMANTIC CHANGE

This is perhaps the most obvious area of linguistic change, and the one which many people find the most fascinating. Semantic change is profoundly connected with the life, literature, and culture of a community. Innumerable examples can be found in the pages of any old book, or simply by careful watching and listening to everyday usage. But plotting the history of the changes in the form, meaning and use of words and morphemes is difficult work, because the evidence is often lacking.

To find out about lexical history, or *etymology*,

the best source of information is a dictionary which has been written on historical principles, such as the *Oxford English Dictionary*. Many languages also have specialized etymological dictionaries.

New words and old

The two most obvious factors in semantic change are the arrival of new words and the loss of old ones. In most languages, the vast majority of new words are in fact *borrowings* from other languages – though this term is not a very appropriate one, as new words are not given back at a later stage! Borrowing proceeds in all directions. *Weekend* and *parking* have been borrowed by French from English; *chic* and *savoirfaire* have been borrowed by English from French. Some languages have borrowed so extensively that native words are in a minority.

A special type of borrowing is known as a *loan translation* or *calque*. In this process, a word is not borrowed whole, but its parts are translated separately and a new word formed – as when German produced the equivalent of English *telephone* in *Fernsprecher* (literally, *fern* 'distant' + *sprecher* 'speaker').

When a word or sense ceases to be used, it is said to be *obsolescent* or *obsolete*. This often happens because an object or concept is no longer of value to a community (other than to the historian or literary scholar); but a word or sense may become obsolescent if it develops unpleasant associations, or is replaced by another word which is felt to be more modern. *Wight* (person), *leman* (sweetheart), and *hie* (hasten), are examples from Elizabethan English which are now no longer used; *humour* (= 'temperament') and *conceit* (= 'idea') illustrate obsolete senses from the same period.

Some types of semantic change

Extension. A word widens its meaning.

Example: In Latin, *virtue* was a male quality (cf. *vir* 'man'); today, it applies to both sexes.

Narrowing. A word becomes more specialized in meaning.

Example: In Old English, *mete* referred to food in general (a sense which is retained in *sweetmeat*); today, it refers to only one kind of food.

Shift. A word moves from one set of circumstances to another.

Example: *Navigator* once applied only to ships, but it now applies to planes, and even to cars.

Figurative use. A shift in meaning based on an analogy or likeness between things.

Example: *Crane*, a bird with a long neck, has led to the use of *crane* as a piece of equipment for lifting weights.

Amelioration. A word loses an original sense of disapproval.

Example: *Mischievous* has lost its strong sense of 'disastrous', and now means the milder 'playfully annoying'.

Pejoration. A word develops a sense of disapproval. Example: *Notorious* once meant 'widely known', and now means 'widely and unfavourably known'.

Some surprising etymologies

The words in the left-hand column once had the meaning given on the right.

treacle	← wild animal
villain	← farm labourer
taxation	← fault finding
bonnet	← a man's hat
furniture	← equipment
pretty	← ingenious
cheater	← rent collector
naughty	← worth nothing
vulgar	← ordinary
sly	← wise
publican	← public servant
orchard	← garden (without fruit trees)

Some English sources

ballot	Italian
banshee	Scots Gaelic
chow mein	Chinese
garage	French
gong	Javanese
goulash	Hungarian
junta	Spanish
kiosk	Turkish
llama	Quechua
marmalade	Portuguese
robot	Czech
schmaltz	Yiddish
sofa	Dutch
sofa	Arabic
tomato	Nahuatl
tycoon	Japanese
veranda	Hindi
window	Old Icelandic
yen	Chinese
(= 'desire')	

Boyfriends and girlfriends

Whether a language will borrow a word whole, or translate its parts, is never predictable. As the words *girlfriend* and *boyfriend* spread from the west to the east, they were handled differently. The Chinese loan-translated the words as *nan pengyu* (male friend) and *nü pengyu* (female friend). The Japanese, however, borrowed the words as wholes, adapting them to their sound system: the result was *bōifurendo* and *gāufurendo*.



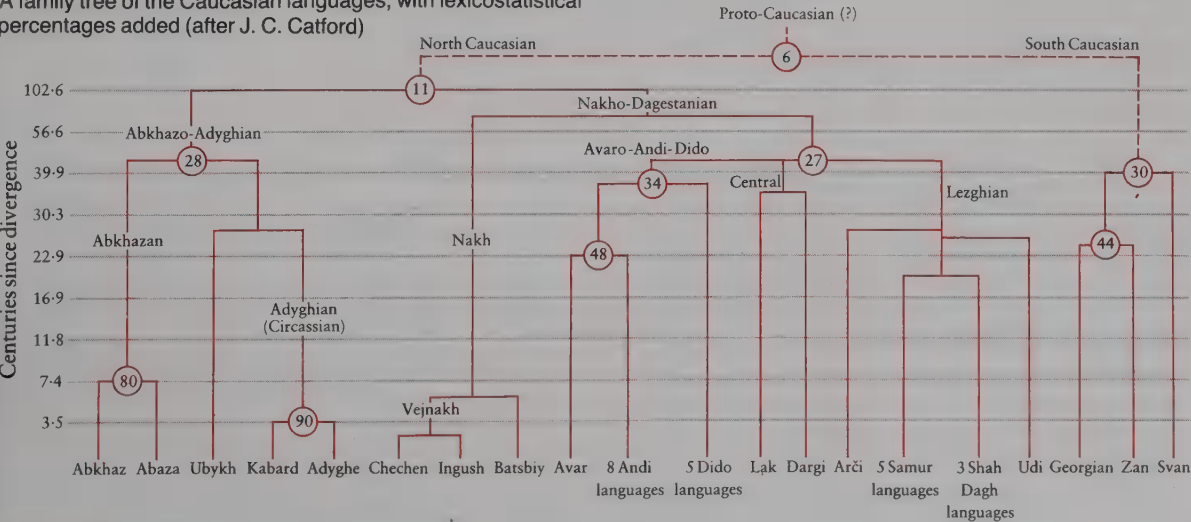
Lexicostatistical
glottochronology

This is an approach, devised by the American linguists Morris Swadesh (1909–67) and Robert Lees (1922–) in the late 1940s, which determines the rate at which a language has changed, over the centuries. It aims to work out the length of time which has elapsed since two related languages (or two languages thought to be related) began to diverge. *Glottochronology* is the name of the study; *lexicostatistics* is the name of the technique it uses (but some authors use the two terms synonymously).

A sample of vocabulary is taken from the languages, using the basic word-list given right, and the number of similar words between the languages is counted, allowing for the effect of phonetic change. Thus, Italian *padre* and Portuguese *pai* would be accepted as equivalent, or *cognate*, words for ‘father’, because the relationship is explicable (p. 292), whereas there is no reasonable phonetic explanation which could relate either of these to, say, the Eskimo word for ‘father’, *ataataq*. The word-list tries to avoid geographically or culturally biased words, such as the names of plants or animals, which would vary greatly from one part of the world to another.

Glottochronologists assume that the lower the number of vocabulary agreements between the two samples, the longer the languages have been separated. Two languages which have 60% vocabulary in common would be thought to have diverged longer ago than two languages which have 80% in common. Swadesh and Lees took several languages where the period of time-change is known, and worked out a correlation between the percentage of common vocabulary and the interval of time (or ‘time-depth’) which has elapsed since they diverged (as in the case of the Romance languages, which have diverged from Latin since the early Christian era). They found that on average two languages would have 86% in common after 1,000 years of separation.

A family tree of the Caucasian languages, with lexicostatistical percentages added (after J. C. Catford)



Working backwards, on this basis, they constructed a table of historical divergence, extracts from which are given below. Using this kind of table, estimates have been given for the possible point of divergence of the languages in many of the world’s families. The Caucasian family (p. 305) is outlined, as an illustration.

CRITICISMS

The approach is a controversial one for several reasons. The method itself has been attacked on the ground that it is impossible to construct a word-list that shows no cultural bias – *sun* and *moon*, for example, have great religious significance in some cultures. It is also argued that the rate of change may not be the same for all languages, and that far more known language histories would need to be analysed before the 86% figure was truly convincing. The method becomes less definite the further back in history it goes, and the slightest of errors in the compilation of the word sample could result in great inaccuracy: for instance, after 70 centuries of divergence, there would be only 12% of cognates left, so that if just one cognate was misanalysed, the result would be three centuries in error. There are all kinds of problems which arise relating to whether words from different languages are indeed ‘the same’ – in meaning as well as in form. And often, not enough information is available about a language (especially for older states) for a complete sample to be drawn up.

Swadesh was fully aware of the limitations of the procedure. But he argued that there must be a balance between the forces which maintain uniformity in language and those which encourage fluctuation, and pointed out that it is possible to obtain ancillary evidence from the dating methods used in archaeology. Certainly, the approach has generated many interesting hypotheses about early language states and the relative chronology of modern languages, and several scholars still use it in their work – if only because no alternative technique has been devised.

The basic word-list

I	horn	lie
you	tail	sit
we	feather	stand
this	hair	give
that	head	say
who	ear	sun
what	eye	moon
not	nose	star
all	mouth	water
many	tooth	rain
one	tongue	stone
two	claw	sand
big	foot	earth
long	knee	cloud
small	hand	smoke
woman	belly	fire
man	neck	ash
person	breasts	burn
fish	heart	path
bird	liver	mountain
dog	drink	red
louse	eat	green
tree	bite	yellow
seed	see	white
leaf	hear	black
root	know	night
bark	sleep	hot
skin	die	cold
flesh	kill	full
blood	swim	new
bone	fly	good
grease	walk	round
egg	come	dry
		name

Glottochronological
estimates of the
time depth
of languages

For example, if two languages spoken today have 60% cognates, they diverged 16.9 centuries ago – around 300 AD. The scale stops at 25,000 years ago.

Percentage of divergence between two languages	Minimum number of centuries of divergence
100	0
95	1.7
90	3.5
85	5.4
80	7.4
75	9.5
70	11.8
65	14.3
60	16.9
55	19.8
50	22.9
45	26.5
40	30.3
35	34.8
30	39.9
25	45.9
20	56.6
15	75.6
10	102.6
5	148.4
1	255.0

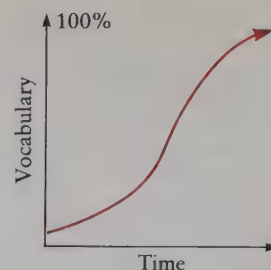
How does language change?

During the later part of the 19th century, it was believed that a sound change affected the whole of a language simultaneously: one sound system would smoothly develop into the next, and all words which contained a particular sound would be affected in the same way.

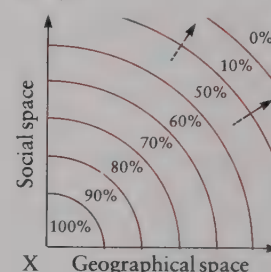
We now know that linguistic change does not operate in such an 'across-the-board' manner. Some speakers introduce the change into their speech before others; some use it more frequently and consistently than others; and some words are affected before others. A more accurate view is to think of a change gradually spreading through the words of a language – a view that is known as *lexical diffusion*. At first just a few people use the change sporadically in a few words (commonly occurring words are influenced very quickly); then a large number of words are affected, with the sound gradually being used more consistently; then the majority of the words take up the change.

The evidence for this kind of process has largely come from sociolinguistic studies of contemporary linguistic variation. Pioneered by William Labov (1927–), these studies proceed on the assumption that the variation in language use which is found in any community (and which fuels the debates over linguistic identity and acceptability (pp. 2–5)) is evidence of change in progress in a language. Detailed observations are made of the way in which different kinds of people speak in different social settings. The parameters along which these differences can be plotted are known as *linguistic variables* (p. 32). By examining the frequency with which different people used a variable, Labov was able to draw conclusions about the motivation, direction and rate of linguistic change.

These are small-scale studies, but they have large-scale implications. It is likely that the same gradual process of change affects whole languages as well as dialects. This process is not most accurately represented using the family-tree model (§50), with its clean splitting off of branches, and several proposals have been made for a more dynamic and sociolinguistically real alternative. The metaphor of a 'wave' has proved particularly attractive since the late 19th century: a change spreads through a language in much the same way as a stone sends ripples across a pool. But even this implies too regular a movement to account for the reality of sociolinguistic variation.



Rates of change The rate at which a change spreads through a language can be drawn as a curve with a characteristic S-shape. There is a slow start, with few words affected; a period of rapid expansion, with most words affected; and a slow conclusion (after M. Chen, 1972).



A wave model of linguistic change A change starts at point X, and moves simultaneously through a geographical area (shown horizontally) and through the strata of society (shown vertically). The further it travels, the less effect the change has. If many changes were taking place at once, the speakers furthest away from X would gradually lose their linguistic identity with those at X. They would become different dialects, and in due course perhaps even different languages (after C.-J. Bailey, 1973).

Change from above

Three New York department stores were the setting for the first major sociolinguistic investigation of language change in English, carried out by William Labov in the early 1970s. Labov wanted to find out why New Yorkers do not always pronounce the final /r/ in words like *car* – a fluctuation which had previously been considered a case of 'free' (i.e. random) variation. Using data obtained from the salespeople at these stores, he was able to show that the variation was systematic – a matter of social status.

The stores represented the top, middle, and bottom of the shopping range. Saks is on Fifth Avenue, a fashionable shopping area. Macy's is a middle-class store, in the middle of the price range. Klein's is near the Lower East Side, dealing in low-priced goods. Labov worked on the assumption that the salespeople's accents would reflect those of their customers, and that the use of /r/ would vary from store to store.

The research technique involved visiting each store, and asking staff questions about where certain goods were located – always requiring the answer that they were on the 'fourth' floor. If the interviewer were on the fourth floor, he would ask simply, 'Which floor is this?' By pretending not to hear the answer, he was able to obtain a second response, more emphatic than the first. All pronunciations of *fourth* were noted, along with background data about the interviewees (sex, approximate age, etc.). In each store, there were 264 interviews.

Labov found that the use of /r/ was highest in Saks, next highest in Macy's, and lowest in Klein's. In other words, the higher the socioeconomic group, the more likely speakers are to use /r/. Moreover, speakers in Klein's used /r/ much more often in their emphatic responses, which were more carefully pronounced than their first, casual reply. This was confirmed in other studies, which showed the incidence of /r/ to increase still further in yet more careful speech, during reading aloud. Labov interpreted this to mean that these speakers were manifesting a linguistic change in progress: /r/ had been unconsciously recognized as a marker of high prestige, and was beginning to be used in careful lower-class speech. The direction of change was 'from above'.

Change from below

Martha's Vineyard is a small island off the east coast of Massachusetts. Here, Labov studied the way in which the diphthongs (p. 154) [ai] and [au] seemed to be changing. Traditionally, the first element of these diphthongs was a vowel sound which resembled the *a* in *far*. But now, many people were pronouncing this vowel with a central quality, resembling the *er* of *butter* ([əi] and [əu]). Could this change be explained?

To establish the nature of the variation, Labov interviewed several islanders, and obtained examples of words containing these diphthongs. The results were analysed in terms of such factors as age, location, and occupation. He found that the change was most noticeable in the speech of people aged 30–45, and was least in evidence in the oldest group (over 75). The change was also more common in the western part of the island, especially in the Chilmark area, where the fishing trade is centred. The fishermen used more of the centralized diphthongs than did people of any other occupation – indeed, the pronunciation had long been around in their speech, but in a less marked form. This suggested that the change had begun with the fishermen in the west, and spread from there.

But why should the fishermen have initiated this change? Labov's explanation relates to the way the island is used during the summer as a tourist centre: its 6,000 permanent residents are increased by over 40,000 [ai]- or [au]-using visitors. The local fishermen (especially the oldest) reacted against this invasion in many ways, one of which was the subconscious exaggeration of speech features which made them sound different. Other islanders came to imitate the way the fishermen were speaking, because (again subconsciously) they admired their traditional character and way of life. In due course, the change spread throughout the island – a change 'from below'.

Why does language change?

It is easy to recognize a change in language – but only after it has taken place. It is not difficult to reflect on how people spoke several years ago, to point to a new word which has recently entered the language, or to express an opinion about the emergence of a cliché. What is almost impossible is to predict a language change. Which sounds, words or grammatical constructions *will* change in the next 10, 20 ... years?

It is just as difficult to be precise about the origins of a change in language. Who first used the new form? Where was it used? And when, exactly? Historical dictionaries always give an approximate date of entry for a new word or meaning – but these dates invariably reflect the earliest known use of that word in the *written* language. The first use of the word in speech is always an unknown number of years previously.

To obtain answers to these questions, we need to know more about why language changes. If we

understood the causes of change, we could begin to make predictions about when a change was likely to take place, and observe it while it was happening. There has long been imaginative speculation on the matter, with suggested causes coming from fields as far apart as theology (that change is a consequence of man's arrogance, as manifested in the Tower of Babel) and climatology (that change is the consequence of man's physical location – the mountain-dweller having a physiologically different capacity for speech compared with the valley-dweller). Some scholars have adopted a highly pessimistic view, feeling that the causes can never be found.

These days, the speculation and pessimism are being replaced by an increasing amount of scientific research, which has shown that there is no single reason for language change. Several factors turn out to be implicated, some to do with the nature of language structure, and some with the nature of society.

Sputnik

Only rarely can we give an exact date of entry for a new word into a language – a recent example being the international use of the word *sputnik*, following the launch of the first artificial satellite on 4 October 1957. On 3 October, the word was unknown. By the evening of 4 October, it had entered hundreds of languages.

The nature of society

Geography When people move away from each other, their language will diverge. The two groups will have different experiences, and at the very least their vocabulary will change. Similarly, when people come into contact with each other, their language will converge. The sounds, grammar, and vocabulary of one group are likely to exercise some influence on the other. These days, the increased mobility of people, within and between countries (p. 36), makes this a major factor.

fall out of daily use, and the language becomes obsolete.

Imperfect learning According to one view, children could be the initiators of language change. They might learn the adult forms imperfectly, and a new standard could gradually emerge. There are indeed similarities between the processes of language acquisition (§38) and historical change, but it is unlikely that there is a causal connection. Children imitate society, rather than the reverse.

According to another view, change is the result of one population imperfectly learning the language of another. This is a common occurrence, as illustrated by many immigrant groups, or

the levels of bilingualism found in contact areas (§60). The minority language forms a 'substratum' which in the long term influences majority usage. For example several varieties of American English display the influence of the West African linguistic background of its black population.

Social prestige People come to talk like those they identify with or admire (p. 51). The process may be conscious or subconscious. Conscious change can be observed in those cases where people go out of their way to use or avoid a certain feature in their spoken or written language – such as *whom* or intrusive /r/ (§1). Subconscious change,

where people are not aware of the direction in which their speech is moving, is less noticeable, but far more common. The movement may be towards a favoured accent or dialect (one which has 'positive prestige'), or away from one which is held in low esteem ('negative prestige'). The speakers are usually aware of the existence of linguistic differences (e.g. 'I don't like the way those people talk'), but unaware of any trend in their own speech related to their attitude.

Recent research in sociolinguistics has shown the way in which patterns of change relate to social prestige. For example, the work of Labov and others has shown that conscious change in American and Brit-

ish English is usually in the direction of those linguistic forms which are widely and openly recognized as prestigious (they have 'overt prestige', as in the case of standard English). This kind of change is often initiated by people from the lower middle-class or upper working-class – especially women, who seem to be more aware of these factors than men. By contrast, subconscious change is usually in the opposite direction, away from overt prestige. It is often initiated by working-class men, and associated with such attributes as toughness and virility, which carry 'covert prestige'.

The nature of language

Social factors can motivate people to change their language, but is there anything in language itself which, so to speak, 'welcomes' a change?

Ease of articulation In the 19th century, it was widely felt that sounds changed because speakers would want to speak using as little effort as possible. On this basis, sounds and sound

systems should become simpler over long periods of time. Some types of sound change do provide evidence for this view – such as the trend in many languages to weaken or drop final consonants, or to allow adjacent sounds to influence each other, as in the case of assimilation (p. 164). But there are also many cases where articulatory complexity is unaffected by a sound

change – and even cases where it seems to have increased. Only a small part of language change can be explained by a principle of least articulatory effort.

Analogy Irregular features in the grammar of a language are often influenced by its regular patterns: the exceptions are made to conform to the rule (p. 234). This trend towards 'neat-

ness' has a parallel in phonology, where many changes have led to the development of a more symmetrical sound system (p. 165).

Randomness Might language change have no systematic explanation? It has been proposed that change might be essentially unpredictable – the result of arbitrary changes in fashion or

chance errors in articulation. Certainly, many changes in vocabulary are isolated and arbitrary; but there is no strong case for randomness in phonology or grammar. On the contrary, similar processes of change have been found in unrelated languages all over the world.

55 Pidgins and creoles

Pidgin languages

A pidgin is a system of communication which has grown up among people who do not share a common language, but who want to talk to each other, for trading or other reasons. Pidgins have been variously called 'makeshift', 'marginal', or 'mixed' languages. They have a limited vocabulary, a reduced grammatical structure, and a much narrower range of functions, compared to the languages which gave rise to them. They are the native language of no-one, but they are nonetheless a main means of communication for millions of people, and a major focus of interest to those who study the way languages change.

It is essential to avoid the stereotype of a pidgin language, as perpetrated over the years in generations of children's comics and films. The 'Me Tarzan, you Jane' image is far from the reality. A pidgin is not a language which has broken down; nor is it the result of baby talk, laziness, corruption, primitive thought processes, or mental deficiency. On the contrary: pidgins are demonstrably creative adaptations of natural languages, with a structure and rules of their own. Along with creoles (p. 336), they are evidence of a fundamental process of linguistic change, as languages come into contact with each other, producing new varieties whose structures and uses contract and expand. They provide the clearest evidence of language being created and shaped by society for its own ends, as people adapt to new social circumstances. This emphasis on processes of change is reflected in the terms *pidginization* and *creolization*.

Most pidgins are based on European languages – English, French, Spanish, Dutch, and Portuguese – reflecting the history of colonialism. However, this observation may be the result only of our ignorance of the languages used in parts of Africa, South America or South-east Asia, where situations of language contact are frequent. One of the best-known non-European pidgins is Chinook Jargon, once used for trading by American Indians in north-west USA. Another is Sango, a pidginized variety of Ngbandi, spoken widely in west-central Africa.

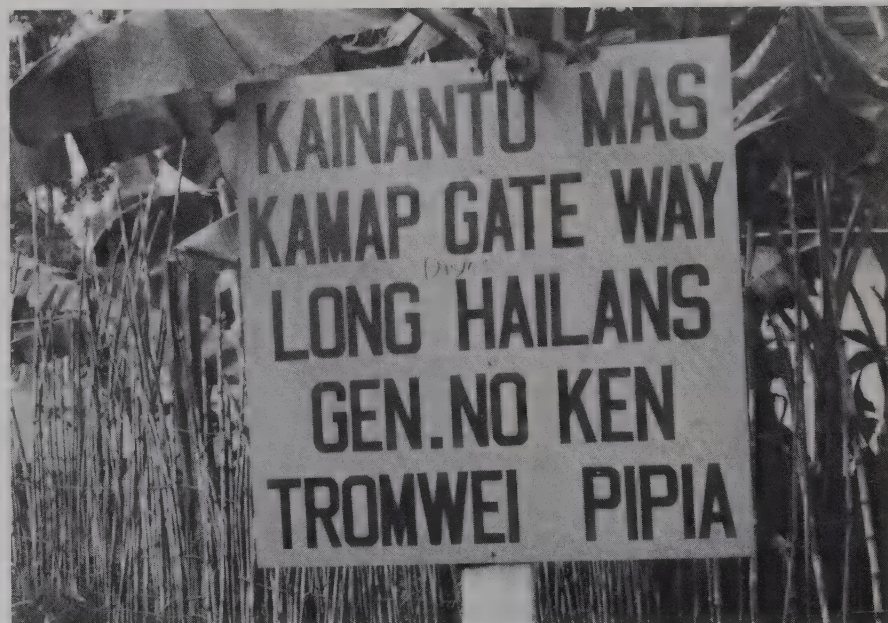
Because of their limited function, pidgin languages usually do not last for very long – sometimes for only a few years, and rarely for more than a century. They die when the original reason for communication diminishes or disappears, as communities move apart, or one community learns the language of the other. (Alternatively, the pidgin may develop into a creole.) The pidgin French which was used in Vietnam all but disappeared when the French left; similarly, the pidgin English

which appeared during the American Vietnam campaign virtually disappeared as soon as the war was over. But there are exceptions. The pidgin known as Mediterranean Lingua Franca, or Sabir, began in the middle ages and lasted until the 20th century.

Some pidgins have become so useful as a means of communication between languages that they have developed a more formal role, as regular auxiliary languages. They may even be given official status by a community, as *lingua francas*. These cases are known as 'expanded pidgins', because of the way in which they have added extra forms to cope with the needs of their users, and have come to be used in a much wider range of situations than previously. In time, these languages may come to be used on the radio, in the press, and may even develop a literature of their own. Some of the most widely used expanded pidgins are Krio (in Sierra Leone), Nigerian Pidgin English, and Bislama (in Vanuatu). In Papua New Guinea, the local pidgin (Tok Pisin) is the most widely used language in the country.

Below: A road sign in Tok Pisin: 'Kainantu must once again become the gateway to the highlands. Don't throw rubbish around.' Kainantu is the first major government centre on the Highlands Highway from Lae on the coast to Mt Hagen in the interior. The sign refers to a slogan in English that was used before independence, when Kainantu had an airstrip (now closed): 'Kainantu: Gateway to the Highlands'.

Right, below: A street poster from Freetown, Sierra Leone, written in Krio: 'Electricity has no legs: it's Kabelmetal cable that carries it.'



Possible origins of the word *pidgin*

All of the following have been suggested as sources for the word *pidgin*, which is first attested in print in 1850:

- A Chinese mispronunciation of the English word *business*.
- The Portuguese word *ocupação* (business).
- The Hebrew word *pidjom* (barter).
- A Yayo word *pidians* meaning *people*.
- Portuguese *pequeno* (little, child) – cf. 'baby-talk'.
- English *pigeon* – suitable for carrying simple messages.

Right: Part of the front page of *Wantok* ('Friend'), a Papua New Guinea weekly newspaper written entirely in pidgin (Tok Pisin) (with an English sports section). The headline of this issue (July, 1985) reads: 'More refugees cross border but local people short of food'.

Wantok

Namba 580 — Wik i stat long 20 Julai, 1985

Insait

- Davaa Ben Moede
- i kisim
- bagarap -
- Rugby League
- News



- Seng i samting ol
- PNG i no mas pret -
- Refuji mama kisim
- Oi toma bilong hau
- Japan na PNG -
- K20,000 i go long

N e k s wik

Winim wampela
yamaha jenerera
Kompetisen i
stat neks wik
long Wantok

Moa refuji i kalapim boda

tasol ol asples i sot long kaikai

LONG TUNDE
10 Julai, 83 lapun,
mama na ol pik-
inini bilong ol
refuji long Wes
Irian i bin kam

Benny Bogg i raunim

grup bilong ol i bin
wet long boda. I gat
samting olsem 300
manmeri na pikinini

Man ya i tok ol-
sem, planti papa
bilong graun-pain-
maul olsem kikai
long ol dispela fun

ol refuji. Ol pipel
pauwim hau taun
long tokautim ol
famili bilong ol yet
long asples. Olsem
na ol refuji bai no
map kisim gaispela
helpim long taun

**ELECTRICITY
NO GET LEG**

**NA
kabelmetal
CABLE
DE CARRY AM**

kabelmetal

Shakespeare in pidgin

The range of pidgin English is well illustrated by the translations which have been made of such works as the Bible and Shakespeare. Here is an extract from *Julius Caesar* (Act III, Scene 2), translated into Krio pidgin and Tok Pisin.

Friends, Romans, countrymen, lend me your ears;
I come to bury Caesar, not to praise him.
The evil that men do lives after them;
The good is oft interred with their bones;
So let it be with Caesar. The noble Brutus
Hath told you Caesar was ambitious.
It it were so, it was a grievous fault;
And grievously hath Caesar answer'd it.
Here, under leave of Brutus and the rest —
For Brutus is an honourable man;
So are they all, all honourable men —
Come I to speak in Caesar's funeral

Krio

Padi dem, kohntri, una ohi wey dey na Rom. Meyk una ohi kak una yeys. A kam ber Siza, a noh kam preyz am. Dem kin memba bad wey pohsin kin du lohng tem afta di pohsin kin dohn dai. Boht plenti tem di gud wey pohsin du kin ber wit im bon dem. Meyk i bi so wit Siza. Bra Brutohs dohn tel una sey Siza na bin man wey want pas mak. It i tohk tru, na badbad ting dis ya. En Siza dohn get im bad pey foh dat. A tayk pamis-hohn frohm Bra Brutohs dem foh kam tohk na Bra Siza im berin. En Bra Brutohs na ohnareybul O! Dem ohda wan sef na ohnareybul.
(From T. Decker, 1965, p. 74.)

Tok Pisin

Pren, man bolong Rom, Wantok, harim nau. Mi kam tasol long plantim Kaesar. Mi noken beiten longen. Sapos sampela wok bolong wampela man i stret; sampela i no stret; na man i dai; ol i wailis long wok i no stret tasol. Gutpela wok bolongen i slip; i lus nating long giraun wantaim long Kalopa. Fesin bolong yumi man. Maski Kaesar tu, gutpela wok i slip.
Brutus ia tokim yu long Kaesar i mangal. Sapos olo-sem, bikipela pekato tru. Tasol Kaesar Kalopa bekim pinis long virua belongen. Tru, Brutus, na ol pren bolongen, gutpela man. I orait. Ol i gipim mi orait long mi toktok sore hia long Kaesar.
(From J. J. Murphy, 1966, pp. 19–20.)

A page from a New Guinea road safety handbook *Rot Sefti Long Niugini* (1972), with instructions in English (top), Tok Pisin (middle), and Hiri Motu (bottom).

If you have an accident, get the other driver's number, if possible his name and address and report it to the police. Do not fight him or abuse him.

Sapos yu kisim bagarap kisim namba bilong narapela draiva, sapos yu ken, kisim naim bilong em na adres tu, na tokim polis longen. Noken paitem em o tok nogut long em.

Bema kerere davarua neganai, taraka o motuka taria tauna ena ladana oi abia bona ena noho o gaukara gabuna danu abia. Taraka o motuka ena naba danu abia vadaeni Police hamaoroa. Oi heai bona hereva dika lasi.



Creole languages

A creole is a pidgin language which has become the mother tongue of a community – a definition which emphasizes that pidgins and creoles are two stages in a single process of linguistic development. First, within a community, increasing numbers of people begin to use pidgin as their principal means of communication. As a consequence, their children hear it more than any other language, and gradually it takes on the status of a mother tongue for them. Within a generation or two, native language use becomes consolidated and widespread. The result is a creole, or ‘creolized’ language.

The switch from pidgin to creole involves a major expansion in the structural linguistic resources available – especially in vocabulary, grammar, and style, which now have to cope with the everyday demands made upon a mother tongue by its speakers. There is also a highly significant shift in the overall patterns of language use found in the community. Pidgins are by their nature auxiliary languages (§58), learned alongside vernacular languages which are much more developed in structure and use. Creoles, by contrast, are vernaculars in their own right. When a creole language develops, it is usually at the expense of other languages spoken in the area. But then it too can come under attack.

The main source of conflict is likely to be with the standard form of the language from which it derives, and with which it usually co-exists. The standard language has the status which comes with social prestige, education, and wealth; the creole has no such status, its roots lying in a history of subservience and slavery. Inevitably, creole speakers find themselves under great pressure to change their speech in the direction of the standard – a process known as *decreolization*.

One consequence of this is the emergence of a continuum of several varieties of creole speech, at varying degrees of linguistic ‘distance’ from the standard – what has been called the ‘post-creole continuum’. Another consequence is an aggressive reaction against the standard language on the part of creole speakers, who assert the superior status of their creole, and the need to recognize the ethnic identity of their community. Such a reaction can lead to a marked change in speech habits, as the speakers focus on what they see to be the ‘pure’ form of creole – a process known as *hypercreolization*. This whole movement, from creolization to decreolization to hypercreolization, can be seen at work in the recent history of black English in the USA.

The term *creole* comes from Portuguese *crioulo*, and originally meant a person of European descent who had been born and brought up in a colonial territory. Later, it came to be applied to other people who were native to these areas, and then to the kind of language they spoke. Creoles are now usually classified as ‘English based’, ‘French based’,

and so on – though the genetic relationship of a creole to its dominant linguistic ancestor is never straightforward, as the creole may display the influences of several contact languages in its sounds, vocabulary, and structure.

Today, the study of creole languages, and of the pidgins which gave rise to them, attracts considerable interest among linguists and social historians. To the former, the cycle of linguistic reduction and expansion which they demonstrate, within such a short time-scale, provides fascinating evidence of the nature of language change. To the latter, their development is seen to reflect the process of exploration, trade, and conquest which has played such a major part in European history over the past 400 years.

French	Guyanese Créole	Krio	English
Mangez	Māze	Chɔp	Eat
J'ai mangé	Mo māze	A chɔp	I ate
Il/Elle a mangé	Li māze	I chɔp	He/She ate
Je mange/Je suis en train de manger	Mo ka māze	A de chɔp	I am eating
J'avais mangé	Mo te māze	A bin chɔp	I ate/had eaten
Je mangeais	Mo te ka māze	A bin de chɔp	I was eating
Je mangerai	Mo ke māze	A go chɔp	I shall eat
Il/Elle est plus grand que vous	Li gros pas u	I big pas yu	He/She/It is bigger than you

Creoles compared

The similarities between European-based creoles are striking, as can be seen from this comparison of the verb phrase in the French-based creole of Guyana and the English-based Krio of Sierra Leone (after L. Todd, 1984, p. 24).

Where do pidgins and creoles come from?

The world’s pidgins and creoles display many obvious differences in sounds, grammar, and vocabulary, but they have a remarkable amount in common. Two opposed theories have attempted to explain these differences.

MANY SOURCES?

A long-standing view is that every creole is a unique, independent development, the product of a fortuitous contact between two languages. On the surface, this ‘polygenetic’ view is quite plausible. It seems unlikely that the pidgins which developed in South-east Asia should have anything in common with those which developed in the Caribbean. And it is a general experience that these varieties come into use in an apparently spontaneous way – as any tourist knows who has faced a souvenir seller. Would not the restricted features of the contact situations (such as the basic sentence patterns and vocabulary needed in order to trade) be enough to explain the linguistic similarities around the world?

The view is tempting, but there are several grounds for criticism. In particular, it does not explain the *extent* of the similarities between these varieties. Common features such as the reduction of noun and pronoun inflections, the use of particles to replace tenses, and the use of repeated forms to intensify adjectives and adverbs are too great

to be the result of coincidence. Why, then, should the pidginized forms of French, Dutch, German, Italian, and other languages all display the same kind of modifications? Why, for example, should the English-based creoles of the Caribbean have so much in common with the Spanish-based creoles of the Philippines? How could uniformity come from such diversity?

ONE SOURCE?

The opposite view argues that the similarities between the world's pidgins and creoles can be explained only by postulating that they had a common origin (i.e. are 'monogenetic'), notwithstanding the distance which exists between them. Moreover, a clear candidate for a 'proto'-language has been found – a 15th-century Portuguese pidgin, which may in turn have descended from the Mediterranean lingua franca known as Sabir (p. 338). The Portuguese are thought to have used this pidgin during their explorations in Africa, Asia, and the Americas. Later, it is argued, as other nations came to these areas, the simple grammar of this pidgin came to be retained, but the original Portuguese vocabulary was replaced by words taken from their own languages. This view is known as the *relexification* hypothesis.

There is a great deal of evidence to support the theory, deriving from historical accounts of the Portuguese explorations, and from modern analyses of the languages. For instance, every English-based pidgin and creole has a few Portuguese words, such as *savi* 'know', *pikin* 'child', and *palava* 'trouble'. In Saramaccan, an English-based creole of Suriname, 38% of the core vocabulary is from Portuguese. Early accounts of Chinese pidgin refer to a mixed dialect of English and Portuguese. And on general grounds, relexification of a single 'proto'-pidgin seems a more plausible hypothesis than one which insists on a radical parallel restructuring of several languages.

The shift in approach, implicit in the relexification theory, is fundamental: it is not the case that English, and the other languages, were 'creolized', but that an original (Portuguese) creole was 'Anglicized'. However, not all the facts can be explained in this way. Pitcairnese creole has no Portuguese influence, and yet has much in common with other varieties. What accounts for those similarities? Then there are several pidgins and creoles which have developed with little or no historical contact with European languages – Sango and Chinook, for instance. And there seem to be many structural differences between European and non-European pidgins and creoles, which the common origin hypothesis finds difficult to explain.

The evidence is mixed. Disentangling the structural similarities and differences between these varieties is a difficult task, and the evidence could be taken to support either a monogenetic or a polygenetic theory. Far more descriptive studies are needed before we rule out one view or the other.

Meanwhile, other theories have been proposed, in an attempt to explain these similarities and differences. Other forms of simplified speech have been noted, such as that used by children (§41), in telegrams and headlines, and in talking to foreigners (p. 373). It is possible that the processes underlying pidgins and creoles reflect certain basic preferences in human language (such as fixed word order, or the avoidance of inflections). In this connection, these languages provide fresh and intriguing evidence in the search for linguistic universals (§14).

Pidgins compared

Lexical similarities and differences between pidgins are clearly illustrated in this list of items collected by F. G. Cassidy in the 1960s, taken from the set of 'basic words' used in glottochronology (p. 331). The English element predominates in Tok Pisin and Chinese Pidgin; in Sango, the vast majority of the words are African; in Chinook, most words are from Chinook or other Amerindian languages (but note the influence of both French and English). French names for parts of the body have emerged in Sango and Chinook. Though there is no historical connection between the languages, note also the coincidences of thought which have produced the figurative phrases for *feather* (grass-of-bird (Tok Pisin), hair-of-bird (Sango), and leaf-of-bird (Chinook)), and the words for *heart* in Tok Pisin and Chinook, both of which stress the notion of heartbeat.

English	Tok Pisin	Chinese Pidgin	Sango	Chinook Jargon
bell	bel	bell	ngbéréná	tíntin
big	bigfela	big	kótá	hyás
bird	piŋin	bird(ee)	ndeke	kalákala
bite	kajkajim	bitee	te	múckamuck
black	blækfela	black	(zo)vókó	klale
blood	blut	blood	méné	piłpil
cold	kilfela	colo	dé	cole, tshis
come	kəm	li	ga	chahko
die	daj	dielo	kúi	mémaloost
dog	dog	doggee	mbo	kámooks
drink	drɪŋk	dlinkee, haw	yɛ	mucka-muck
ear	ir	ear	mé	kwolánn
earth	grawn	glound	sése	illahie
eat	kajkaj	chowchow	kóbe, te	múcka-muck
fat	gris	fat, glease	mafuta	glease
feather	gras bilɔŋ piŋin	fedder	kóá tí ndeke	kalákala yaka túpso
fish	fiš	fišee	susu	pish
give	gɪvɪm	pay	fú	pótlatch
green	grɪnfela	gleen, lu	vókó kété	pechúgh
hair	gras bilɔŋ hed	hair	kóá	yákso
hand	hæn	hand, sho	mabókó	le mah
head	hed	headee	li	la tet
heart	klak	heart	coeur	túmtum
know	save	savvy	hínga	kumtuks
man	mæn	man	kóli	man
no	no	na	non	wake
nose	nos	peedza	hō	nose
one	wənfela	one piecee	ókó	ikt
small	lɪklɪk	likki	kété	ténas
sun	sən	sun	lá	sun, ótelagh
talk	tək	talkee	tene	wáuwau
two	tufela	two	óse	mokst
warm	hotfela	warm	wá	waum

100 pidgins and creoles

(After Ian F. Hancock, 1971)

1 Hawaiian Pidgin/Creole

English-based, with influence of Chinese, Japanese, Hawaiian, Portuguese, and Philippine languages. c. 500,000 speakers, many as a first language.

2 Pitcairinese Creole English

Descendants of the mutineers from HMS *Bounty*, who settled here in 1790. English-based with a little Tahitian influence. c. 150 speakers.

3 Chinook Jargon

Chinook-based, with influence of English, French, Nootka, and Salishan dialects. Spoken by 100,000 in late 19th century, but now nearly extinct.

4 Pidgin Eskimo

A series of Eskimo-based pidgins, used in trading with whites, and with Athabaskan Indians.

5 Pachuco (Pochismo)

Spanish-English contact language in limited use in Arizona and parts of southern California.

6 Trader Navaho

Navaho-based, used by traders to the Indians, but not conversely.

7 Franco-Amerindian

Used in the 17th century between French fishermen and Indians, around Montreal.

8 Souriquoien

Used in the 17th century between French fishermen and local people in Nova Scotia.

9 New Jersey Amerindian

Once used between English and Dutch traders and New Jersey Indians. Showed the influence of English grammar, but with a largely Algonquian vocabulary.

10 Mogilian

Choctaw-based pidgin, formerly used by many Indian tribes along the Gulf Coast and Mississippi River.

11 Amerindian Pidgin English

English-based pidgin once used widely in the USA between traders and Indians. First recorded in 1641.

12 Gullah

English-based creole used along the USA south-eastern coast. Many features in common with West African varieties. Estimates vary, 150–300,000.

13 Louisiana Creole French

A French-based creole still used in parts of eastern Louisiana, but diminishing in number of speakers.

14 Belize Creole English

Used as a lingua franca in rural areas; as a first language in mainly urban areas.

15 Mesquito Coast Creole

A pidginized form of some of the Caribbean creole dialects used along the Mesquito Coast area of Nicaragua.

16 Nahuatl-Spanish Creole

Used in Nicaragua from the 16th century, and now probably extinct.

17 Papiamentu (Papiamentu)

A Spanish creole, derived from a Portuguese pidgin, with Dutch vocabulary influence. Used in Curaçao, Bonaire, and Aruba by c.200,000 speakers.

18 Pidgin Spanish

A Spanish-based trading language used mainly by two Indian tribes in west Venezuela.

19 Spanish Creole

Several creolized varieties used by Indians in north Colombia.

20 Caribbean Creole English

Around 30 English-based creoles are found throughout the islands of the Caribbean, some represented by several varieties. The largest is Jamaican Creole, with over 2 million speakers (and cf. Trinidad and Tobago Creole).

21 Haitian French Creole

Used in three main varieties in Haiti by over 4 million speakers.

22 Virgin Islands Dutch Creole

Widely used in the 19th century (a New Testament translation was produced in 1818), but now nearly extinct.

23 Antilles Creole

French-based varieties spoken in such islands as Grenada, Guadeloupe, Dominica, Martinique, Saint Lucia, Trinidad, and Tobago.

24 Sranan

English-based creole of coastal Suriname and other coastal ports. A widely used lingua franca, and a first language of c. 80,000 speakers.

25 English Bush Negro

English-based creole dialects of Boni (or Aluku), Djuka (or Aucan), used in Suriname. Djuka is the only creole to have developed a syllabic writing system. Pidgin Djuka is used between the Bush Negroes and the Trio Indians.

26 French Guyana Creole

French-based creole, with some Portuguese influence, used in Cayenne and along the coast. c. 50,000 speakers.

27 Trinidad and Tobago Creole

Both Spanish- and English-based varieties are used in these islands, as well as an indigenous patois. The influence of immigrant languages, such as Hindi, is apparent.

28 Guyanese Creole/Creolese

English-based creole used in Guyana, with influences from other creoles, such as Barbados and Sierra Leone.

29 Nikari Karu Pidgin

A Portuguese-based pidgin, used in Guyana near the Brazilian border.

30 Guyana Dutch Pidgin

This variety is reported to have been used on inland rivers in Guyana, in the 19th century. A creolized form is still used in S. Guyana.

31 Portuguese Bush Negro

Portuguese-based dialects used in Suriname, with English and African vocabulary influence.

32 Brazilian Creole Portuguese

Used by Brazilians of African ancestry in rural areas. An Italian-Negro variety known as *Fazandeiro* exists in São Paulo.

33 Lingoa Geral

A Tupi-Guarani-based pidgin used in Brazil; now losing ground to Portuguese.

34 Cocoliche

A variety of Italianized Spanish used around Buenos Aires.

35 Franco-Spanish Pidgin

A contact language with limited use in Buenos Aires – in some studies referred to as 'Fragnol'.

36 Russenorsk

A contact language, derived from Russian and Norwegian, now nearly extinct.

37 Anglo-Romani

A creolized variety, derived from Romany and English, used by Gypsies in Britain.

38 Sheldru (Shelta)

An Anglo-Irish creole, used mainly by Irish travellers and their descendants in England, USA, and elsewhere; based on English grammar with (often modified) Irish vocabulary.

39 Inglés de Escalerilla

A Spanish-English-based pidgin used in some Mediterranean ports, such as Malaga and La Linea.

40 North African Pidgin French

A French-based pidgin, also known as 'Petit Mauresque'.



41 Sabir

A pidginized variety of Provençal, used in many Mediterranean ports (and in the Middle East, during the Crusades), and influenced by the vocabulary of other languages in the area. Now extinct.

42 Cape Verde Creole

A Portuguese-based creole, used in two main dialects in the Cape Verde Islands. It is reported to be spoken by groups descended from 19th-century immigrants in Massachusetts and California.

43 Kryól

A Portuguese-based creole, used in Senegal. c. 57,000 speakers.

44 Gambian Krio (Aku)

An English-based creole used in the Gambia; widely used as a second language, with limited use as a first language. Gradually being ousted by English and pidginized Wolof.

45 Crioulo

A Portuguese-based creole used in Guinea, widely used as a lingua franca.

46 Krio

An English-based creole of an area based on Freetown in Sierra Leone. c. 50,000 speakers as a first language, and widely used as a second. An old-fashioned variety is also found in Liberia.

47 (A)Merico (Settler English)

An English-based creole used along the Liberian coast.

48 Kru English

An English-based pidgin used by Kru fishermen in Liberia, and along the West African coast.

49 Petit-Nègre

A French-based pidgin used mainly by soldiers in the Ivory Coast and other former French possessions along the West African coast.

50 West African Pidgin English

A mutually intelligible chain of English-based pidgins and creoles is found throughout West Africa – such as Ghana, Togo, Nigeria, and Fernando Po (and cf. Gambia, Krio, Merico, Kru, and Cameroon).

51 Gulf of Guinea Portuguese

A group of creoles used on the islands of Annobon, São Tomé, and Príncipe.

52 Cameroon Pidgin English

An English-based pidgin, creolized in some urban areas, used in Cameroon as a second language by about 2 million speakers. Related varieties are used in eastern Nigeria and Fernando Po.

53 Ewondo Populaire

An African-based pidgin used as a trade language in the Yaoundé area of Cameroon.

54 Barikanci

A Hausa-based pidgin, used as a lingua franca among the armed forces in northern Nigeria. Pidginized Hausa is also found in N. Cameroon, and on the desert route to Mecca.



55 Tekkur
An Arabic-based pidgin, widely used as a lingua franca to the east of Lake Chad, and in the Bodélé depression in northern central Africa.

56 Sudan Arabic
An Arabic-based pidgin which developed in the southern Sudan around the end of the 19th century.

57 Gargaliya
An Arabic-based pidgin used by the Kalamáfi tribe in north-eastern Nigeria.

58 Sango
A pidginized variety of Ngbandi, with French vocabulary influence, used widely in the Central African Republic, and sporadically in Cameroon and Chad.

59 Congo Pidgins
Many pidginized varieties of local African languages in the Congo, such as Kituba (derived from Kikongo) and Lingala (pidginized Ngala). Kituba has around 2 million speakers as a second language.

60 Asmara Pidgin Italian
An Italian-based pidgin still used in Eritrea, in Ethiopia.

61 Swahili Pidgins
Several varieties of pidginized Swahili are used in eastern Africa, such as Kisettla, spoken in Kenya between Europeans and Africans. Creolized in some areas.

62 Afrikaans Pidgin
Used in the Namaland region of south-west Africa between tribesmen and Afrikaners. Creolized in some areas.

63 Cape Dutch (Taal Dutch)
Afrikaans-based varieties used in the South African Cape; the label 'Cape Coloured Afrikaans' is also used.

64 Fanagaló
A Zulu-based English pidgin, with some lexical influence, used mainly by African mine-workers around Johannesburg, and in Zimbabwe and Namibia. It is known by many names, such as Mine Kaffir and Kitchan Kaffir.

65 Zambia Pidgins
Several African-language-based pidgins are used in the Zambian copper belt, such as Town Bemba.

66 Réunionnais
A French-based creole used in Réunion by over 200,000 people.

67 Barracoen
A language used in the 19th century in the Mozambique ports, containing elements from many languages, such as Arabic, Swahili, Portuguese, and Malagasy.

68 Mauritian French Creole
Used by most of the population of Mauritius, and by some in Madagascar and the Comoros Islands; increasingly influenced by English.

69 Rodrigues Creole
A French-based creole, used on Rodrigues Island, near Mauritius, by around 17,000 people.

70 Seychellois
A French-based creole, used in the Seychelles and other islands by around 40,000 people.

71 Sri Lanka Portuguese
A Portuguese-based creole formerly used by Indo-Portuguese Christian immigrants, and still spoken in parts of Sri Lanka.

72 Goanese
A Portuguese-based creole used in Goa; probably now extinct.

73 Indian Portuguese
Several pidgin and creole varieties used in ports along the Indian coast, now largely extinct.

74 St Helena Creole
An English-based creole used on the island of St Helena; some use as a pidgin.

75 Bazaar Hindustani
A Hindi-based pidgin, used as a lingua franca in urban centres in northern India.

76 Madras Pidgin
An English-based pidgin, much influenced by Dravidian languages, used during British rule in India, and still found in some urban communities.

77 Tay Boy
A French-based pidgin, widely used in Vietnam during the period of French control; now almost extinct.

78 Makista (Macauenho)
A Portuguese-based creole, influenced by Chinese vocabulary, used mainly in Macau.

79 China Coast Pidgin
An English-based pidgin, formerly in widespread use in coastal China and Hong Kong, but now almost extinct.

80 Bamboo English
An English-based pidgin used in Korea, especially during the Korean War; almost extinct.

81 Japanese pidgin
An English-based pidgin widely used in Japanese ports in the late 19th century, and also in areas which saw American occupation in the 1940s; no longer used.

82 Vietnam Pidgin
An English-based pidgin used in Vietnam between local people and American servicemen; now largely extinct.

83 Malacca Portuguese
A Portuguese-based creole used in western Malaysia by about 3,000 people.

84 Singapore Portuguese
A Portuguese-based creole, with some Malay and English influence, used in parts of Singapore.

85 Jakarta Portuguese
A Portuguese-based creole, formerly spoken in Jakarta and nearby, and now probably extinct.

86 Baba Malay
A pidginized variety of standard Malay, widely used in Malaysia and Indonesia. Also in this area, *Baba Malay*, a pidginized variety strongly influenced by Chinese.

87 Caviteño and Ermitaño
Spanish-based creoles used in the area around Manila, in the Philippines.

88 Chabacano
A Spanish-based creole, with influences from Tagalog and Cebuano, used in Zamboanga, the Philippines.

89 Davaueño
A Spanish-based creole, used in Davao, the Philippines.

90 Bamboo Spanish
A Spanish-based pidgin, used first by the Japanese and later by the Chinese in Davao, the Philippines.

91 Ternateño
A language once used in Ternate, the Moluccas, between Spanish Mexican soldiers and the Portuguese-speaking local community.

92 Tok Pisin (Neo-Melanesian)
An English-based pidgin, influenced by local Papuan languages, widely used in Papua New Guinea by around 1 million people; it has been creolized in some areas.

93 Hiri Motu
A pidginized variety of Motu, formerly often called 'Police Motu', much influenced by English vocabulary, widely used as a trade language for over 100 years in the Port Moresby area of Papua New Guinea.

94 Solomon Islands Pidgin
An English-based pidgin used in and around the Solomon Islands; becoming creolized in urban centres.

95 Bislama (Beach-la-Mar)
An English-based pidgin, with local language influences, widely used in Vanuatu, Fiji, and surrounding areas as a lingua franca; some first-language use. *Bislama* derives from 'bêche-de-mer', a local variety of sea-slug.

96 Bagot Creole English
An English-based variety deriving from Australian Pidgin, used on the Bagot Aboriginal Reserve near Darwin, northern Australia.

97 Australian Pidgin
An English-based pidgin which may have developed out of Neo-Melanesian; it is possible that the influence was in the other direction, with New Guinea plantation workers carrying the pidgin back home.

98 New Caledonia Pidgin
A French-based pidgin used in New Caledonia, in the south-west Pacific.

99 Norfolkese
An English-based creole, which developed from Pitcairinese, used by settlers who moved to Norfolk Island from Pitcairn Island, in the 19th century.

100 Maori Pidgin
An English-based pidgin used during the early years of colonization in New Zealand; no longer spoken.

France, Emphasizing U.S. Ties, Will Sign Pact on Disney Park

By Axel Krause
International Herald Tribune
PARIS — Prime Minister Jacques Chirac, of France and executive of Walt Disney Co. will sign an agreement Tuesday to establish Western Europe's first Disneyland theme park.

The park will include hotels, office and shopping centers and will represent a total investment of more than 10 billion francs (\$2.6 billion).

The project, which gradually will be expanded over 10 years, represents the largest single foreign investment in France's history, French and U.S. officials said Sunday.

At a news conference after the signing of the accord, Mr. Chirac is expected to emphasize his determination to attract other American and foreign investment in France following recent strains in French U.S. relations over European agriculture, telecommunications and financing of Airbus aircraft, the officials said.

In a related development, the of-

operates similar parks in California, Florida and Tokyo.

The theme park is scheduled to open in early 1993 and is expected to attract an estimated 10 to 15 million visitors annually, including more than 5 million from abroad, French and U.S. negotiators said in interviews Sunday.

The park's price, while still under discussion, is expected to be set at around 120 francs (about \$20).

"Our agreement may be a pioneer, because of some critical points," said Joe Shapiro, Walt Disney's general counsel and chief vice president.

Mr. Shapiro cited as examples the French government's willingness to reduce the state sales tax on ticket receipts to 7 percent from 17 percent and agreeing to Disney's demand that any disputes over French government investments may be resolved by international arbitration. In each case, special laws were approved by the National Assembly.

A major compromise also was reached after Mr. Chirac insisted

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Il Psi boccia il documento Ripropone ad Andreotti: facciamo governo e referendum

Il Psi boccia il documento ripropone ad Andreotti: facciamo governo e referendum

La Croce Rossa invita gli americani a sottoporre

Aids, è allarme negli Stati Uniti per le trasfusioni dal '78

Sono dai 25 ai 30 milioni le persone interessate - Miliardi di dollari a plasma infuso sarebbero solo 683

Nouvelle-Calédonie : la France retrouvée

(Page 2 : le reportage de Thierry DESJARDINS)

Portfolio
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Chirac : poursuivre l'action engagée

Sur le plan économique, pas de relance, mais un sérieux coup de pouce aux investissements des entreprises.

Il y a eu « accord et unanimité » de l'ensemble de l'équipe gouvernementale sur les conclusions qui se sont dégagées de la réunion interministérielle organisée, hier, par le premier ministre, à Matignon.

Jacques Chirac a réaffirmé sa volonté de poursuivre, « sans rupture, l'action engagée » dans tous les domaines.

Redressement économique : le gouvernement se refuse à annoncer une véri-

Les cadres mécontents

Le président a que le pouvoir ment soit

En dressant, hier, bilan de l'action gouvernementale, après dix mois de gestion, le président de la Confédération française de l'enseignement (C.F.E.) s'est inquiété de l'évolution négative du pouvoir des cadres.

Après dix ans d'enseignement, le C.F.E. a constaté une dégradation des conditions de travail des cadres.

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WASHINGTON — Veniti trecento milioni di persone potrebbero aver contratto il virus dell'Aids, si è stimato negli Stati Uniti.

La Croce Rossa ha rivolto appello a queste persone vittime della malattia, affinché vadano dal medico e accertino con un test il loro sangue.

Il rischio di contagio è più alto per chi ha intrattenuto nelle aree oppresse di New York, Francoforte, Los Angeles, San Francisco, Miami e Washington.

La Croce Rossa ha invitato gli americani a sottoporre il loro sangue a un test di screening per individuare il virus dell'Aids.

La Croce Rossa ha invitato gli americani a sottoporre il loro sangue a un test di screening per individuare il virus dell'Aids.

A Parigi uno scienziato si inietta un vaccino

A pagina 11 Ulderico Munzi

الدولة
AL AHRAH-INTERNATIONAL

LE F.A.R.O.G. FORUM
JOURNAL BILINGUE
mars 1980

"Religion et Nationalisme" LOUISIANA

Mensuel publié par la Fondation Louisiana
NO. 33, AVRIL 1980

NORDISK TIDEI
NORWEGIAN NEWS - NORSKE NYHETER

Norsk In-Brief
Lokasjon ved kjø
Høflig politisk kultur

LA NEW ENGLAND SEMANA
Hispanic News Journal
First Bilingual Newspaper In New England

Alcalde White... Pondrá Hispanos A Cargo Organismos De La Alcaldía!
PAG. 2

Mayor White... Hispanics Will Be Appointed To City Posts!
PAG. 3

Presidente Carter... Ordena La Marina Cooperar Con Refugiados
PAG. 9

President Carter... Orders Navy Cooperate With Refugees
PAG. 9

"Nadie Será Devuelto A Cuba!"
PAG. 9

"Nobody Will Be Returned To Cuba!"
PAG. 9

PART X

Language in the world

市參議欲和解
 雙語選舉控案

Language is the main means whereby people communicate. It is also, ironically, the main means whereby people fail to communicate. These simple facts motivate the content and organization of Part x of the encyclopedia. We need to examine the problem from both international and intranational points of view. In the former case, we are dealing with the difficulties posed by the existence of so many languages in the world, and the solutions that have been proposed to alleviate them. In the latter case, we need to consider the consequences for mutual understanding that stem from the existence of so many specialized varieties within a language.

We begin by considering the way foreign languages can act as a barrier to international communication and the various methods that have been proposed to reduce or eliminate the problem. One possible solution lies in translating and interpreting – a field whose future will be much affected by progress in computer applications. Another is to create an international auxiliary language (such as Esperanto) or to simplify an existing language for international use (such as Basic English). A third solution is to promote the development of an existing language as a world language – something that currently seems to be happening to English. A

fourth is to foster the growth of multilingualism in individuals and societies, either through the natural course of events, as people come into contact, or through the promotion of special educational procedures for teaching languages. Each of these approaches is given separate discussion and illustration. A focus is provided by the branch of sociolinguistics known as 'language planning' – an area that has attracted increasing attention in recent years.

Within a language, the co-existence of many specialized varieties presents a further area of enquiry. Fields such as science, medicine, law, religion, and mass communications have developed styles of language that require careful study if they are to be understood. Popular attitudes to specialized language also need to be taken into account – notably, in the work of the various campaigns for 'plain English'. We examine the background to several of these varieties, illustrating the kinds of linguistic features they display. Part x then concludes by considering the impact of the 'information explosion', which presents us daily with a mass of linguistic data, only a fraction of which can be assimilated, and which, as it accumulates, makes for increasing difficulties of organization and retrieval.

The linguistic variety in the modern world can be seen on sale daily at any international news-stand.

اسم الإبراهيم في أغسطس
 رئيس مجلس الإدارة
 إبراهيم
 السنة ١١١ - العدد ٣٦٦٩

مبارك وحسين يطالبان

الزعيمان بعد مباحثات ٤ ساعات بال

مصر على اتصال بمنظمة التحرير
 لتنسيق المواقف وتسهيل عقد

بحث أبرز القضايا والمخاض
 والأوضاع العربية والملا

خلال مباحثات امتدت لأكثر من أربع ساعات مع الملك الذي وصل أمس إلى القاهرة في زيارة عمل سريعة. دعا المعاهل الأردني. إلى وقف الحرب في الخليج وتسوية الحدود الدولية. وأكد الرئيس مبارك بعد المباحثات التحدث باسم منظمة التحرير الفلسطينية. وأنه القرارات التي اتخذتها مؤتمرات القمة العربية. بالوحيد للشعب الفلسطيني. بينما قال الملك حسين أن العربي الفلسطيني. وتعكس آماله وطموحاته وأهد ليست هناك اتصالات غير عادية معها فيما يتعلق بالت

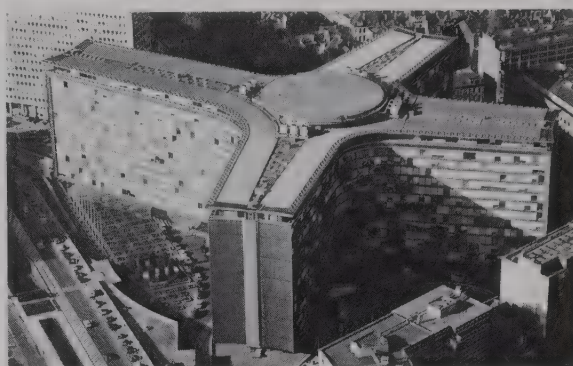
النسوية
 وردا على أسئلة الصحفيين أعلن الرئيس مبارك أن مصر على اتصال حتى تستطيع تسهيل عملية انعقاد المؤتمر الدولي وهذه المسألة تأ الأيدي تأييد بلاده لعقد مؤتمر دول السلام. وقال أن موقفها واضح تحت أشرف الأمم المتحدة وبحضور الدول الخمس دائمة العضوية المعنية بما في ذلك منظمة التحرير
 وقد وجه الملك حسين بعد اجتماعه
 ظهر أمس وتخللها لقاء عمل نداء جديدا
 والتوصل إلى صيغة للتسوية السلمية لها
 مبارك بحثا أبرز القضايا والمخاض في
 التطورات الأخيرة في حرب الخليج وتسوية
 وأنها وطموحاته إلى جانب العراق وذلك من
 للتسوية تقوم على العودة للحدود الدولية
 المفاوضات بين إيران والعراق من أجل
 وتخطي على الأبناء الفلسطينية حول
 المعامل الأرمي أنه ليرتفع التوجه إلى
 وأنه لم يتقرر بعد شيء. مصدر فيما بدا
 وقد ظهر الرئيس مبارك والملك حسين
 توجع المعامل الأرمي غدا في حال
 مجلس الشورى والمختار معالي
 وقال الملك حسين أنه وصل إلى القاهرة
 حسي مبارك حيث زارته إلى مقر رئاسة
 لعدالة ترأس الاستقلال الرئاسية. وأست
 ناط وظلة مالت الزور لعدالة الملك
 مستقطعة ١٠ مدهتهم المذكور على

الصحف السعودية أبرزت
 نيا زيارة الملك حسين
 للقاهرة أمس
 الرياض - ١ في ١٠ أبريل
 الصحف السعودية الصادرة أمس في
 صدر صفحاتها الأولى نيا زيارة الملك
 حسين. على الأرمي للقاهرة أمس
 وصارته مع الرئيس حسين مبارك.
 وقالت صحيفة «الشرق الأوسط»
 أن معاداة المعامل الأرمي والرئيس
 مبارك تنسج بأهمية كبيرة نظرا
 للظهور الجديدة في تسوية السلام.
 والعودة الدولية للتواصل لحل
 القضية الفلسطينية
 وأشارت الصحيفة إلى أن زيارة
 حسين للقاهرة تأتي بعد أربعة أشهر
 قام بها الرئيس الأمريكي السابق جيمي

56 The language barrier

The discovery that language can be a barrier to communication is quickly made by all who travel, study, govern, or sell. Whether the activity is tourism, research, government, policing, business, or data dissemination, the lack of a common language can severely impede progress and can halt it altogether. 'Common language' here usually means a foreign language; but the same point applies in principle to any encounter with unfamiliar dialects or styles within a single language. 'They don't talk the same language' has a major metaphorical meaning alongside its literal one (§63).

Although communication problems of this kind must happen thousands of times each day, very few become public knowledge. Publicity comes only when a failure to communicate has major consequences, such as strikes, lost orders, legal problems, or fatal accidents – even, at times, war. A reported instance of communication failure took place in 1970, when several Americans ate a species of poisonous mushroom. No remedy was known, and two of the people died within days. A radio report of the case was heard by a chemist who knew of a treatment that had been successfully used in 1959 and published in 1963. Why had the American doctors not heard of it, seven years later? Presumably because the report of the treatment had



EEC Babel

The EEC building in Brussels. Nowhere does the foreign language barrier exist so markedly as in the offices of the European Economic Community. The member states use nine official languages in their work, and this presents a massive translation problem – 72 language pairs. In 1980, a third of all Commission staff, and half of all European Parliament staff, were fully engaged in translation and interpreting, using up over 50% of the EEC's total administrative expenditure.

been published only in journals written in European languages – other than English. (After D. A. E. Shephard, 1973.)

Several comparable cases have been reported. But isolated examples do not give an impression of the size of the problem – something that can come only from studies of the use or avoidance of foreign-language materials and contacts in different communicative situations. In the English-speaking scientific world, for example, surveys of books and documents consulted in libraries and other information agencies have shown that very

Critical languages

In 1985, the U.S. Department of Education published a list of 169 languages which the U.S. Government considered to be 'critical', in the sense that knowledge of them would promote important scientific research or security interests of a national or economic kind. The aim, supported by special funding, was to help counter what the *Washington Post* called the nation's 'language illiteracy'. (Spellings have been made to conform to those used in Appendix III.)

Achinese	Azerbaijani	French	Korean	Norwegian	Swedish
Acholi	Bahasa Indonesia	Fulani	Kpelle	Nyanja	Tagalog
Afrikaans	Balinese	Gã	Krio	Oriya	Tajik
Akan	Baluchi	Ganda	Kumauni	Oromo	Tamil
Albanian	Bamileke	Gbaya	Kurdish	Panjabi	Tatar
Amharic	Bashkir	Georgian	Lahnda	Papiamento	Telugu
Arabic	Basa (Kru)	German	Lamani	Pashto	Temen
Armenian	Belorussian	Greek (Modern)	Latvian	Persian	Thai-Lao
Assamese	Bemba	Guaraní	Lithuanian	Polish	Tibetan
Aymará	Bengali	Gujarati	Luba	Polynesian	Tigrinya
	Berber	Haitian Creole	Macedonian	Portuguese	Tiv
	Bhojpuri	Hausa	Madurese	Quechua	Toba Batak
	Bikol	Hebrew (Modern)	Maithili	Rappang (Buginese)	Tsonga
	Bulgarian	Hindi	Malagasy	Romanian	Tungus (Evenki, Lamut)
	Burmese	Hmong	Malayalam	Romany	Turkish
	Buryat	Hungarian	Manchu	Rundi	Turkmen
	Cambodian	Iban (Malay)	Mandekan (Bambara)	Russian	Tuvian
	Catalan	Icelandic	Manipuri	Rwanda	Tuvian
	Chinese	Igbo	Marathi	Sango	Uighur
	Chuvash	Ilocano	Maya	Santali	Ukrainian
	Ciokwe	Irish	Mende	Serbo-Croatian	Urdu
	Czech	Italian	Minangkabau	Shona	Uzbek
	Danish	Japanese	Mixtec	Sindhi	Vietnamese
	Dari (Afghan Persian)	Javanese	Mongolian	Sinhalese	Visayan (Sebuano)
	Dinka	Kamba	Mordvin	Slovak	Wolof
	Dutch	Kannada	More	Slovene	Yakut
	Efik	Kanuri	Mundari-Ho	Somali	Yao
	Eskimo	Kashmiri	Nahuatl	Songhai	Yiddish
	Estonian	Kazakh	Neo-Melanesian	Sotho	Yoruba
	Ewe-Fon	Kikuyu	Nepali	Spanish	Yucatec
	Fijian	Kirghiz	Nēwari	Sundanese	Zapotec
	Finnish	Kongo	Ngala (Losengo)	Swahili	Zulu-Xhosa

little foreign-language material is ever consulted. In one study, an analysis of over 60,000 British Library requests in the field of science and technology showed that only 13% were for foreign-language periodicals (C. A. Bower, 1976). Studies of the sources cited in publications ('citation analysis') leads to a similar conclusion: the use of foreign-language sources is often found to be as little as 10%. Likewise, in the non-English-speaking world, there is also a marked reliance on native-language material – though here the special influence of English must be considered (sometimes accounting for over half the requests made or sources used (§59)).

There are several ways of getting around the foreign-language barrier, but none is simple, nor has any as yet been entirely successful.

1. Increase the number and availability of translating and interpreting services (§57).
2. Develop an auxiliary language that everyone will understand (§58).
3. Develop an existing language as a world language that everyone will understand (§59).
4. Provide increased motivation and opportunity to learn foreign languages (§§60, 62).

THE BUSINESS WORLD

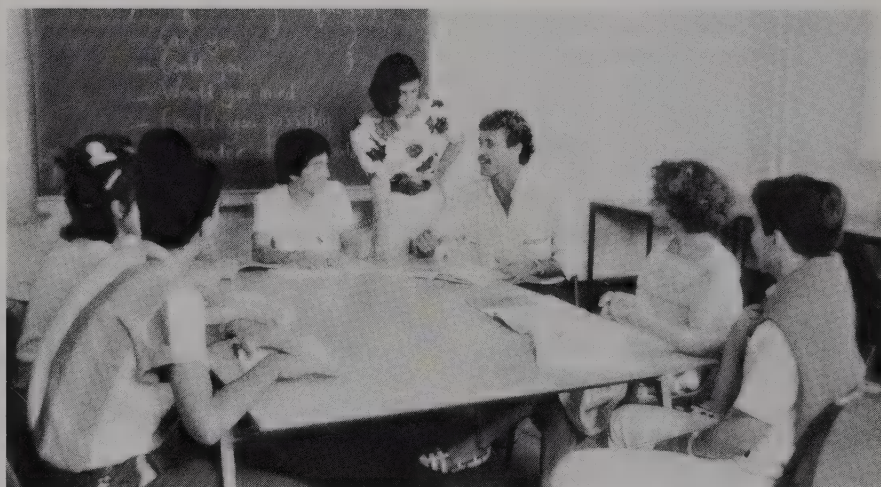
The language barrier presents itself in stark form to firms who wish to market their products in other countries. British industry in particular has in recent decades often been criticized for its linguistic insularity – for its assumption that foreign buyers will be happy to communicate in English, and that awareness of other languages is therefore not a priority. In the 1960s, over two-thirds of British firms dealing with non-English-speaking customers were using English for outgoing correspondence; many had their sales literature only in English; and as many as 40% employed no-one qualified to communicate in the customers' languages. A similar problem was identified in other English-speaking countries, notably the USA, Australia, and New Zealand. And non-English-speaking countries were by no means exempt – though the widespread use of English as an alternative language made them less open to the charge of insularity.

The criticism and publicity given to this problem since the 1960s seems to have greatly improved the situation. Industrial training schemes have promoted an increase in linguistic and cultural awareness – for example, programmes of industrial visits abroad, temporary exchanges of junior managers, or the appointment of overseas agents. Many firms now have their own translation service or international telephone service; to take just one example from Britain, Rowntree Mackintosh now publish their documents in six languages (English, French, German, Dutch, Italian, and Xhosa). Some firms run part-time courses in the language with which they are most involved; some produce their own glossaries of technical terms, to ensure consistency when material is being translated. It is now much

more readily appreciated that marketing efforts can be delayed, damaged, or disrupted by a failure to take account of the linguistic needs of the customer, or to look after one's own linguistic interests abroad (in such areas as patenting and trade-mark control).

The changes in awareness have been most marked in English-speaking countries, where the realization has gradually dawned that by no means everyone in the world knows English well enough to negotiate in it (§59), and that this is especially a problem when English is not an official language of public administration, as in most parts of the Far East, the Soviet Union, Eastern Europe, the Arabic world, Latin America, and French-speaking Africa (p. 357). Even in cases where foreign customers can speak English quite well, it is often forgotten that they may not be able to understand it to the required level – bearing in mind the regional and social variation which permeates speech (Part II) and which can cause major problems of listening comprehension. In securing understanding, how 'we' speak to 'them' is just as important, it appears, as how 'they' speak to 'us'.

An advanced class of foreign students at an English language school in London. There are over 600 such schools in Britain – though less than a third of these are officially recognized by a professional body. In the early 1980s, they were dealing with over 20,000 students each year, and generating an annual turnover of £300 million. Many schools all over the world now put on courses geared to the special needs of specific groups of foreigners, such as doctors, bankers, lawyers, or industrialists.



Expolangues This annual linguistic 'motor show', with around 500 languages represented, has been held in Paris since 1983. The exhibits reflect ongoing language-related activities in commerce, technology, culture, education, publishing, and several other fields. In 1985, the exhibition attracted over 40,000 visitors.

57 Translating and interpreting

When people are faced with a foreign-language barrier, the usual way round it is to find someone to interpret or translate for them. The term 'translation' is the neutral term used for all tasks where the meaning of expressions in one language (the 'source' language) is turned into the meaning of another (the 'target' language), whether the medium is spoken, written, or signed. In specific professional contexts, however, a distinction is drawn between people who work with the spoken or signed language (*interpreters*), and those who work with the written language (*translators*). There are certain tasks that blur this distinction, as when source speech is turned into target writing (for example, in monitoring foreign-language broadcasts, or in writing sub-titles for foreign films). But usually the two roles are seen as quite distinct, and it is unusual to find one person who is equally happy with both occupations. Some writers on translation, indeed, consider the interpreting task to be more suitable for extrovert personalities, and the translating task for introverts!

Translating

It is sometimes said that there is no task more complex than translation – a claim that can be readily believed when all the variables involved are taken into account. Translators not only need to know their source language well; they must also have a thorough understanding of the field of knowledge covered by the source text, and of any social, cultural, or emotional connotations that need to be specified in the target language if the intended effect is to be conveyed. The same special awareness needs to be present for the target language, so that points of special phrasing, contemporary fashions or taboos in expression, local (e.g. regional) expectations, and so on, can all be taken into account. On the whole, translators work *into* their mother tongue (or language of habitual use), to ensure a result that sounds as natural as possible – though some translators have argued that, for certain types of text (e.g. scientific material) where translation accuracy is more crucial than naturalness, it makes more sense for translators to be more fluent in the source language.

THE PROBLEM OF TRANSLATION

The aim of translation is to provide semantic equivalence between source and target language. This is what makes translation different from other kinds of linguistic activity, such as adapting, *précis* writing, and abstracting. However, there are many problems hidden within this apparently simple

statement, all to do with what standards of 'equivalence' should be expected and accepted.

Exact equivalence is of course impossible: no translator could provide a translation that was a perfect parallel to the source text, in such respects as rhythm, sound symbolism (§30), puns, and cultural allusions. Such a parallel is not even possible when paraphrasing within a single language: there is always some loss of information.

On the other hand, there are many kinds of inexact equivalence, any of which can be successful at a certain level of practical functioning. It therefore follows that there is no such thing as a 'best' translation. The success of a translation depends on the purpose for which it was made, which in turn reflects the needs of the people for whom it was made. An inelegant, rough-and-ready translation of a letter can suffice to inform a firm of the nature of an enquiry. A translation of a scientific article requires careful attention to meaning, but little attention to aesthetic form. The provision of a dubbed film script will warrant scrupulous care over the synchronization of lip movements, often at the expense of content (p. 392). Literary work requires a sensitive consideration of form as well as content, and may prompt several translations, each of which emphasizes a different aspect of the original. It is easy to see that what might be 'best'

Levels of translation

■ **Word-for-word** Each word (or occasionally morpheme, p. 90) in the source language is translated by a word (or morpheme) in the target language. The result often makes no sense, especially when idiomatic constructions are used:

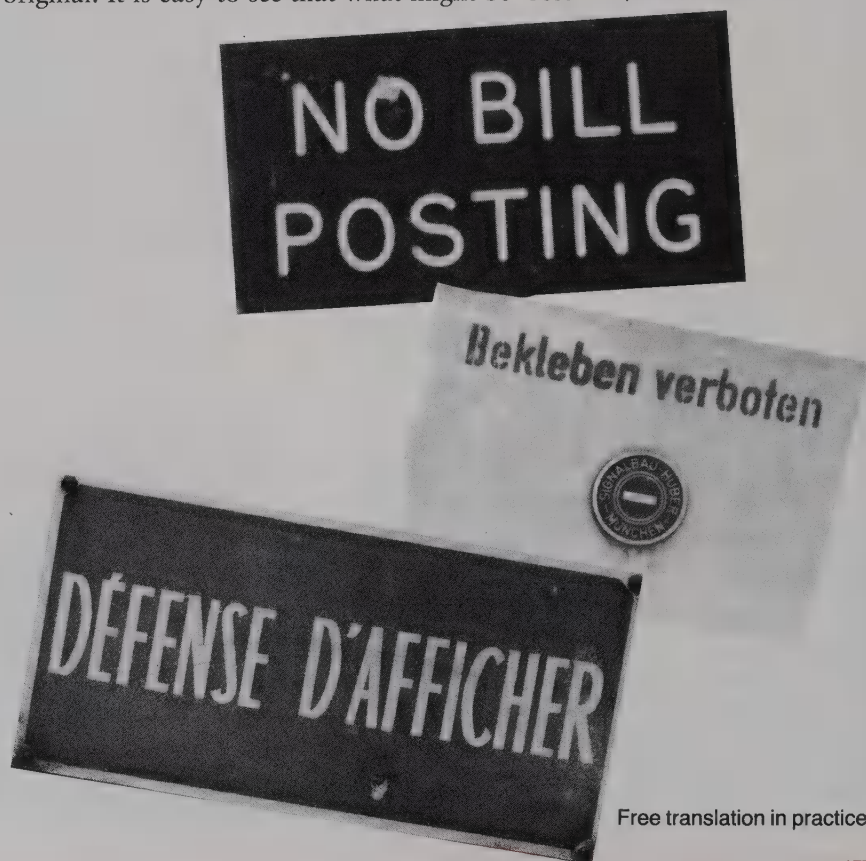
It's raining cats and dogs.
Il est pleuvant chats et chiens.

■ **Literal translation** The linguistic structure of the source text is followed, but is normalized according to the rules of the target language:

It's raining cats and dogs.
Il pleut des chats et des chiens.

■ **Free translation** The linguistic structure of the source language is ignored, and an equivalent is found based on the meaning it conveys:

It's raining cats and dogs.
Il pleut à verse.



Free translation in practice

for one set of circumstances may be entirely unsuitable for another.

Several different kinds of translation have been proposed, to allow for this range of possibilities. In a *pragmatic* translation, the emphasis is entirely on accuracy and knowledge of the subject, as required for instructional manuals and much scientific research (§21). In an *aesthetic* translation, important for literary material, the focus is on preserving the emotional as well as the cognitive content of the work, and on maintaining some level of stylistic equivalence (§12). *Ethnographic* or *sociolinguistic* translations aim to pay full attention to the cultural backgrounds of the authors and the recipients, and to take into account differences between source and target language, as when Christian religious traditions based in the Middle East are 'translated' into the cultural norms of Central Africa or modern-day America (§§9–10). And there are various kinds of *linguistic* translation, where the aim is to convey the structural flavour of the original text, often in a quite literal manner, emphasizing such features as archaisms, dialecticisms, and levels of formality (§§8,10). Most translations, of course, are mixtures of these theoretical types, reflecting the complex reality of language in use, where 'pure' varieties are conspicuously absent.

PROFESSIONALISM

Translators aim to produce a text that is as faithful to the original as circumstances require or permit, and yet that reads as if it were written originally in the target language. They aim to be 'invisible people' – transferring content without drawing attention to the considerable artistic and technical skills involved in the process. The complexity of the task is apparent, but its importance is often underestimated, and its practitioners' social status

How fast can translators work?

The only satisfactory answer is: it depends – upon such factors as the translators' experience, their familiarity with the subject matter, and whether they dictate the translation or have to type it themselves. The difficulty of the text is a crucial factor: a translator may be able to achieve 1,000 words per hour for popular writing, but only 400 for technical material. The linguistic relationship between source and target language is also relevant: languages which share structural and cultural patterns will be easier to relate than those which are widely different. And the direction of translation can also affect speed: some translators are almost twice as fast in working from language A into B than from B into A.

Assuming a continuous text, with familiar subject matter, self-typing, and an aim of producing a 'polished' translation, estimates of translator output vary from between 2,000 and 8,000 words a day, with most people producing about 3,000. Estimates of the gain in speed from using machine translation (p. 350) are not yet clear: the need for human editing of the machine-translated text has to be taken into account, and this can still be considerable at present.

and legal rights undervalued. Some countries view translation as a menial, clerical task, and pay their translators accordingly. Others (such as the Japanese) regard it as a major intellectual discipline in its own right. The question of status is currently much debated, especially in Europe, where demand for translators is rocketing, especially in relation to the EEC.

Since the 19th century the important role of the professional translator has come increasingly to be recognized. Some hold full-time jobs in translation agencies or in government or commercial organizations, where they provide an in-house service; but there is also a large cadre of free-lance translators, usually working from home. The field now has its own training courses, examinations, career structure, and professional organizations – such as the American Translators' Association, the Translators' Guild of the (British) Institute of Linguists, and the Fédération Internationale des Traducteurs.

The number of translations made is certainly on the increase, fuelled by a growing number of specialized multilingual publications (such as journals that publish editions in more than one language or provide issues specially devoted to translations of foreign scientific material). As a consequence, several central organizations have now developed to coordinate information about the availability of translations and to facilitate their accessibility, once they are made – notably the International Translations Centre at Delft (The Netherlands) and the National Translations Center in Chicago. In this domain, of course, the advent of computational techniques of information storage and retrieval has been a blessing – although one that is not yet as widely shared as it might be. In a 1971 study, over 90% of a sample of academic staff had never used any translation indexes; and other reports indicate that perhaps as many as 80% of scientists are not even aware of their existence (J. A. Large, 1983).

Great claims have been made for translation. It has been called the key to international understanding. The Japanese see it as a key to learning. Western Europe, it has been said, 'owes its civilization to translators' (L. G. Kelly, 1979). It is all probably so.

Language of publication	Language of citations %			
	English	German	French	Other
PSYCHOLOGY				
English	92.5	5.2	0.7	1.6
German	2.7	91.1	6.2	0.0
French	25.6	7.4	64.0	3.0
CHEMISTRY				
English	79.4	11.9	4.7	4.0
German	22.8	64.0	6.2	7.0
French	36.7	27.9	29.1	6.3
PHYSICS				
English	86.2	5.9	2.0	5.9
German	35.3	58.1	1.4	5.2
French	49.8	15.3	30.7	4.2

The barrier in operation

The translation literature is full of anecdotes about errors which illustrate the foreign-language barrier in operation (§ 56). Some errors are simply funny; others can provoke a diplomatic incident.

● *L'Afrique n'érige plus des autels aux dieux* ('Africa no longer erects altars to the gods'), said one UN delegate. The sentence was misheard as ... *hôtels odieux* and translated as 'Africa no longer builds horrible hotels.'

■ During a television interview in the United States, Soviet premier Khrushchev was told he was 'barking up the wrong tree'. However, this was translated into Russian as 'baying like a hound' – a highly insulting expression.

■ Many problems occur during Bible translation. In a translation into an Indian language of Latin America, *ass* was translated as 'a small long-eared animal'. The effect was to suggest that Jesus entered Jerusalem riding on something which closely resembled a rabbit.

■ In tone languages (§ 29), it is almost impossible to adapt the words to a western melody and preserve the meaning. In one Latin American tone language, as a consequence, the missionaries found that a sung translation about 'sinners' was in fact about 'fat people'.

● The slogan 'Come alive with Pepsi' was once translated in a Chinese newspaper (in Taiwan) as 'Pepsi brings your ancestors back from the grave'!

Language sources Scientists tend to use material published in their own language before they use foreign-language sources. This analysis of citations is taken from an early study of English, French, and German journals in three fields during 1952. German authors cited German sources almost as much as English authors cited English sources. French authors used a wider range of sources – perhaps because there are fewer scientific publications in this language – but they still cited French work more frequently than did either of the other groups. Similar results have since been found in citation analyses of several other languages. (After C. M. Louttit, 1957.)

THREE WAYS OF TESTING THE QUALITY OF A TRANSLATION

■ In *back-translation*, one translates a text from language A into language B; a different translator then turns the B text back into A, and the resulting A text is compared with the original A text. If the texts are virtually identical, it is strong evidence that the original translation was of high quality (though not incontrovertible evidence, because the second translator might have improved upon the work of the first in the reverse process).

■ In *knowledge testing*, speakers of language B are tested about the content of the translation (e.g. using a questionnaire), and the same questions are put to speakers of A. If the results correspond, the translation must be efficient.

■ In *performance testing*, speakers of language B are asked to carry out actions based on the text (e.g. in a repair manual), as are speakers of A. The results can then be compared to determine translation efficiency. This is a very time-consuming process, however, and requires expert supervision if clear results are to be obtained.

A good back-translation ...

Original: Leaks occurring beyond relief valve could cause some indication of low oil pressure.

Back-translation: If oil is leaking at the outside of the pressure relief valve, it can activate the warning of oil low pressure.

... and a bad one

Original: Troubleshooting precautions.

Back-translation: Preventions while repairing. (R. W. Brislin, 1976, p. 10.)

Transliteration

When the source language is written in a different script from the target language (§33), it is often necessary to provide a *transliteration* of an original word, rather than a translation – something commonly done with the names of people, places, institutions, and inventions. Here, each character of the source language is converted into a character of the target language; for example, Russian спутник ‘companion, satellite’ becomes *sputnik*.

Transliteration needs to be distinguished from *transcription*, in which the *sounds* of the source words are conveyed by letters in the target language. For example, an English transcription of Soviet premier Gorbachev’s name would have to be *Gorbachöf*, to reflect the way it is pronounced in Russian. This approach is often unavoidable with languages that use partial alphabetic scripts (e.g. Arabic, p. 202), where transliteration would be very difficult, or logographic scripts (e.g. Japanese *kanji*, p. 200), where it would be impossible.

Both approaches have their problems. With transcriptions, the target equivalents are likely to differ when the words are converted into different languages, as in English *Tchaikovsky*, Dutch *Tsjai-kowskij*, Hungarian *Csajkovszkij*. With transliterations, there is often the problem of there being insufficient symbols in the target language (so that diacritics have to be added) or too many symbols (in which case arbitrary choices have to be made). Arbitrariness is most noticeable when there is no close correspondence between the sounds of the source and target languages.

As a result, there are often several transliteration systems available, as has happened with Chinese (p. 312) and Russian (where, for example, the familiar form Khrushchev could appear as Xruščev, or in several other ways). In the absence of an internationally agreed scheme, it is often very difficult to trace terms and names in international indexes. A Russian name beginning with я might be transliterated into *ia*, *ja* or *ya*, with major retrieval problems unless the conversion system is known.

Transliterating Russian

One system of English equivalents for Russian letters. Over a third have alternatives.

Russian alphabet	English transliteration
а	a
б	b
в	v
г	g
д	d
е (ё)	e (ë)
ж	ž or zh
з	z
и	i
й	j or ĭ
к	k
л	l
м	m
н	n
о	o
п	p
р	r
с	s
т	t
у	u
ф	f
х	h or kh
ц	c or ts
ч	č or ch
ш	š or sh
щ	šč or shch
ъ	'' or ''
ы	y
ь	' or 'r
э	è or é
ю	ju or yu
я	ja or ya

Twain's back-translation

Mark Twain once complained that his sketch 'The Celebrated Jumping Frog of Calaveras County' had been unsuccessful in France because of a bad translation. He therefore carried out his own back-translation of the French text to prove his point.

Twain's original

"Now, if you're ready, set him alongside of Dan'l, with his fore paws just even with Dan'l's, and I'll give the word." Then he says, "One – two – three – git!" and him and the feller touched up the frogs from behind, and the new frog hopped off lively, but Dan'l give a heave, and hysted up his shoulders – so – like a Frenchman, but it warn't no use."

Twain's back-translation

"Now if you be ready, put him all against Daniel, with their before-feet upon the same line, and I give the signal" – then he added: "One, two, three – advance!" Him and the individual touched their frogs by behind, and the frog new put to jump smartly, but Daniel himself lifted ponderously, exalted the shoulders thus, like a Frenchman – to what good?"

Only a name ...

Transliteration makes especial sense with foreign personal or brand names, where unfortunate consequences can result if a translation is used. For example, it would be risky to translate the name of the British chain of chemists, *Boots*, into some equivalent word for footwear in a foreign language, in case the connotations were harmful. The same risk applies in reverse, as when we encounter 'iceberg' as

the name for certain textiles, or 'east wind' as the name of farm machinery – both examples of translations from Chinese.

The problem is further complicated when western names are turned into logographic languages (p. 200). First the name has to be given a phonetic equivalent in the language. *Crystal*, for example, has been turned into Japanese as *Kuri-sutaru*. Each syllable, however, can be rendered by

several characters, each with a different meaning. Several 'translations' of the name are therefore possible – some of which might be flattering, others insulting. (One meaning of *Crystal*, it seems, is 'chestnut-celebration-barrel'!) There are dictionaries which give lists of 'safe' equivalents for western names – usually by choosing rare characters, which prompt a phonetic rather than a semantic interpretation.

TERM BANKS

One of the most urgent contemporary needs is the international unification of terminology. If people are not to be perpetually at cross purposes, the terms used in instructional manuals, codes of practice, scientific research, government meetings, and many other situations need to be correlated and standardized. Scientific research, especially in rapidly developing areas such as medicine and computing, is particularly at risk, where work could easily be duplicated. Several efforts have therefore been made to organize data banks of terminology in various fields, using computational techniques of information storage and retrieval. For example, the EEC term bank, EURODICAUTOM (European Automatic Dictionary), is now publicly accessible on-line via Euronet, and contains over 180,000 items in the official languages of the Community. Each term or abbreviation is listed along with a contextual example, equivalent items in other EEC languages, a definition, and bibliographical references.

False friends

Words that look the same in two languages often do not mean the same thing. They are known as *faux amis* ('false friends'). Here are some French-English examples (* = wrong meaning).

abusif *abusive/incorrect, excessive
achever *achieve/finish (off)
avertissement *advertisement/warning
bande *band/gang
carpette *carpet/rug
demander *demand/request
éventuel *eventual/possible
fastidieux *fastidious/tiresome
idiome *idiom/language (of a group)
incohérent *incoherent/inconsistent
inconvenient *inconvenient/drawback
information *information/news
lard *lard/bacon
libeller *libel/make out a cheque
partition *partition/musical score
pétulant *petulant/lively
phrase *phrase/sentence
pourpe *purple/crimson
prétendre *pretend/claim
prune *prune/plum
résumer *resume/summarize
rogue *roguish/arrogant
sensible *sensible/sensitive
sommaire *summary/contents list
starter (car) *starter/choke
sympathique *sympathetic/agreeable
truculent *truculent/realistic
verbe *verb/word
veste *vest/jacket
vivace *vivacious/hard-wearing
(P. Thody & H. Evans, 1985.)

And a few others...

German *also* = therefore
Spanish *constipado* = having a head cold
Danish *øl* = beer
Italian *caldo* = warm
Polish *karawan* = funeral procession

```

DO TERM
% P001 -DLL U-26
PRESS L FOR TERMINOLOGY OR X FOR ABBREVIATION
*L
TYPE CODE OF SOURCE LANGUAGE
DG GERMAN      DK DANISH      EG ENGLISH      FG FRENCH
IT ITALIAN      NG DUTCH        PT PORTUGUESE  SP SPANISH
*EG
TYPE CODE(S) OF TARGET LANGUAGE(S) WITH SINGLE SPACE BETWEEN
(FOR EXAMPLE: DG NG) OR A FOR ANY LANGUAGES
*A
SOURCE LANGUAGE      :EG
TARGET LANGUAGE(S)  :DG IT FG NG DK SP PT
SUBJECT CODE         :
PRESS Q OR ANOTHER COMMAND
*Q
TYPE YOUR QUESTION
*INFLATION
                                DOC = 1 PAGE = 1
BE= BTM   TY= TFI74  NI= 0038128  DATE = 750220  CF= 4
CM  EC4 ECB
EG UE  INFLATION
PH  PRICE INFLATION IS MOST LIKELY TO OCCUR WHEN DEMAND
    INCREASES WHILE THE LABOUR SUPPLY IS TIGHT AND THE
    INDUSTRIAL CAPACITY IS FULLY UTILIZED...WHEN SOURCES OF
    SUPPLY DRY UP..
FG UE  INFLATION
PH  EXCES DE POUVOIR D'ACHAT OU EXCES DES MOYENS DE PAIEMENT.
    ON LA CONFOND SOUVENT...AVEC LA SIMPLE HAUSSE DES PRIX.
    OR CELLE-CI EST LA CONSEQUENCE DE L'INFLATION ET NON DE
    L'INFLATION ELLE-MEME.
    PRESS C TO CONTINUE OR GIVE ANOTHER COMMAND

```

The result of an on-line search for the term *inflation* in EURODICAUTOM. Several steps are involved.

1. Does the enquirer require a term or an abbreviation (L or X)?
2. Which source and target languages are involved? (In the example, the source language was English, and all

other EEC languages were requested as targets.)

3. Is there a subject code, e.g. medicine, nuclear science? (None, in this case.)

4. The term is then typed in, and any listings are printed out (in this case, only an English and a French listing are available). The printout

gives various details of sources, and the last occasion when the record was updated (date 750220, i.e. 20 February 1975). There is also a reliability code (CF) using a scale from 0 to 5.

Translation shifts

The French definite article, *le/la/l'/les* is usually thought of as the equivalent of the English definite article *the*. However, there are many exceptions to this rule, where the translation 'shifts' from one form to another. *La* is translated by

'a' in *Il a la jambe cassée* 'He has a broken leg' and *l'* can become zero in *l'amour* 'love'. In a study of French articles found in French texts with English translations, the various possible equivalences were worked out. The table

shows that *le* is equivalent to *the* in only 64.6% of all cases. *Du* 'of the' is translated by zero (no article at all) more than half the time. *Un* 'a' has the best rating, with 70%. (After R. Hudson, in J. C. Catford, 1965, p. 81.)

French			English		
	zero	the	some	a	(other)
zero	67.7	6.1	0.3	11.2	4.6
le	14.2	64.6	—	2.4	18.9
du	51.3	9.5	11.0	5.9	22.4
un	6.7	5.8	2.2	70.2	15.1

BEST TRANSLATIONS?

A great deal can be learned about the art and craft of translating by comparing cases where different people have translated the same text. The following versions of the opening verse of Baudelaire's *L'Albatros* shows the different attention paid to form and content in the varying treatment of rhyme, rhythm, word order, and lexical choice.

*Souvent, pour s'amuser, les hommes d'équipage
Prennent des albatros, vastes oiseaux des mers,
Qui suivent, indolents compagnons de voyage,
Le navire glissant sur les gouffres amers.*

Often to amuse themselves, the men of the crew trap albatrosses, the great sea-birds, that follow the ship slipping over the bitter deeps, like idle travelling companions.

(A. Hartley)

Often, for their amusement, sailors catch albatross, those vast birds of the sea, indolent companion of their voyages, that follow the ship gliding across the bitter deepths.

(F. Scarfe)

In order to amuse themselves, the members of the crew often catch albatrosses, those huge sea-birds which, as

indolent companions on the voyage, follow the ship gliding over the bitter depths.

(I. F. Finlay)

Sometimes, sailors to amuse themselves catch albatrosses, great birds of the sea, which as companions follow indolently the vessel gliding over bitter gulfs.

(C. F. MacIntyre)

Sometimes for sport the men of loafing crews Snare the great albatrosses of the deep,
The indolent companions of their cruise
As through the bitter vastitudes they sweep.

(R. Campbell)

In sport a vessel's crew will often take
The mighty albatross, who on the breeze
Doth idly sail and follow in the wake
Of ships that glide upon the bitter seas.

(A. Conder)

Often, as an amusement, crewmen
Catch albatrosses, huge birds of the sea,
Who follow, indolent companions of the voyage,
The ship gliding over the salty deeps.

(W. Fowlie)

(From I. F. Finlay, 1971, pp. 129–32.)

WHEN FOREIGN IS BEST

Sometimes it pays *not* to translate, as the business world has long known. Sales can benefit if a product is given a foreign name. In 1960 a Finnish firm distributed tinned coffee for the home market using Finnish labels. Sales were poor. The firm then had new labels made with a text in English on the same tins, and sales rocketed. Similarly, English marketing firms and other businesses make use of foreign languages to convey special effects – such as the use of French for the names of restaurants, night-clubs, and perfumes. In one page of a British telephone directory, under 'Restaurants', nearly half the names were in a language other than English – *La Bella Napoli*, *Le Patron*, *Les Deux R*, *Les Quatres Saisons*, *Mamma Mia*, *Maison Romano*, *Que Pasa*, *Rendez-vous*, *Roma*, *Santa Lucia*, *Shangri-La*...

The culture that seems to make most use of foreign languages as a part of business enterprise is Japanese. Here, a wide variety of foreign names is used, depending on the particular quality of the product the manufacturer wishes to stress. In the field of car names, for example, English is used in order to convey an impression of good quality and reliability (e.g. 'Crown'). If elegance is to be stressed, a French name is chosen (e.g. 'Ballade'). A sports car often has an Italian name (e.g. 'Leone').

The linguistic effects are most noticeable in television commercials, where appropriate American, French, etc. settings are used along with the foreign language (without translation). Japan is the only monolingual country to make frequent use of foreign languages (primarily English and French) in its commercials. The viewer usually does not

understand them, but the connotations of prestige associated with these languages are enough to warrant their use. The purpose of the language (§4) is not to communicate ideas, but to appeal to the sensibilities of the Japanese viewer, who the manufacturers believe is much influenced by the values of modern cosmopolitan society.

Foreign elements in Japanese commercials

English

Terrific, everybody, new, life, now, healthy, power, big, sale, open, happy, nice, beautiful, night, extra.

French

Plaisir 'pleasure', *image* 'image', *café* 'coffee', *printemps* 'spring', *chocolat* 'chocolate', *accessoire* 'accessory'.

German

Auslese 'selection', *schick* 'chic', *schön* 'beautiful', *Sahne* 'cream', *Wagen* 'car'.

Italian

Carina 'sweetheart', *manifesto* 'manifest', *buongiorno* 'good morning'.

Spanish

Olé 'hey', *domingo* 'Sunday', *bonita* 'pretty'.

Combinations of words are also common, such as *high quality*, *happy smoking time*, *light and smooth*, *quick and overnight service*, *la mesure d'élégance* 'the standard of elegance', *nouvel coloris* 'new shade'. Whole sentences may be used, such as *Je suis une femme qui aime la vie* 'I am a woman who loves life' (spoken by a Japanese woman), *We want you to win*, *Get action on your car*. There may even be combinations of English and French (e.g. *bon shop*, *santé soft*) or a foreign language plus Japanese (e.g. *soft kapuseru* 'soft capsule', *auto wakkusu* 'auto wax', p. 195). (After H. Haarman, 1984.)

Translating names

Mari, Mary, Marie, Marenka, Marinka, Marienka, Maruska, Mara, Mana, Maruse, Marka, Marena...

The problem facing the literary translator is well illustrated by this list of names, which are just some of the ways of translating 'Mary' in Czech, each expressing its own mood and level of intimacy. English has no such range of expressions; the nearest, Marie and Maria, are thought of as different names. For everyday translational purposes, it may not be important to convey such exact distinctions in an English version; but in translating literary texts, nuances of this kind often need close attention.

Some Japanese car names

Daihatsu
Domino
Charade
Charmant

Nissan
Bluebird
Cherry
Laurel
Micra
Patrol
Prairie
Silvia
Stanza
Sunny
Violet

Toyota
Camry
Carina
Celica
Corolla
Corona
Cressida
Starlet
Tercel

Interpreting

Interpreting is today widely known from its use in international political life. When senior ministers from different language backgrounds meet, the television record invariably shows a pair of interpreters hovering in the background. At major conferences, such as the United Nations General Assembly, the presence of headphones is a clear indication that a major linguistic exercise is taking place. In everyday circumstances, too, interpreters are frequently needed, especially in cosmopolitan societies formed by new generations of immigrants and *Gastarbeiter* (§9). Often, the business of law courts, hospitals, local health clinics, classrooms, or industrial tribunals cannot be carried on without the presence of an interpreter. Given the importance and frequency of this task, therefore, it is remarkable that so little study has been made of what actually happens when interpreting takes place, and of how successful an exercise it is.

Doubtless the recency of developments in the field partly explains this neglect. One procedure, known as *consecutive* interpreting, is very old – and presumably dates from the Tower of Babel! Here, the interpreter translates after the speaker has finished speaking (either in short bursts, or at the very end of a discourse). This approach is widely practised in informal situations, as well as in committees and small conferences. In larger and more formal settings, however, it has been generally replaced by *simultaneous* interpreting – a recent development that arose from the availability of modern audiological equipment and the advent of increased international interaction following the Second World War.

Of the two procedures, it is the second that has attracted most interest, because of the complexity of the task and the remarkable skills required. In no other context of human communication is anyone routinely required to listen and speak at the same time, preserving an exact semantic correspondence between the two modes. Moreover, there is invariably a delay of a few words between the stimulus and the response, because of the time it takes to assimilate what is being said in the source language and to translate it into an acceptable form in the target language. This 'ear-voice span' (p. 147) is usually about 2 or 3 seconds, but it may be as much as 10 seconds or so, if the text is complex. The brain has to remember what has just been said, attend to what is currently being said, and anticipate the construction of what is about to be said. As one writer has put it:

As you start a sentence you are taking a leap in the dark, you are mortgaging your grammatical future; the original sentence may suddenly be turned in such a way that your translation of its end cannot easily be reconciled with your translation of its start. Great nimbleness is called for to guide the mind through this syntactical maze, whilst at the same time it is engaged upon the work of word-translation.

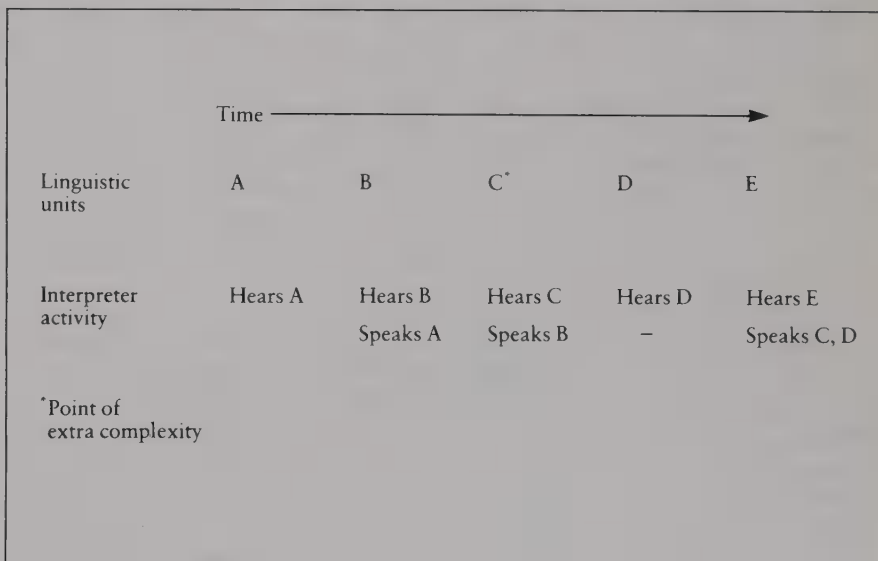
(R. Glemet, in D. Gerver, 1976, p. 168)

How it is all done is not at all clear. That it is done at all is a source of some wonder, given the often lengthy periods of interpreting required, the confined environment of an interpreting booth, the presence of background noise, and the awareness that major decisions may depend upon the accuracy of the work. Research projects have now begun to look at these factors – to determine, for example, how far successful interpreting is affected by poor listening conditions, or the speed at which the source language is spoken. It seems that an input speed of between 100 and 120 words per minute is a comfortable rate for interpreting, with an upper limit of around 200 w.p.m. But even small increases in speed can dramatically affect the accuracy of output. In one controlled study, when speeds were gradually increased in a series of stages from 95 to 164 w.p.m., the ear-voice span also increased with each stage, and the amount correctly interpreted showed a clear decline (D. Gerver, 1969). Also, as the translating load increases, not only are there more errors of commission (mistranslations, cases of vagueness replacing precision), there are also more errors of omission, as words and segments of meaning are filtered out. These are important findings, given the need for accuracy in international communication. What is needed is a more detailed identification of the problem areas, and of the strategies speakers, listeners, and interpreters use to solve them. There is urgent need to expand what has so far been one of the most neglected fields of communication research.

The ear-voice span

When the input language is straightforward, the interpreter will be a regular 2 or 3 seconds behind the speaker. But when an unexpected textual difficulty emerges, or the speaker suddenly speeds up, the delay may increase, with a consequential 'knock-on' effect that may take some time to resolve. During this period, when the ear-voice span is several seconds long, the interpreter's cognitive linguistic processing abilities are under great pressure.

A common linguistic reason for interpreting delay occurs when translating from a language where the verb occurs at the end of the sentence (SOV languages, §14) into a language where the verb occurs in the middle (SVO languages). The interpreter often has to wait until the speaker gets to the end of the sentence before it is possible to translate the intervening material. The problem occurs in the case of translating Japanese into English, and, notoriously, in translating German subordinate clauses.



Machine translation

The idea of using machines to provide translations between natural languages has been recognized since the 1930s, but an appropriate climate for development did not arise until the years following the Second World War. At that time, the rise of information theory, the success of advanced code-breaking techniques (p. 58), and the invention of the electronic computer all indicated that machine translation (MT) could be a reality. Warren Weaver, a founder of the field, caught the optimism in a 1947 memorandum: 'One naturally wonders if the problem of translation could conceivably be treated as a problem of cryptography. When I look at an article in Russian, I say: "This is really written in English, but it has been coded in some strange symbols. I will now proceed to decode."' As a result, several groups began research programmes into MT during the 1950s, and great claims were made for the future of the subject (W. Weaver, 1955).

However, initial results were not encouraging. The systems proved to be very limited in the kind of data they could handle. Translations were crude, full of errors, and required so much human post-editing that they proved to be more expensive than having a human translator carry out the whole task in the first place. The main reason was the lack of a sufficiently sophisticated linguistic theory to provide a frame of reference for the tasks that MT needed to undertake. The earliest MT systems did little more than look for equivalences between the words in each language – in effect, they acted as an automatic bilingual dictionary. After several decades of linguistic research, it is easy to see why these approaches could not have worked. They ignored the problem posed by the grammatical dimension of language analysis – the different levels of syntactic organization (§16), and the absence of straightforward formal correspondences between units of grammar (such as is illustrated by the use of the definite article, p. 347). They also

ignored the different ways in which languages structure meaning: word-for-word translation is often not possible and usually not desirable (p. 344). Nor was there any way of distinguishing between the different senses of words or deciding whether a group of words was an idiom. Many ambiguities can be resolved only by using an analysis in terms of semantics (§17) or of real-world knowledge, and such analyses were not available at that time. There was evidently a great deal more to MT than 'code breaking'.

The dissatisfaction was summarized in a US report of 1966 by the Automatic Language Processing Advisory Committee (ALPAC), which concluded that human translating was faster, more accurate, and less expensive than MT, and that no further support for the latter should be provided. As a consequence, only a minimal amount of MT research was carried on in subsequent years, either in the USA or in Europe (though continued support was provided in the Soviet Union).

A NEW MOOD

The pendulum has begun to swing back again in recent years, following the major intellectual and technological developments of the 1970s in linguistics (§65) and computing. A new mood is abroad, promoted by the promising practical achievements of new commercial MT projects, by the great potential of the new research programmes in artificial intelligence, and by an increased theoretical awareness of the translation task which has come from progress in linguistics. There is also a greater realism concerning what MT can and cannot do, and a recognition of the need to devise techniques of human/machine collaboration, in order to get the best results from both.

The main developments have been to provide systems of analysis that allow for grammatical and semantic complexity. The first steps were in devising automatic procedures ('algorithms') for parsing the syntactic structure of a sentence, and for carrying out an analysis of word-structure. An automa-

A pre-edited translation

The extract below speaks for itself. It has been pre-edited in Hong Kong on the Chinese University Language Translator (CULT), a system used for the automatic translation of Chinese journal papers in mathematics and physics into English. There are very few places where further editing is necessary – but this has to be balanced against the amount of pre-editing time involved. There is also the point that the amount of pre-editing will vary, depending on the structural similarity between the languages.

A fixed set of pre-editing rules must therefore be formulated to enable inexperienced and even monolingual people to transform quickly the input into machine-translatable form. With this arrangement, post-editing can be kept to a minimum, if not all together eliminated. Given time and better programming techniques, these pre-editing rules will gradually be reduced so that the computer will eventually take up this routine work. Pre-editing can therefore solve many of the present linguistic problems that are otherwise dependent on further research in natural language, computational linguistics and transformation mathematics. In other words, models that are much more comprehensive and sophisticated than the present ones have to be designed. These models may take years to perfect and, at present, pre-editing is absolutely essential in order to achieve the goal. In present stage of our development, very complex sentences can be translated with the aid of pre-editing. A sentence which has a complicated structure can be analysed by the existing program if it is broken up into simpler sentences which are then readily translated by the computer. Sentences in Chinese are often without verbs or subjects and pre-editing can add the verbs or subjects so that these sentences can thus be analysed and translated. (S. C. Loh, 1976, p. 108.)

SYSTRAN

One of the best-known MT systems, SYSTRAN, was developed in the U.S. with particular reference to Russian-English translation – for example, it was used to translate Russian into English during the Apollo-Soyuz space project. It is also now used by the EEC for a limited range of purposes (such as abstract searches) with certain languages (mainly French). Its future status is unclear, as it is likely to be replaced by a more powerful system (EUROTRA) in due course.

Russian-English

An extract follows, showing the kind of output produced by SYSTRAN, and the kind of post-editing required to produce an acceptable translation. The numbers in the Russian transliteration have been inserted by the computer to represent Cyrillic letters not found in the computer's (Latin-based) character set.

Original

Sovremenny1 a3roport
predstav4et sobo1 slojny1
kompleks injenernyx sooru-

jeni1, texniceskix sredstv,
dl4 razme5eni4 kotorogo
trebuets4 territori4, izmer-
4ema4 v otdel6nyx slu4a4x
tys4cam1 gektarov (na-
primer moskovski1 a3roport
Domodedovo, H6h-1orkski1
a3roport Kennedy).

Raw SYSTRAN output

A contemporary airport is
the involved complex of en-
gineer constructions and
techniques, for arrange-
ment of which the territory,
measured sometimes is re-
quired by thousands of hec-
tares (for example the Mos-

cow Airport Domodedovo,
Kennedy's New York Air-
port).

Revised output

The modern airport is an
elaborate complex of engi-
neering structures and tech-
nical devices requiring a
large territory, which, in
some cases, measures
thousands of hectares (for
instance, Domodedovo Air-
port in Moscow or Kennedy
Airport in New York).

(F. Knowles, 1979, p. 130.)

tic morphological analysis (p. 90) was particularly necessary to enable the computer to find words in its dictionary memory: *cats*, for example, would have to have its ending removed, in order to locate the base form *cat*. The problem is not very great for English, which uses few endings, but it is a major issue for languages that rely more on inflections.

Later developments have begun to introduce semantic information into the procedure, most recently using artificial intelligence techniques to simulate human thought processes. If the computer is given enough data on the meaning of words and about the context of a sentence, it is argued, it should be able to work out for itself what analysis to make in cases where individual words or sentences are ambiguous. The computer, like the human reader, should be able to look back at the preceding discourse in order to check its interpretation of a point. The principle is undeniable, but it has proved extremely difficult so far to write programs that can handle more than fragments of discourse. The advent of special programming languages, designed to handle the properties of natural language in a more direct way, will facilitate the task; but it will take many years before the pure research results in routine commercial applications.

In the meantime, increasing use is being made of 'interactive' systems of MT, in which human beings pre-edit or postedit the text that the computer processes. In pre-editing, a natural language source text is rewritten, using a controlled syntax and vocabulary, to produce a version that the computer can handle with relative ease. This procedure is practicable only in restricted situations (such as scientific abstracting), because of the large expenditure of time and training required to prepare the input; but it has produced successful translations in several cases. In postediting, 'raw' machine-produced data in the target language is edited into an error-free text – also a time-consuming procedure, and one that is often tedious and time wasting (because the human translator may have to duplicate a great deal of the computer's work in order to eliminate an error). However, there are several levels of quality possible in postediting, ranging from a basic 'threshold' level of intelligibility to

a highly polished style. If the most basic editing steps only are undertaken, the gains in translation speed can be very great. But the choice, of speed vs quality, is not always an easy one to make.

THE FUTURE

It is unlikely that machines will ever replace human translators; but they can undoubtedly help to take a great deal of the drudgery out of routine translation work, and enable far more material to be processed than would otherwise be the case. Firms such as Automated Language Processing Systems (ALPS) or Weidner Communications now have systems that can process quantities of scientific text in certain areas at rates of up to 14,000 words per hour – which, even after editing, produces a rate of over 1,000 w.p.h., several times faster than is possible 'by hand'. There is also the rapidly developing world of 'machine-aided translation' – the use of computationally organized data banks and all kinds of peripheral equipment to help translators in their work. A word processor can save enormously on the production of translation drafts, for example; and a great deal of time can be saved if the translator has on-line access to a term bank (p. 347) to discover the 'best' equivalent for a source-language word (instead of having to engage in a slow hunt for it through dated dictionaries). More and more people are finding that the benefits outweigh the disadvantages, and this in turn adds to the mood of optimism that pervades current MT debate. At present the MT world is still quite a small one, with few research programmes and commercial organizations involved. This situation is likely to have changed dramatically by the end of the century.

Telephone translation

The automatic translation of telephone conversations, using fifth-generation computers, should be a reality by AD 2000, according to proposals made by the Japanese Ministry of Posts and Telecommunications in 1985. If Japan were to undertake the development alone, it was estimated to take about 15 years at a cost of 400 million dollars. Japan has therefore suggested joint development proposals with several countries, in the interests of saving time and money, the first agreement (with France) being reached in 1985.

MT output These extracts use a German–English system marketed by the Logos Corporation in the Federal Republic of Germany. The original, taken from a construction contract, is shown along with the raw MT output and the post-edited output.

Original text:

Treppenreparaturarbeiten.
Haupteingangsstufe an allen Gebäuden wie folgt reparieren:
1. Fußabstreifferrahmen sorgfältig komplett ausbauen.
2. Beschädigungen, die durch den Ausbau des Fußabstreifers entstanden sind, mit kunststoffvergütetem Zementmörtel ausbessern.
3. Risse in der Stufe auskratzen und mit kunststoffvergütetem Zementmörtel ausbessern.
4. Risse zwischen Stufe und Gebäude ca. 1 cm bis 5 cm breit auskratzen und mit kunststoffvergütetem Zementmörtel ausbessern.

Post-edited output:

Stair repair work.
Repair main entrance step at all buildings as follows:
1. Carefully remove complete shoe scraper frames.
2. Repair damages which have resulted from removal of shoe scraper with epoxy cement mortar.
3. Scrape out cracks in step and repair with epoxy cement mortar.
4. Scrape out cracks between step and building approx. 1 cm–5 cm wide, and repair with epoxy cement mortar.

Raw MT output:

Stair repair work.
Main entrance step at all buildings such as follows repair:
1. Carefully completely expand door mat frame.
2. Repair damages which have resulted by developing the door mat with epoxy cement mortar.
3. Scrape rents in the level and repair with epoxy cement mortar.
4. Approximately scrape rents between level and building one CM broadly to 5 CM and repair with epoxy cement mortar.

58 Artificial languages

Many people believe that the foreign-language barrier can be surmounted through the use of an 'artificial' language (AL) – a language which has been specially invented to facilitate international communication. The term 'auxiliary language' is often preferred, especially by AL supporters who find the connotations of 'artificial' too limiting. In particular, Esperantists (p. 354) feel that their language is highly developed in the range of functions it can perform, and is also natural, to the extent that these days several children have had it introduced to them as a mother tongue. However, 'auxiliary' is by no means restricted to ALs; it is also used to refer to natural languages that have been chosen to aid communication within a special domain (e.g. the use of English or French at international conferences). 'Artificial' thus continues to be a widely used designation.

ALs are commonly divided into two types (though several projects in fact display features of both). The first type uses an invented set of elements – often numbers or special symbols – that stand for basic concepts; these are then grouped into a logical (and supposedly universal) classification, based on scientific or philosophical principles. These *a priori* languages were particularly common in the 17th century, but proposals along these lines have continued to be made at intervals ever since. By contrast, *a posteriori* languages are based on elements drawn from natural languages – invariably from one or more of the languages of Western

Europe. Most ALs that have been devised in the last century belong to this second type. A further division is also sometimes made, within the latter category, between those ALs that do not allow for exceptions (e.g. Esperanto) and those that are closer to existing natural languages, permitting some degree of irregularity (e.g. Occidental).

HISTORICAL BACKGROUND

Several hundred ALs have been recorded, and new ones continue to be devised. The desire for a universal language can be traced back to Classical times, but the idea began to flourish only in the 17th century, when world exploration brought to light many new languages, and Latin began to fall from favour as a universal medium. Francis Bacon (1561–1626) was one of the first to ask whether things could be represented by ‘real characters’ that would be understood regardless of language, instead of the usual letters or sounds. Detailed systems were devised by Wilkins, Dalgarno, Leibniz, Comenius, and several others. It was an age when symbol systems of all kinds stimulated curiosity, especially those that seemed to express concepts directly – music, numerals, ideograms (§33), shorthand (p. 206), and cryptography (p. 58). However, all the invented systems, though simple, logical, and plausible at the outset, became extremely arbitrary and complicated as they were developed. As the illustrations show, the learner was presented with a virtually impossible memory load, and a

An extract from *An essay towards a real character and a philosophical language* (1668) by Bishop John Wilkins (1614–72). Wilkins's approach classified all ideas and things into 40 basic types, or genera (e.g. herbs, fish, sickness). Each genus was symbolized by a consonant and vowel (for speech) and by a written sign. Different items within a genus were then identified through the use of extra consonants or vowels or by additional written strokes.

An extract from the first universal language scheme, Francis Lodwick's *A Common Writing: whereby two, although not understanding one the others language, yet by the helpe thereof, may communicate their minds one to another* (1647). A basic set of 'radical' words was selected (e.g. *drink*), and each assigned ■ character. Related words were shown by the addition of special marks.

The signe of the fix sorts of Nounes Substantive Appellative, is this, (→) augmented, as under.

For the 1. thus.	1	And apply-	1	the drinker.
2. thus.	2	ed to the	2	drink.
3. thus.	3	right side	3	the drinking.
4. thus.	4	of the Ra-	4	drunkard.
5. thus.	5	diol, thus.	5	drunkenneſſe.
6. thus.	6		6	drinking houſe.

The 7. Section.

The distinctionall signe for the proper names shall be this, (☾) joyned to the left side of the Radix, toward the head thereof, thus. (☾☿)

The signe of the feminine gender shall be this, (L) placed as following. (D)

The subordinall signe for the young ones shall be this, (6) placed as following. (7)

The Lords Prayer.

Ha: coba ʒʒia ril dad, ha bəbi so ʒymta, ha falba so velca, ha talba so vemgʒ, mʒ ril dady me ril dad so velpi ral ai ril ʃ po to ha: faba vaty, na so ʒeldyʒs lal ai ha: balgas me a: ʒa ʒeldyʒs lal ei ʒʒ ra valgas rʒ ai na mi so velco a:, ral bedodlʒ nil so cʒalbo a: lal vage:so, nor al falba, na al tado, na al tadala ʃ ha piʒbyʒ ʒʒ mʒ so.

1 2 3 4 5 6 7 8 9 10 11
 Ha: cobra x̄ ril dad, ha bābi so syymta ha
 Our Father who art in Heaven, Thy Name be Hallowed, Thy
 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26
 salba so velca, ha talbi so vemg̃m̃x̄ ril dady ril dad, so velp̃
 Kingdome come, Thy Will be done, so in Earth as in Heaven, Give
 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41
 tal ril spoto ha saba vat̃y, so feldis lal ha balga
 to us on this day our bread expedient and forgive to us our trespasses

rigid classification within which it proved difficult to incorporate new knowledge.

For such reasons, *a priori* schemes fell out of favour at the end of the 17th century. They had a revival a century later, with the rise of the ‘general grammar’ movement (p. 84), which aimed to discover universal principles of thought behind the variety of grammatical forms in language. There was much more at stake here than international communication: it was felt that a good philosophy of signs, or ‘ideology’, would help to eliminate vagueness and ambiguity from language, provide a better vehicle for thought, and be a more efficient means of spreading knowledge. But the resurgence of interest was short-lived. By the mid-19th century, there was little active support, and since then the vast majority of AL proposals have been *a posteriori* in character.

In the last quarter of the 19th century, there was another flurry of enthusiasm, with several AL proposals competing with each other for public support. The first large-scale movement was Volapük, followed closely by Esperanto, Idiom Neutral, Ido, and several dozen other systems. In 1924, the International Auxiliary Language Association was formed in New York, focussing on the promotion

of common vocabulary between the various systems. Most of the proposals have had very short lives, but some, such as Esperanto, have achieved an impressive international use.

Since the turn of the century, an enormous amount of time, energy, money, and ingenuity has been expended on the invention and dissemination of AL proposals. In the early years they were usually seen by their supporters as a key to a world of mutual understanding, clearer thinking, and peaceful coexistence. The use of a common language does not guarantee peace, however, as is plain from terrorist activity in many parts of the world. In recent years, therefore, there has been a tendency to adopt less ambitious goals, and there have been several local successes, with different countries and organizations (especially on the Continent of Europe) being persuaded to introduce an AL dimension into aspects of their daily life – in hotels, telephone boxes, telegrams, advertisements, and timetables. Even with the most successful of these movements, however, very limited progress has been made towards the goal of an internationally recognized and universally used auxiliary language.

A CENTURY OF ARTIFICIAL LANGUAGES

Language	Inventor	Date	Comment
Volapük ('World language')	Johann Martin Schleyer	1880	8 vowels, 20 consonants; based largely on English and German (p. 300).
Esperanto ('Lingvo Internacia')	Ludwig Lazarus Zamenhof	1887	5 vowels, 23 consonants; mainly West European lexicon; Slavonic influence on syntax and spelling (p. 300).
Idiom Neutral	V. K. Rosenberger	1902	A former supporter of Volapük; strongly influenced by Romance (p. 301).
Latino Sine Flexione (Interlingua)	Giuseppe Peano	1903	Latin without inflections; vocabulary mainly from Latin words.
Ido	Louis de Beaufront or Louis Couturat	1907	A modified version of Esperanto (the name means 'derived from' in Esperanto).
Occidental	Edgar von Wahl	1922	Devised for the western world only; largely based on Romance.
Novial	Otto Jespersen	1928	Mainly Ido vocabulary and Occidental grammar. Novial = New + International Auxiliary Language.
Interglossa	Lancelot Hogben	1943	Published only in draft form.
Interlingua	International Auxiliary Language Association	1951	A Romance-based grammar, with a standardized vocabulary based on the main Western European languages.
Glosa	W. Ashby and R. Clark	1981	A modified version of Interglossa. Contains a basic 1,000-word vocabulary, derived from Latin and Greek roots.

And a selection of other projects

Perio (1904), Lingua Internacional (1905), Ekselsioro (1906), Ulla (1906), Mondlingvo (1906), Lingwo Internaciona (Antido) (1907), Mez-Voio (1908), Romanizat (1908), Romanal (1909),

Latin–Esperanto (1911), Europeo (1914), Nepo (1915), Hom Idyomo (1921), Espido (1923), Néo (1937), Esperantuisho (1955), Globaço (1956), Modern Esperanto (1958), Delmondo (1960), Utoki (1962), Eurolengo (1972), Uropi (1986).

Solresol

This remarkable language was the invention of a French music master, Jean François Sudre, at the beginning of the 19th century. Solresol, or 'Langue Musicale Universelle', was based on the principle that the tones of music, as named in the seven-note diatonic scale (do, re, mi, fa, sol, la, si), could be used as the elemental syllables of a universal language.

Two-note combinations were used for grammatical words, e.g. *si* 'yes', *do* 'no', *re* 'and', *dore* 'I', *domi* 'you'. Common words used three-note combinations, e.g. *doredo* 'time', *doremi* 'day', *dorefa* 'week', *doresol* 'month', *dorela* 'year', *doresi* 'century'. Four-note combinations were divided into different classes (or 'keys'), each one being based on a particular note. 'La', for example, was used for the field of industry and commerce. Over 9,000 five-note combinations were used for the names of animals, vegetables, and minerals. Semantic opposites were often expressed by reversing the order of syllables, e.g. *misol* 'good' vs *solmi* 'evil'.

The unique feature of this AL is that it could be played, whistled, or sung, as well as spoken! It became very popular in the mid-19th century, and won several prizes. As with all *a priori* languages, it was difficult to learn, and, with so few sounds permitted, it must have sounded extremely monotonous. However, it still had some supporters at the beginning of the present century, and thus proved to be one of the longest surviving artificial languages.

The best-known of all ALs, Esperanto, was the invention of a Polish oculist, Ludwig Lazarus Zamenhof (1859–1917). The scheme was first published in Russian in 1887 under the title *Mezhdunarodny yazyk* ('An international language') using the pseudonym 'Doktoro Esperanto' ('Doctor Hopeful'). The language was called 'Lingvo Internacia', but the name 'Esperanto' quickly caught on, and in due course became the official title. The first Esperanto journal (*La Esperantisto*) was published in 1889, and the First Universal Congress of Esperanto was held in 1905, bringing together nearly 700 delegates from 20 countries. That year also saw the publication of the *Fundamento de Esperanto*, an authoritative statement of the language's structure and vocabulary, which was to be the 'obligatory basis for Esperantists of all time'.

Esperanto has still to achieve official status as an international language. A proposal to the United Nations in 1966 was signed by nearly a million people from 74 countries, but was not accepted. There is a great deal of opposition from those who favour English as a world language, and from supporters of other ALs. There are also objections on political grounds, because of the language's East European background and the present-day trend by many organizations (of varying political or religious views) to use Esperanto as a language of international propaganda.



Sixteen grammatical rules (§16) have been explicitly laid down.

- word in a clause is allowed.

13. The objective case is used when nouns reply to *where*?

14. An indefinite preposition, *je*, is used when the choice of another preposition would be unclear.

15. Loan words follow the system of orthography.

16. The *a* of the article, and the *o* of nouns, may be dropped for reasons of euphony.

There are only about 15,000 roots in the language, but these can be combined in various ways to produce a large vocabulary. In particular, great use is made of prefixes and suffixes to form complex words.

Several criticisms have been made of the language. Within the grammar, the use of the objective case (not found in several modern languages) has been particularly controversial, as has the use of agreement between noun and adjective. Languages that do not fit the latinate use of tenses or prepositions find particular problems. In vocabulary, sev-

eral formations have been criticized for not using the form common in modern languages. Some words are thus not easy to recognize; for example, *hospital* is *malsanulejo* (the root *sana* 'health' plus affixes). There are also several *faux amis* (p. 347), such as *for-esto* = 'absence'.

The Slavonic bias to the pronunciation system has been a further source of contention: not all languages share Esperanto's reliance on diphthongs and sibilants (§27). Similarly, use of circumflexed letters is often considered cumbersome, especially in typing and computational setting (though the substitution of *h* for *^* is permitted).

The language is relatively straightforward to learn to read, as can be judged from a glance at any illustrative text. As always with language learning, however, passive competence is much easier to achieve than active use, and a great deal of memory work is still needed before fluency is acquired.

An ideal artificial language

Several criteria have been proposed for an 'ideal' international artificial language, some of which are rather more achievable than others.

Easy to learn This is usually taken to mean that the grammar has to be regular and simple, compared to that of natural languages; the semantic formation of words has to be based on clear principles; the spelling should be phonetic; and there should be no difficult sounds.

Relatable to mother tongues It should be possible to translate into and out of any natural language with comparable ease; its structure would be flexible, capable of reflecting the idiom of the speaker's own language; it would display many universal features of language, and use word roots that have a history of international use.

A rich range of functions It must be able to fulfil the ordinary needs of everyday speech and writing, as well as the specialized needs of science, religion, trade, sport, politics, etc. It must also be capable of being used in international communications media, such as telegrams, radio, and television.

Standardized There should be no dialectal variation, in order to avoid the risk of reduced intelligibility. An authoritative body would monitor all proposals for new forms.

Neutral It must be politically and linguistically unaligned, and therefore equally acceptable to all countries. Many AL supporters see this as an indispensable step towards the unity of mankind and a world of peace.

Providing insight Several AL supporters see international communication as only one aim. They also hope that the greater regularity and clarity of these languages will enable people to think more logically or rationally, and thus establish a deeper understanding of the nature of reality. This search for a philosophical language, in which words and ideas would be logically linked without ambiguity or irregularity, was particularly common in 17th-century ALs, which were generally in the form of taxonomies of concepts expressed in a complex notation.

THE PROBLEMS

The international acceptance of an AL is a long uphill battle for its supporters, who have to overcome problems of a social, linguistic, and political kind.

Motivation How is the inventor of an AL to persuade people to learn it, when no-one else knows it? To avoid this problem, there has to be a massive period of simultaneous learning, which is extremely difficult to organize. Zamenhof was one who saw this as a crucial factor. His solution was to include promissory forms at the end of his intro-

ductory book that read: 'I, the undersigned, promise to learn the international language proposed by Dr Esperanto, if it appears that 10 million people have publicly given the same promise.' He planned to publish a book that would contain all their names and addresses – something that it has never been possible to do (though there is a register of Esperanto translators).

Identity One of the chief functions of language is to express identity, and this explains a large number of linguistic differences (Part II). ALs do not permit these differences. They are therefore in conflict with the aspirations of movements where there is a desire to retain and express national, regional, or social identities. The growth of nationalism, in particular, stopped the expansion of ALs in the late 18th century – a time when linguistic divisions were seen as an asset and source of pride – and it has had a marked effect on the AL movement since the First World War.

Linguistic bias It is not as easy to develop a simple and common language as is claimed. Most ALs are based on western Indo-European languages, and this acts as a barrier to speakers of other languages. There is still a marked linguistic parochialism among ALs, which tend to underestimate the diversity of the world's languages (Part IX).

Semantic differences Insufficient attention is paid to the semantic differences that exist between languages: words do not have meanings that can be neatly broken down into components (as some 17th-century systems tried to do), or that are exactly equivalent to each other. Speakers of different languages may translate their mother-tongue words into an AL, but this does not necessarily mean that they understand each other any better. The figurative, idiomatic, and connotative (p. 103) uses of words will differ: for example, American and Soviet attitudes to a word like *capitalism* will not alter simply because both sides agree to use the same AL label.

Antagonism Many people who are sympathetic to the general idea of a universal language are put off by the great fervour with which proponents of ALs present their causes. Several AL organizations arrange public occasions with songs and hymns, each displaying a faith in the efficacy of its own AL which reaches evangelical proportions. Some ALs have been censured because the authorities associate them with political movements. Esperanto, in particular, has been frequently persecuted – notably in Germany and the Soviet Union in the 1930s, when the organization was suppressed and many of its members arrested or shot.

Five examples

English

For, of the things that mankind possesses in common, nothing is so truly universal and international as science.

Esperanto (using *h* for accents)

Char el la komunaj posedajhoj de la homaro, neniu estas tiel vere ĝenerala kaj internacia kiel la scienco.

Ido

Nam del kozi, quin la homaro posedas komune, nula estas tam vere universala ed internaciona kam la cienco.

Novial

Den ek li coses kel li homaro posese comunim, nuli is tam verim general e international kam li scientie.

Occidental

Nam de omni comun posedages del homanité niun es tam vermen general e international quam scientie.

Latino Sine Flexione

Nam, de commune possessiones de genere humano, nihil es tam generale et internationale quam scientia.

And a test in Interlingua Translate!

Tote le membros del communitate de linguas occidental son in un certe senso dialectos individual que devia plus o minus de un *patrono commun*. De iste facto son derivate tote le principios methodic supportante le compilation del *Dictionario Interlingua-Anglese*. Le termine *interlingua* es solmente un synonymo plus technic de *lingua de patrono*. Illo representa un lingua que es international proque su elementos existe de facto o potencialmente in un gruppo de linguas national.

Crib (if required)

All the members of the western community of languages are in a sense individual dialects which deviate more or less from a *common pattern*. From this fact are derived all the working principles underlying the compilation of the *Interlingua-English Dictionary*. The term *interlingua* is merely a more technical synonym of *pattern language*. It stands for a language that is international because its elements exist actually or potentially in a group of national languages.

The language barrier has also been attacked by several proposals to simplify the structure of a natural language, usually by reducing the complexity of its grammar or the size of its vocabulary. All the main Western European languages have been modified in this way, the most famous approach being that of Charles Kay Ogden (1889–1957), known as *Basic English* (1930). BASIC is an acronym for 'British American Scientific International Commercial'. It consists of 850 words selected to cover everyday needs: 400 general nouns, 200 picturable objects, 100 general qualities, 50 opposites, and 100 operations (adverbs, particles, etc.). The working principle is that all words not on this list can be replaced by those that are (permitting several inflectional variations). The basic vocabulary is supplemented by several international and scientific words (e.g.

The system was strongly supported in the 1940s by such people as Churchill and Roosevelt, but there were also many criticisms. The simplification of the vocabulary is achieved at the expense of a more complex grammar and a greater reliance on idiomatic construction. The replacement forms are often unwieldy, involving lengthy circumlocutions. And although BASIC proved easy to learn to read, it proved very difficult to write in the language in such a way that meaning was clearly preserved. The system is now largely of historical interest, though analogous principles can be found in several spheres of foreign and remedial language teaching (e.g. the concept of a restricted defining vocabulary in some contemporary dictionaries).

OPPOSITIONS		THINGS		QUALITIES				
100	ETC.	400 General		1000 General				
			Picturable		50 Opposites			
COME	ACCOUNT	EDUCATION	METAL	SENSE	ANGLE	KNEE	ABLE	AWAKE
GET	ACT	EFFECT	MIDDLE	SERVANT	ANT	KNIFE	ACID	BAD
GIVE	ADDITION	END	MILK	SEX	APPLE	KNIGHT	ANGRY	BEANT
KNOW	ADJUSTMENT	ERROR	MIND	SHADE	ARCH	LEAF	AUTOMATIC	BITTER
KEEP	ADVERTISEMENT	EVENT	MINE	SHAKE	ARMY	LEG	BEAUTIFUL	BLUE
LET	AGREEMENT	EXAMPLE	MINUTE	SHAME	ARM	LIBRARY	BLACK	CERTAIN
MAKE	EXCHANGE	MUSIC	MUCH	RAVY	LINE	LOCK	BOLD	COLD
PUT	AMOUNT	EXISTENCE	MONEY	SIDE	BAG	LIP	BRIGHT	COMPLETE
SEEM	AMUSEMENT	EXPANSION	MOTION	SIGN	BALL	LOCK	BROKEN	CRUEL
TAKE	ANIMAL	EXPERIENCE	MORNING	SISTER	BASKET	MAP	BROKEN	COLD
BE	ANSWER	EXPERIENCE	MOTHER	SISTER	BASKET	MATCH	CHEAP	DEAD
DO	APPARATUS	FACT	MOVING	SISTER	BASKET	MONKEY	CHEAP	DEAD
HAVE	APPROVAL	FALL	MOUNTAIN	SIZE	BED	MOON	CHEMICAL	DIFFICULT
ARGUMENT	APPROVAL	FAMILY	MOVY	SLEEP	BEE	MOUTH	CHEMICAL	DIFFERENT
SEE	ATTACK	FATHER	MUSIC	SLEEP	BEE	MUSCLE	CLEAR	DIRECT
SEND	ATTACK	FEAR	NAME	SLEEP	BELL	NAIL	COMMON	DIRTY
ATTEND	ATTENTION	FEELING	NAIL	ROAD	NAIL	NEEDLE	COMMON	DIRTY
WILL	ATTENTION	FEELING	NEED	SMASH	BIRD	NEEDLE	CONSCIOUS	FEEL
ABOUT	ATTRACTION	FIELD	NEWS	SMELL	BLADE	NEURVE	CUT	FEMALE
ACROSS	AUTHORITY	FIGHT	RIGHT	SMILE	BLADE	NEURVE	DEEP	FEMALE
AFTER	BACK	PIDE	NOISE	SMOKE	BOAT	NOSE	DEPENDENT	FUTURE
AGAINST	BEHAVIOUR	FLAME	NOTE	SNEEZE	BONE	NOSE	EARLY	GREEN
AMONG	BASS	FLIGHT	NUMBER	SNOW	BOOK	OFFICE	ELECTRIC	ILL
BEFORE	BEHAVIOUR	FLOWER	SOAP	BOAT	BOAT	ORANGE	EQUAL	LATE
BEFORE	BELIEF	FOOD	OFFER	SOCIETY	BOTTLE	OVEN	EQUAL	LATE
BETWEEN	BIRTH	FOLD	OPIL	SON	BOX	PARCEL	PAAT	LEFT
BITE	BITE	FORM	OPINION	SOFT	BRAIN	PENCIL	FIRST	LOUD
DOWN	BLOOD	FRIEND	ORGANIZATION	ORGANIZATION	PIG	PIG	FIXED	LOW
IN	BLOW	FRONT	ORGANIZATION	ORGANIZATION	PIG	PIG	FIXED	LOW
OFF	BOODY	FRUIT	ORGANIZATION	ORGANIZATION	PIG	PIG	FIXED	LOW
ON	BRASS	GLASS	OWNER	STAGE	BRIDGE	PIPE	FLAT	MIXED
OVER	BREAD	GOLD	PAINT	STAGE	BRIDGE	PIPE	FLAT	MIXED
THROUGH	BROTHER	GRASS	PAPER	STEEL	BUTTON	POCKET	GREAT	SAD
TO	BUILDING	GRASS	PAPER	STEEL	BUTTON	POCKET	GREAT	SAD
UNDER	UP	HAIR	PART	STITCH	CAMERA	POTATO	HANGING	SECRET
WITH	BURST	GROUP	PASTE	STITCH	CAMERA	POTATO	HANGING	SECRET
AS	BUSINESS	GROWTH	PAYMENT	STONE	CARD	PRISON	HAPPY	SHORT
FOR	BUTTER	GUIDE	PEACE	STOP	CARD	PUMP	HARD	SHUT
OF	CANVAS	HARDWARE	STORY	CARRIAGE	RAT	RAIL	HEALTHY	SIMPLE
TILL	CARE	HARMONY	PLACE	STRETCH	CAT	RAT	HOLLOW	SLOW
THAN	CAUSE	HATE	PLANT	STRUCTURE	CHIN	RECEIPT	PLANT	SMALL
THE	CHANGE	HEAT	PLEASURE	SUGAR	CHEST	ROD	KIND	SOLID
ALL	CHANGE	HEAT	POINT	SUGGESTION	CHIN	ROOF	LING	SPECIAL
ANY	CLOTH	HISTORY	SURROUND	SURROUND	CHURCH	LIVING	LONG	STRANGE
EVERY	COLOUR	HOLE	POLISH	SUPPORT	CIRCLE	SAIL	LONG	THIN
NO	COLOUR	HOLE	PORTER	SURPRISE	CLOCK	SCIOOL	MALE	WHITE
OTHER	COMFORT	HOUR	POSITION	SWIM	CLOUD	SCISSORS	MARRIED	WRONG
SOME	COMPANY	IDEA	PRICE	TASTE	COMB	SHEEP	MILITARY	WRONG
SUCH	COMPARISON	IDEA	PRICE	TASTE	COMB	SHEEP	MILITARY	WRONG
THAT	CONDITION	INCREASE	PROCESS	TEACHING	COW	SHIP	NECESSARY	WRONG
THIS	CONNECTION	INDUSTRY	PRODUCE	TENDENCY	CUP	SHIRT	NEW	WRONG
I	CONTROL	INK	PROFIT	CURTAIN	SHIRT	NEW	NORMAL	WRONG
WHO	COOK	INSECT	PROFIT	CURTAIN	SHIRT	NEW	NORMAL	WRONG
AND	COPPER	INSTRUMENT	PROSE	THING	DOG	SKIRT	PARTIAL	WRONG
BECAUSE	COPY	INSURANCE	PROTEST	THOUGHT	DOOR	SNARE	PARTIAL	WRONG
CUT	COTTON	INVENTION	PUNISHMENT	TIME	DRESS	SPADE	POLITICAL	WRONG
OR	COUGH	IRON	PURPOSE	TIN	DRAW	SPONGE	POOR	WRONG
IF	COUNTRY	IRON	PURPOSE	TIN	DRAW	SPONGE	POOR	WRONG
THOUGH	COVER	JOIN	QUALITY	TOUCH	EAR	SPRING	PRESENT	WRONG
WHILE	CRACK	JOURNEY	QUESTION	TRADE</				

The tendency to a common level of output being more frequent, is a sign that output is being consciously kept inside a certain limit. When the lowest outputs are most frequent and the output of workers not widely different and generally high, after selection of workers by test has come into use, the tendency may be taken as a sign of the efficiency of the system of selection.

(C. K. Ogden, 1938, p. 146.)

cocoa, Chocolate powder.
coddle, v. Take great care of.
code, s., v. Body (system) of laws
(rules, behaviour, signs).
co-education, Education of boys
and girls together.
coercion, Use of force, government
by force.
coffee, *International*.
coffin, Box for a dead body.
cob, Pointed tooth (on a wheel).
cohabitation, Living together as
if married.
coherent, adj. Hanging together;
clear. cohesion, Keeping together;
coiffure, Way of doing (dressing)
hair.
coll, s., v. Twist (round) of cord
(wire).
coin, s., v. (Bit of) metal money.

59 World languages

Many people feel that the only realistic chance of breaking the foreign-language barrier is to use a natural language as a world lingua franca. The history of ideas already provides precedents, with Latin used as a medium of education in western Europe throughout the middle ages, and French used as the language of international diplomacy from the 17th to the 20th centuries. Today, English is the main contender for the position of world lingua franca (p. 358).

There are few competitors. Several other languages have an important local role as a lingua franca but no comparable international level of use, such as Russian in eastern Europe, or Spanish in South and Central America. More people in the world speak Chinese than any other language (§48), but in the West Chinese is too unfamiliar to be a serious contender. French is still widely used, but far less than it was a century ago.

Many factors contribute to the gradual spread of a language – chiefly political and military might, economic power, and religious influence (all of which artificial languages lack, §58). These same factors mean that the development of a world language is not viewed with enthusiasm by those who would have to learn it. Such a language, it can be argued, would give its originating culture an unprecedented influence in world affairs and scientific research. For example, scientists who used it as a mother tongue would be in a privileged position: they would not have to spend time learning it and would more easily assimilate ideas expressed in it. Furthermore, it is thought, a world language would inevitably erode the status of minority languages and pose a threat to the identity of nations (§9). Many people thus view the current progress of English towards world-language status with concern and often with antagonism (p. 359).

Ironically, the main danger to the growth of a world language comes from within. As the language becomes used in all corners of the world, by people from all walks of life, so it begins to develop new spoken varieties which are used by local people as symbols of their identity (Part II). In the course of time, these new varieties might become mutually unintelligible. How far this diversification will affect English cannot be predicted (p. 359). It is not easy to weigh the trend towards diversity against the trend towards unity that results from increased modern contacts through travel and communications. A hundred years ago, predictions were being made that British and American English would by now be mutually unintelligible. Linguistic predictions have a habit of being wrong.

Official languages

The list below gives the languages which have achieved special status in most of the countries of the world. English is cited 45 times, French 30. About a quarter of the countries have more than one language with official or semi-official status.

<i>Afghanistan</i> Dari Persian, Pashto	<i>Guatemala</i> Spanish	<i>Poland</i> Polish
<i>Albania</i> Albanian	<i>Guinea</i> French	<i>Portugal</i> Portuguese
<i>Algeria</i> Arabic, French	<i>Guinea-Bissau</i> Portuguese	<i>Puerto Rico</i> Spanish, English
<i>Angola</i> Portuguese	<i>Guyana</i> English	<i>Qatar</i> Arabic
<i>Antigua and Barbuda</i> English	<i>Haiti</i> French	<i>Réunion</i> French
<i>Argentina</i> Spanish	<i>Honduras</i> Spanish	<i>Romania</i> Romanian
<i>Australia</i> English	<i>Hungary</i> Hungarian (Magyar)	<i>Rwanda</i> Kinyarwanda (Rwanda), French
<i>Austria</i> German	<i>Iceland</i> Icelandic	<i>St Christopher and Nevis</i> English
<i>Bahamas</i> English	<i>India</i> Hindi, English, 14 regional languages	<i>St Lucia</i> English
<i>Bahrain</i> Arabic	<i>Indonesia</i> Bahasa Indonesia	<i>St Vincent and the Grenadines</i> English
<i>Bangladesh</i> Bengali	<i>Iran</i> Farsi (Persian)	<i>São Tomé and Príncipe</i> Portuguese
<i>Barbados</i> English	<i>Iraq</i> Arabic	<i>Saudi Arabia</i> Arabic
<i>Belgium</i> Flemish Dutch, French (German)	<i>Irish Republic</i> Irish, English	<i>Senegal</i> French
<i>Belize</i> English	<i>Israel</i> Hebrew, Arabic	<i>Seychelles</i> English, French
<i>Benin</i> French	<i>Italy</i> Italian	<i>Sierra Leone</i> English
<i>Bermuda</i> English	<i>Ivory Coast</i> French	<i>Singapore</i> Chinese, Malay, Tamil, English
<i>Bhutan</i> Dzongkha	<i>Jamaica</i> English	<i>Somalia</i> Somali, Arabic
<i>Bolivia</i> Spanish	<i>Japan</i> Japanese	<i>South Africa</i> Afrikaans, English
<i>Botswana</i> English, Tswana	<i>Jordan</i> Arabic	<i>Soviet Union</i> Russian (local national languages)
<i>Brazil</i> Portuguese	<i>Kampuchea</i> Khmer	<i>Spain</i> Spanish (Catalan, Basque)
<i>Brunei</i> Malay, English	<i>Kenya</i> Swahili, English	<i>Sri Lanka</i> Sinhala
<i>Bulgaria</i> Bulgarian	<i>Korea (N. and S.)</i> Korean	<i>Sudan</i> Arabic
<i>Burkina Faso</i> French	<i>Kuwait</i> Arabic	<i>Suriname</i> Dutch, English
<i>Burma</i> Burmese	<i>Laos</i> Lao	<i>Swaziland</i> Swazi, English
<i>Burundi</i> French, Rundi	<i>Lebanon</i> Arabic	<i>Sweden</i> Swedish
<i>Cameroon</i> English, French	<i>Lesotho</i> Sotho, English	<i>Switzerland</i> French, German, Italian, Romansch
<i>Canada</i> English, French	<i>Liberia</i> English	<i>Syria</i> Arabic
<i>Central African Republic</i> French	<i>Libya</i> Arabic	<i>Taiwan</i> Mandarin Chinese
<i>Chad</i> French	<i>Luxembourg</i> French, German, Letzebuergesch	<i>Tanzania</i> Swahili, English
<i>Chile</i> Spanish	<i>Madagascar</i> French, Malagasy	<i>Thailand</i> Thai
<i>China</i> Mandarin Chinese	<i>Malawi</i> English, Nyanja (Chewa)	<i>Togo</i> French
<i>Colombia</i> Spanish	<i>Malaysia</i> Malay	<i>Trinidad and Tobago</i> English
<i>Congo</i> French	<i>Maldives</i> Maldivian	<i>Tunisia</i> Arabic
<i>Costa Rica</i> Spanish	<i>Mali</i> French	<i>Turkey</i> Turkish
<i>Cuba</i> Spanish	<i>Malta</i> Maltese, English	<i>Uganda</i> English
<i>Cyprus</i> Greek, Turkish	<i>Martinique</i> French	<i>United Arab Emirates</i> Arabic
<i>Czechoslovakia</i> Czech, Slovak	<i>Mauritania</i> Arabic, French	<i>United Kingdom</i> English
<i>Denmark</i> Danish	<i>Mauritius</i> English	<i>United States of America</i> English
<i>Djibouti</i> French, Arabic	<i>Mexico</i> Spanish	<i>Uruguay</i> Spanish
<i>Dominica</i> English	<i>Mongolian People's Republic</i> Khalka	<i>Vatican City</i> Italian, Latin
<i>Dominican Republic</i> Spanish	<i>Morocco</i> Arabic	<i>Venezuela</i> Spanish
<i>Ecuador</i> Spanish	<i>Mozambique</i> Portuguese	<i>Vietnam</i> Vietnamese
<i>Egypt</i> Arabic	<i>Nepal</i> Nepali	<i>Yemen (Arab Republic and Democratic)</i> Arabic
<i>El Salvador</i> Spanish	<i>Netherlands</i> Dutch	<i>Yugoslavia</i> Macedonian, Serbo-Croat, Slovene
<i>Equatorial Guinea</i> Spanish	<i>New Zealand</i> English	<i>Zaire</i> French
<i>Ethiopia</i> Amharic	<i>Nicaragua</i> Spanish	<i>Zambia</i> English
<i>Fiji</i> English	<i>Niger</i> French	<i>Zimbabwe</i> English
<i>Finland</i> Finnish, Swedish	<i>Nigeria</i> English	
<i>France</i> French	<i>Norway</i> Norwegian	
<i>French Guiana</i> French	<i>Oman</i> Arabic	
<i>Gabon</i> French	<i>Pakistan</i> Urdu, English	
<i>Gambia</i> English	<i>Panama</i> Spanish	
<i>Germany (FRG, GDR)</i> German	<i>Papua New Guinea</i> Tok Pisin, Hiri Motu, English	
<i>Ghana</i> English	<i>Paraguay</i> Spanish, Guaraní	
<i>Greece</i> Greek	<i>Peru</i> Spanish	
<i>Greenland</i> Danish, Greenlandic	<i>Philippines</i> Pilipino, English	
<i>Grenada</i> English		
<i>Guadeloupe</i> French		

World English

In the minds of many people, there is no longer an issue. They argue that English has already become a world language, by virtue of the political and economic progress made by English-speaking nations in the past 200 years, and is likely to remain so, gradually consolidating its position.

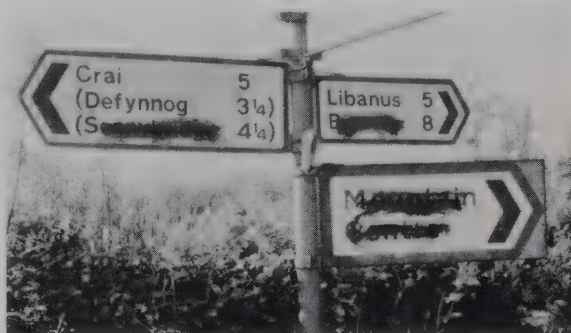
An impressive variety of facts about usage support this view. According to conservative estimates, mother-tongue speakers have now reached around 300 million; a further 300 million use English as a second language (p. 368); and a further 100 million use it fluently as a foreign language. This is an increase of around 40% since the 1950s. More radical estimates, which include speakers with a lower level of language fluency and awareness, have suggested that the overall total is these days well in excess of 1,000 million. The variation results largely from a lack of precise data about English language use in such areas as the Indian sub-continent, where the historical impact of the language exercises a continuing influence on many of its 900 million people, and China, where there has been a burst of enthusiasm for English language studies in recent years, with over 100 million people watching the BBC television English series *Follow Me*. One visitor, returning to China in 1979 after a gap of 20 years, wrote: 'In 1959, everyone was carrying a book of the thoughts of Chairman Mao; today, everyone is carrying a book of elementary English.' Even if only 10% of these learners become fluent, the effect on totals is dramatic: the number of foreign learners is immediately doubled.

Surveys of range of use carried out by UNESCO and other world organizations reinforce the general statistical impression. English is used as an official or semi-official language in over 60 countries, and has a prominent place in a further 20. It is either dominant or well established in all six continents. It is the main language of books, newspapers, airports and air-traffic control, international business and academic conferences, science, technology, medicine, diplomacy, sports, international competitions, pop music, and advertising. Over two-thirds of the world's scientists write in English. Three-quarters of the world's mail is written in English. Of all the information in the world's electronic retrieval systems, 80% is stored in English. English radio programmes are received by over 150 million in 120 countries. Over 50 million children study English as an additional language at primary level; over 80 million study it at secondary level (these figures exclude China). In any one year, the British Council helps a quarter of a million foreign students to learn English, in various parts of the world. In the USA alone, 337,000 foreign students were registered in 1983.

It would be possible to continue with such statistics for several pages, but their significance can be illustrated more succinctly by comments made by foreign learners themselves:

- 'When I finish learn English, my pay as secretary will be increase by nearly ten times.'
(Egyptian trainee secretary.)
- 'My company plans big deals with Arabic world. None of us speak Arabic, and they do not know Japanese. All our plans and meetings are in English.'
(Japanese businessman.)
- 'After I learned English, I felt I was in touch with the international world for the very first time.'
(Nigerian teacher.)
- 'If I want to keep up to date with the latest techniques and products. I must certainly maintain my English very strongly.'
(Indian doctor.)
- 'Nearly everyone in Denmark speaks English. If we didn't, there wouldn't be anyone to talk to.'
(Danish university student.)

Opposition to English The influence of English within a country has often been bitterly condemned. France has issued laws banning its use in certain public domains (p. 4). In French-speaking Québec, English advertisements, shop names, and traffic signs have been changed, in an effort to stop the advance of English in the province. There have been anti-English movements in Spain, Germany, Mexico, Burma, India, and several other countries; but for the most part they have had little effect.



A signpost in Wales. The English names have been defaced by Welsh nationalists.

International varieties

Some people think they already see signs of the break-up of the language when they find difficulty in understanding the English used in India, West Africa, or other parts of the world – even, at times, within Great Britain and North America (§8). Variation can also be seen in the written language, mainly in a distinctive regional lexicon. An English edition of an Indian newspaper, for example, might refer routinely to *roti*, *kapra*, and *makan* ('food, clothing, and housing'), a *rail roko* (railway strike), and to such quantities as a *crore* ('10 million') or *lakh* ('100,000'). In some international varieties of English, the local standard vocabulary (including words for local food, fauna, or flora) may run to thousands of items.

This variation raises a question mark against the notion of 'world' English. With so many varieties, which one should be used as the international medium? Should it be American, British, Indian, Australian...? Teachers in

particular are faced with a conflict of aims: should they teach British or American English? both? or neither, focussing on the variety found in their own country? What effect will their decision have on the ability of their students to communicate at an international level?

Nuclear English

These problems are of recent origin, and are only beginning to be discussed. One proposal, made by the British linguist Randolph Quirk (1920–), argues that the problem of variety would be avoided if the language were specially adapted to produce a 'nuclear' English for international use. 'Nuclear English' would provide a core of structure and vocabulary from within the range of acceptable English. It would eliminate all features that are 'dispensable', in the sense that the language has an alternative means available for their expression. Examples of omisable structures include the range of tag questions

(*isn't it?*, *aren't they?*, etc.), which might be reduced to a single form (such as *isn't that*) right?); or one of the indirect object constructions (English has both *I gave the man a book* and *I gave a book to the man*). When all such options are removed, in both grammar and vocabulary, we are left with the obligatory minimum of the language, its communicative nucleus.

To be successful, Nuclear English would have to be easier to learn than any variety of 'full' English; it would have to meet the communicative needs of its users; and it would have to be capable of development into an 'expanded' form, for more advanced uses. It is too soon to say how far the proposal can be taken; but there is no doubt that the possibilities of linguistic adaptation provide an interesting theoretical alternative to proposals of outright adoption, which have so far been the focus of attention, and the source of much controversy. (After R. Quirk, 1982.)

Estimates of the number of English speakers in the world

The first column gives figures for those who speak English as a mother tongue or first language. The second column gives recent total population figures (usually 1981) for those countries where English has official status as a medium of communication, and where people learn it, usually in school, as a second language. These totals bear little correlation with the real use of English in the area. There are no figures available for people who have learned English as a foreign language, in countries where the language has no official status. The plus sign means 'more than'; the minus sign means 'less than'; and the question mark is used for cases where no-one knows how many first language speakers there are (though in these cases the figures are likely to be very small).

Country	First language speakers of English	Country population	Country	First language speakers of English	Country population	Country	First language speakers of English	Country population
Anguilla	10,000-	10,000	Kenya		17,000,000	Seychelles		60,000
Antigua and Barbuda			Kiribati		60,000+	Sierra Leone		3,600,000
Barbuda	100,000	100,000	Lesotho		1,400,000	Singapore	?	2,500,000
Australia	14,000,000	15,000,000-	Liberia		2,000,000	Solomon Islands		200,000+
Bahamas	250,000	250,000	Malawi		6,400,000	South Africa	2,000,000+	30,000,000
Bangladesh	?	92,600,000+	Malaysia (East)		14,300,000	Sri Lanka	?	15,200,000+
Barbados	250,000+	250,000+	Malta		350,000	Suriname		395,000
Belize	100,000+	150,000+	Mauritius		1,000,000	Swaziland		600,000
Bermuda	50,000+	50,000+	Montserrat	15,000	15,000	Tanzania		18,500,000
Bhutan	?	1,200,000+	Namibia		1,000,000	Tonga		100,000+
Botswana		1,000,000-	Nauru		80,000+	Trinidad and Tobago	1,200,000	1,200,000
Brunei		200,000+	Nepal	?	15,800,000+	Tuvalu		80,000+
Cameroon		8,000,000+	New Zealand	3,000,000	3,200,000	Uganda		13,000,000
Canada	17,000,000+	24,000,000+	Nigeria	?	90,000,000+	U.S.	215,000,000	230,000,000+
Dominica	50,000+	100,000-	Pakistan	?	87,100,000+	U.S. territories in Pacific		300,000-
Fiji		600,000+	Papua New Guinea		3,500,000	Vanuatu		100,000
Ghana		12,000,000	Philippines		50,000,000	Western Samoa		150,000+
Gibraltar		30,000+	St Christopher and Nevis	60,000	60,000	Zambia		6,000,000
Great Britain	56,000,000+	57,000,000	St Lucia	?	100,000+	Zimbabwe	200,000+	7,600,000
Grenada	100,000+	100,000+	St Vincent and the Grenadines	100,000+	100,000+	Other British territories	30,000+	30,000+
Guyana	900,000+	900,000	Senegambia		600,000	TOTALS	316,015,000+	1,606,920,000+
Hong Kong	?	6,000,000-						
India	?	700,000,000+						
Irish Republic	3,300,000	3,300,000						
Jamaica	2,300,000	2,300,000						

The spread of English as a world language This map shows the growing use of English, both in those countries where it is a mother tongue, and in those where it has official or semi-official status. The main countries of the world have been shown larger or smaller than their actual size, to reflect their relative share of the world's population. The role of the Indian sub-continent in the population estimates for English is obvious. There are around 900 million people in that area, but estimates of those who are fluent in the language have been as low as 3%. (From R. W. Bailey & M. Görlach, 1982.)



60 Multilingualism

People brought up within a western society often think that the monolingualism that forms a routine part of their existence is the normal way of life for all but a few 'special' people. They are wrong. Multilingualism is the natural way of life for hundreds of millions all over the world. There are no official statistics, but with around 5,000 languages co-existing in fewer than 200 countries (§§47, 59) it is obvious that an enormous amount of language contact must be taking place; and the inevitable result of languages in contact is *multilingualism*, which is most commonly found in an individual speaker as *bilingualism*.

The widespread impression that multilingualism is uncommon is promoted by government policies: less than a quarter of the world's nations give official recognition to two languages, according to the list on p. 357, and only six recognize three or more. However, when we look at what is taking place within each country, studying the speakers rather than the national policies, a very different picture emerges. It has been argued, in fact, that there is no such thing as a totally monolingual country. Even in countries that have a single official language used by the majority of the population (e.g. Britain, USA, France, Germany, Japan), there exist sizeable groups that use other languages. In the USA, around 7% of the population regularly speak a language other than English. In Britain, over 100 minority languages are in routine use. In Japan, one of the most monolingual of countries, there are substantial groups of Chinese and Korean speakers. In Ghana, Nigeria, and many other African countries that have a single official language, as many as 90% of the population may be regularly using more than one language. It is an interesting irony that there may be more bilingual people in an officially monolingual country than in an officially bilingual one, because in the latter case there tends to be territorial separation between the groups (as in Belgium, Switzerland, or Yugoslavia).

Maintenance, shift, and death

It is impossible to generalize about the way multilingualism manifests itself around the world; there are vast differences in social and cultural situations. Often the majority of a population is bilingual (e.g. the widespread use of Spanish and Guaraní in Paraguay, where the former is used as the official language, and the latter as the national language); often only a small minority may be affected (e.g. Gaelic speakers in Scotland). The majority of the bilingual speakers may be concentrated in the cities, or they may be found throughout the

country, with focal points in those rural areas where languages are in contact. The bilingualism may be due to a long-standing co-existence of different groups (as in Belgium) or to a more recent and shifting co-existence (as with the many *Gastarbeiter* groups in Europe, p. 36). We need to examine many such situations in individual detail, in order to arrive at valid conclusions about the social antecedents and consequences of multilingualism.

An important characteristic of these situations is their fluidity. It is rare to find a setting where the languages are stable and balanced, and where social controversy over government policy is not a major issue (Paraguay is one such exception). Usually the language balance is changing, either spontaneously or because of government pressure. In some areas, the level of bilingualism is increasing (e.g. Sweden since the Second World War); in others it is decreasing, with second- and third-generation immigrants becoming increasingly monolingual (e.g. the USA).

A distinction is commonly drawn between cases where one language is holding its own despite the influence of powerful neighbours (language *maintenance*) and cases where a language has yielded to this influence, and speakers have assimilated to the dominant culture (language *shift*). Other possibilities include extensive vocabulary borrowing by one of the languages, or the emergence of a new 'hybrid' as a result of the contact, as with pidgins and creoles (§55). Lastly, as shown by the history of the Celtic languages (p. 302), the contact can lead to a language being completely eliminated (language *death*).

Language death

It is unusual to see the death of a language commemorated – but in this particular case the judgment may have been premature. In recent years an enthusiastic revivalist campaign has been launched to breathe new life into the Cornish language (p. 303).



HERE LIEETH INTERRED
DOROTHY PENTREATH
WHO DIED IN
1777
SHE IS SAID TO HAVE BEEN THE
LAST PERSON WHO CONVERSED
IN THE ANCIENT CORNISH
OR MEERISH LANGUAGE OF
THIS COUNTRY FROM THE
EARLIEST RECORDS
TILL IT EXPIRED IN THE
EIGHTEENTH CENTURY
IN THE PARISH OF
SAINT PAUL

•What causes multilingualism?

A multilingual situation can develop for reasons which may be difficult to disentangle because of their obscure historical origins. Often the situation is of the people's own choosing; but it may also be forced upon them by other circumstances.

■ *Politics* Annexation, resettlement, and other political or military acts can have immediate linguistic effects. People may become refugees, and have to learn the language of their new homes. After a successful military invasion, the indigenous population may have to learn the invader's language in order to prosper.

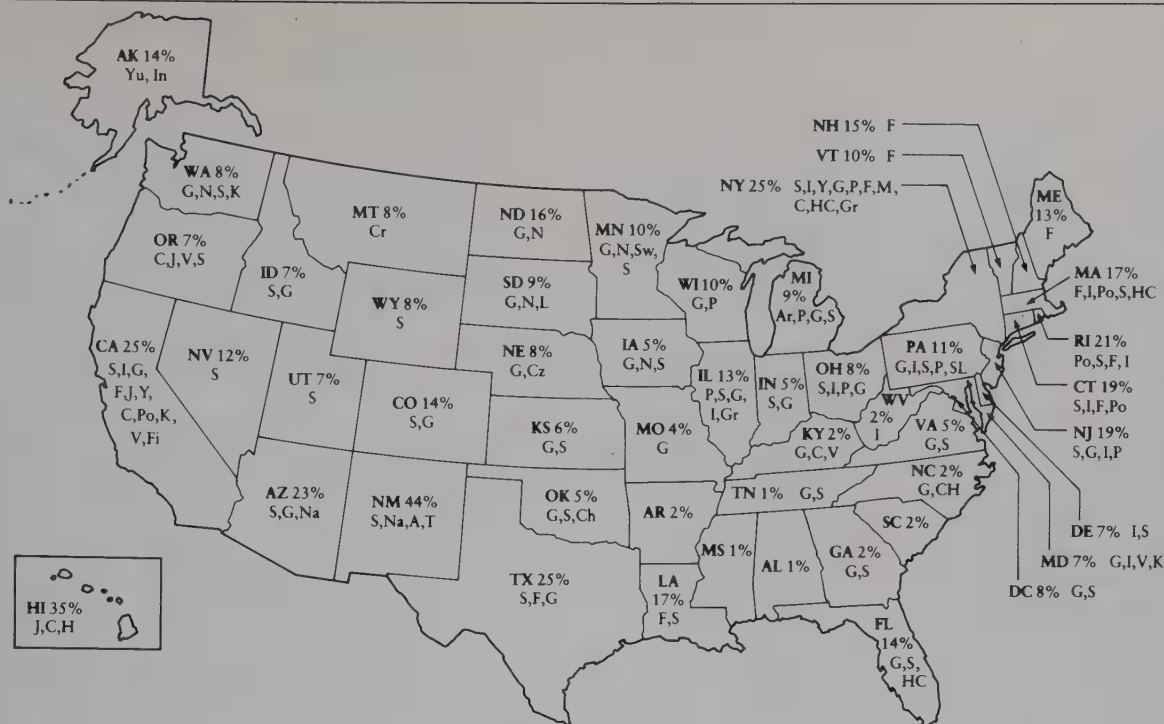
■ *Religion* People may wish to live in a country because of its religious significance, or to leave a country because of its religious oppression. In either case, a new language may have to be learned.

■ *Culture* A desire to identify with a particular ethnic culture or social group usually means learning the language of that group. Nationalistic factors are particularly important (§9).

● *Education* Learning another language may be the only means of obtaining access to knowledge. This factor led to the universal use of Latin in the middle ages, and today motivates the international use of English (§59).

■ *Economy* Very large numbers of people have migrated to find work and to improve their standard of living. This factor alone accounts for most of the linguistic diversity of the U.S., and an increasing proportion of the bilingualism in present-day Europe.

■ *Natural disaster* Floods, volcanic eruptions, famine, and other such events can be the cause of major movements of population. New language contact situations then emerge as people are resettled.



The estimated percentage of people with a non-English background in the U.S. in the mid-1970s, and the main minority languages in each state. The highest figures are in the north-east (around New York and its hinterland), in the north-central states, and in the south-west (where the main influx of Spanish speakers has taken place). The figures are based on the 1976 U.S. Survey of Income and Education, and do not reflect the marked increase in the non-English-speaking population which has since taken place in certain States (such as Texas and California). (After F. Grosjean, 1982.)

Languages

A	Apache	H	Hawaiian	P	Polish
Ar	Arabic	HC	Haitian Creole	Po	Portuguese
C	Chinese	I	Italian	S	Spanish
Ch	Cherokee	In	Inupiac	Sl	Slovak
Cr	Crow	J	Japanese	Sw	Swedish
Cz	Czech	K	Korean	T	Tewa
F	French	L	Lakota	V	Vietnamese
Fi	Filipino	M	Mohawk	Y	Yiddish
G	German	N	Norwegian	Yu	Yupik
Gr	Greek	Na	Navaho		

States

AK	Alaska	HI	Hawaii	ME	Maine	NJ	New Jersey	SD	South Dakota
AR	Arkansas	IA	Iowa	MI	Michigan	NM	New Mexico	TN	Tennessee
AZ	Arizona	ID	Idaho	MN	Minnesota	NV	Nevada	TX	Texas
CA	California	IL	Illinois	MO	Missouri	NY	New York	UT	Utah
CO	Colorado	IN	Indiana	MS	Mississippi	OH	Ohio	VA	Virginia
CT	Connecticut	KS	Kansas	MT	Montana	OK	Oklahoma	VT	Vermont
DC	District of Columbia	KY	Kentucky	NC	North Carolina	OR	Oregon	WA	Washington
DE	Delaware	LA	Louisiana	ND	North Dakota	PA	Pennsylvania	WI	Wisconsin
FL	Florida	MA	Massachusetts	NE	Nebraska	RI	Rhode Island	WV	West Virginia
GA	Georgia	MD	Maryland	NH	New Hampshire	SC	South Carolina	WY	Wyoming

A journey to work

'My French friend had been brought up with the erroneous idea that the United States was a monolingual English-speaking country with a few, fast-disappearing linguistic minorities. One day I took him to work with me by a roundabout route to show him the great linguistic diversity that can be found in an American city – in this case, Boston.

As we walked to the bus stop, we passed a group of Haitian children playing ball and shouting at each other in Haitian Creole. On the bus to Cambridge we sat next to an Armenian American from Waltham reading one of the two daily Armenian newspapers published in the Boston area. Walking down Cambridge Street, we found ourselves for a short while in a little Portugal – the people around us spoke Portuguese, the stores sold Portuguese goods, the restaurants

offered Portuguese specialties, and the children in the area were off to their bilingual programs in school.

We continued on our tour and went to Boston's North End for breakfast. Now we were in Italy. A procession in honor of a saint was getting under way, a group of elderly Italian-speaking people was playing cards in the shade of a tree, and storekeepers were setting up their displays of Italian cold cuts and cheeses. Notices posted on the walls were in Italian, and as we entered a pastry shop the customers were all speaking Italian to one another.

From the North End we walked a few blocks to Chinatown, with its Chinese-speaking inhabitants, street signs in Chinese and English, bilingual school, and Chinese stores, clubs, and temples. Because time was getting short we decided not to visit

Dorchester with its large Creole-speaking Haitian population, and we quickly passed through South Boston, where many Hispanic Americans live. We did have time, however, to buy the local bilingual Spanish-English paper and check the times at the local cinema that shows only Spanish films.

We then arrived at my university, which welcomes, in addition to its American student population, students from thirty foreign countries. In the laboratory we set about our day's work on a research project concerning yet one more language actively used in the United States, American Sign Language, the manual-visual language of many deaf Americans.' (F. Grosjean, 1982, pp. 42-3.)



A corner of 'Little Italy'

Being bilingual

Research into bilingualism usually distinguishes between large-scale analyses of multilingual societies ('societal' bilingualism, p. 360) and small-scale analyses of the settings in which bilingual speakers interact ('individual' bilingualism). Several fundamental questions have to be dealt with under the latter heading – in particular, how bilingualism is to be identified and defined, and what its purpose is within the speech community. Both questions have 'obvious' answers, neither of which is adequate.

WHAT IS A BILINGUAL?

The obvious answer is: someone who speaks two languages. But this answer will not suffice. It does not allow for those who make irregular use of one or other language, or those who have not used the language at all for many years (so-called 'dormant' bilinguals). Nor does it allow for the many people who have developed a considerable skill in comprehending a foreign language, but who do not speak it; or those who have learned to read in another language, but who cannot speak or write it. It leaves unclear the relationship between different languages and different dialects, styles, or levels of the same language (as in the case of diglossia, p. 43). And above all, this definition says nothing about the level of proficiency that has to be attained before speakers can legitimately claim to be bilingual.

The notion of proficiency raises some very complex issues. Again, the 'obvious' answer is to say that people are bilingual when they achieve native-like fluency in each language. But this criterion is far too strong. People who have 'perfect' fluency in two languages do exist, but they are the exception, not the rule. The vast majority of bilinguals do not have an equal command of their two languages: one language is more fluent than the other, interferes with the other, imposes its accent on the other, or simply is the preferred language in certain situations. For example, a child of French/English parents went to school and university in France. She became a geography teacher, married a British doctor, and came to live in England, where she had her first child. In general conversation, she could cope with ease in either language; but she found herself unable to teach geography in English, and she was extremely reluctant to discuss baby care in French. In each case she knew the slang, jargon, and phrasing which is naturally assimilated when learning a new skill – but this was available in only one of her languages. Her linguistic competence certainly did not resemble that of monolingual teacher-mothers.

This situation seems to be typical. Studies of bilingual interaction have brought to light several differences in linguistic proficiency, both within and between individuals. Many bilinguals fail to achieve a native-like fluency in either language.

Some achieve it in one (their 'preferred' or 'dominant' language), but not the other. For such reasons, scholars now tend to think of bilingual ability as a continuum: bilingual people will find themselves at different points on this continuum, with a minority approaching the theoretical ideal of perfect, balanced control of both languages, but most being some way from it, and some having very limited ability indeed. However, the notion is a difficult one to make precise, because so many different abilities are involved – in speaking, listening, reading, and writing, as well as in phonology, grammar, vocabulary, and pragmatics (Parts III–V).

WHY USE TWO LANGUAGES?

Here, the 'obvious' answer is: to communicate with people of different language backgrounds. And once again, the obvious answer will not account for the remarkable range of linguistic behaviour that can be observed in adult bilinguals. The 'easy' cases are those where a bilingual meets different monolingual people within a multilingual society, and changes from one language to the other in order to communicate with them. Somewhat more complex are cases where a bilingual chooses to use one language knowing that the listener would prefer the other (for example, electing to be tried in the language of a minority group, in order to embarrass the authorities). Here, language choice is a symbol of national identity.

But such bilingual/monolingual interactions and confrontations account for only a minority of cases. More often, in a multilingual society, bilinguals interact with other bilinguals, and opt to use their different languages in a complex network of interaction that proves extremely difficult to describe and explain. The choice of language will vary depending on the type of person addressed (e.g. members of the family, schoolmates, colleagues, superiors, friends, shopkeepers, officials, transport personnel, neighbours), and on the location or social setting (e.g. a family may vary their language use depending on whether they are at home, in the street, or in church; at the office, someone may talk to a colleague in language X, but over lunch talk to the same person using language Y). Even more complex, and not well understood, are the many cases when a bilingual talks to another bilingual with the same language background, and yet changes from one language to another in the course of the conversation – a phenomenon known variously as 'language mixing', 'language switching', or simply 'code switching'.

Dormant languages

There is no clear indication as to whether there is a limit to human multilingual ability. Cardinal Giuseppe Mezzofanti (1774–1849), librarian at the Vatican, is reputed to have been able to speak 50 languages (most with great fluency), to understand a further 20, and to translate 114. The Victorian diplomat Sir John Bowring (1792–1872) was said to have spoken 100 languages and read another 100. Unfortunately, there is no way of knowing exactly what proficiency level was achieved by these remarkable language learners.

It is in fact highly unusual to maintain proficiency in more than two or three languages at a time. Most multilinguals have a single dominant language, others being 'dormant' to varying degrees. The typical situation can be illustrated by a case study that was made in the field of aphasia (p. 270). It emerged that the person had learned seven languages during his life, but five had become dormant. His mother tongue had been Hungarian. At the age of 4, he moved to Poland, learned Polish, and stopped using Hungarian. When he was 6 he returned to Hungary, and had to relearn Hungarian. At the age of 10, he moved to Romania, using Romanian in school and Yiddish socially. Two years later he returned to Hungary, where in school he learned German, English, and Hebrew. This was followed by six years in Germany, during which time German became his dominant language. At 25, he moved to the U.S., where English became dominant. At the time of the study, only English and Hungarian were regularly used (his wife is Hungarian). The others were dormant, and in some cases almost forgotten. (L. Galloway, 1978.)

Language switching

Switching between languages is extremely common and takes many forms. A long narrative may switch from one language to the other. Sentences may alternate. A sentence may begin in one language, and finish in another. Or phrases from both languages may succeed each other in apparently random order (though in fact grammatical constraints are frequently involved). Such behaviour can be explained only by postulating a range of linguistic or social factors such as the following.

- The speaker cannot express himself adequately in one language, and switches to the other to make good the deficiency. This may trigger the speaker to continue in the other language for a while. An example from a Spanish/English study (G. Valdés Fallis, 1976): *Porque alli hay cashews. You don't like them?* (Because here are some cashews ...). This tends to happen a great deal when the speaker is upset, tired, or otherwise distracted.

- Switching to a minority language is very common as a means of expressing solidarity with a social group. The language change signals to the listener that the speaker is from a certain background; if the listener responds with a similar switch, a degree of rapport is established. The same switch may of course also be used to exclude other people, who do not know the language, from the group.

- The switch between languages can signal the speaker's attitude towards the listener – friendly, irritated, distant, ironic, jocular, and so on. Monolinguals can communicate these effects to some extent by varying the level of formality of their speech; bilinguals can do it by language switching. If two bilinguals normally talk to each other in language X, the choice of Y is bound to create a special effect. A common example is for a mother to tell her child to do something in one language, and then, if the child fails to obey, to switch to another language, thereby showing her stronger emphasis or displeasure.

These are but some of the sociolinguistic functions that language switching can perform. The phenomenon is evidently a complex and subtle one, with speakers usually being totally unaware of the extent to which they have been switching in a conversation. If interrupted, they may even be unable to say which language they were using in their last sentence. Monolinguals often dismiss or satirize language switching, using such pejorative labels as 'Franglais', 'Spanglish', or 'Tex-Mex'. Perhaps because of this kind of criticism, many bilingual people come to be very self-conscious about their switching, and try to avoid it in talking to strangers or on formal occasions. But in informal speech, it is a natural and powerful communicative feature of bilingual interaction, which presents linguists with one of their most intriguing analytical challenges.

Bilingual verbal strategies

Language switching is a major feature of this conversation between two native Americans of Mexican ancestry. *E* is a university teacher, who is working as a volunteer in a day care centre where *M* is a social worker. The Spanish passages are translated in parentheses.

E: What do you dream in?

M: I don't think I ever have any conversations in my dreams. I just dream. Ha. I don't hear people talking: I just see pictures.

E: Oh, they're old-fashioned, then. They're not talkies yet, huh?

M: They're old-fashioned. No, they're not talkies yet. No, I'm tryin' to think. Yeah, there too have been talkies. Different. In Spanish and English both. An' I wouldn't be too surprised if I even had some in Chinese. (Laughter) Yeah, Ed. Deveras. ('Really') (*M* offers *E* a cigarette which is

refused) Tu no fumas, verdad? Yo tampoco. Deje de fumar ('You don't smoke, do you? I don't either. I stopped smoking') and I'm back to it again.

...
M: An' – an' – an' they tell me, 'How did you quit, Mary?' I di'n' quit. I – I just stopped. I mean it wasn't an effort that I made. Que voy a dejar de fumar porque me hace daño o ('That I'm going to stop smoking because it's harmful to me, or') this or tha', uh-uh. It just – that – eh – I used to pull butts out of the – the – wastepaper basket. Yeah. (Laughter) I used to go look in the (unclear speech). Se me acababan los cigarros en la noche ('My cigarettes would run out on me at night'). I'd get desperate, y ahí voy al basurero a buscar, a sacar, you know? ('And there I go to the wastebasket to look for some, to get some, you know?') (Laughter) Ayer

los (unclear speech) no había que no traía cigarros Camille, no traía Helen, no traía yo, el Sr. de Leon ('Yesterday the – there weren't any. Camille didn't have any, Helen, I, Mr. de Leon didn't have any') and I saw Dixie's bag crumpled up, so I figures she didn't have any, y ahí ando en los ceniceros buscando a ver onde estaba la – ('And there I am in the ashtrays looking to see where there was the –') I di'n' care whose they were.

The authors of this study point out that *M*'s language switching is not random. *M* is ambivalent about her smoking, and she signals this through her choice of language. Spanish sentences in this conversation reflect her embarrassment and personal involvement; English is used for more general or detached statements. (J. Gumperz, 1970.)

Bilingual acquisition

There is a widespread popular impression that the children of bilingual parents are linguistically at risk. It is said that their brains will not be able to cope, and that they will grow up 'semilingual', confused, or retarded. There is no justification for this pessimism, as is evident from the confident fluency displayed by millions of bilingual and trilingual children all over the world. By the time these children arrive in school, the vast majority have reached the same stage of linguistic development as have their monolingual peers.

But the process of learning two languages is not exactly the same as the process of learning one (Part VII). Three main stages of development have been noted:

1. The child builds up a list of words, as does a monolingual child, but the list contains words from both languages. It is rare for these words to be translation equivalents of each

other.

2. When sentences begin to contain two or more elements, words from both languages are used within the same sentence, e.g. (from a 2-year-old German/English child) *ein* ('a') *big cow*, *from up in Himmel* ('sky'). The amount of mixing rapidly declines. In one study, at the beginning of the third year, nearly 30% of the sentences contained mixed vocabulary; by the end of the year, it was less than 5%.

3. As vocabulary grows in each language, translation equivalents develop. But the acquisition of separate sets of grammatical rules takes longer. For a while, a single system of rules seems to be used for both languages, until finally the two grammars diverge.

When bilingual children reach this stage, usually in the fourth year, they have become aware that the two languages are not the same. They typically use each language to the parent who speaks it, and not

to the other. Indeed, if one parent uses the language of the other to the child, there may be quite a reaction. The child may be surprised, embarrassed, fail to understand, think it funny, or become upset. An extract from a recent bilingual-acquisition study illustrates this last reaction. Lisa (nearly 4 years old) has an Italian father and a German mother. The father uses a short German sentence to her, to which she replies:

Lisa: No, non puoi. ('No, you can't')

Father: Ich auch – spreche Deutsch. ('I also speak German.')

Lisa: No, tu non puoi! ('No, you cannot.')

(V. Volterra & T. Taeschner, 1978.)

Not surprisingly, it is at this age that children try to play their parents off against each other. One child would always switch into French when he saw his English father approach him purposefully at bedtime!

61 Language planning

Language, sooner or later, proves to be a thorn in the flesh of all who govern, whether at national or local level. Different social groups wish to see their linguistic identities and interests maintained, and may actively – and often violently – campaign for recognition (§9). Governments have to react to these differences, officially or unofficially: they may wish to reconcile them, or try to eliminate them. With the pace of change increasing, and countries becoming more heterogeneous, cosmopolitan, and internationally aware, it is not possible to rely on the slow course of natural linguistic evolution to resolve the many pressures and conflicts that arise. Many governments, accordingly, try to solve their problems by engaging in conscious, principled ‘language planning’, or ‘linguistic engineering’.

Language planning involves the creation and implementation of an official policy about how the languages and linguistic varieties of a country are to be used. Decisions of a fundamental nature may need to be made, especially in the developing countries. But planning issues are to be found in all countries, as people debate such topics as the place of minority languages, the role of an academy in safeguarding standards (§1), the influence of the media on usage (p. 392), the value of spelling reform (p. 215), the avoidance of sexist language (p. 46), the modernization of religious language (p. 384), the need for plain English (p. 378), stylistic standards in publishing (p. 388), and the maintenance of oracy and literacy levels in school (§44).

Language planning is carried out by a variety of government departments and agencies, academies, committees, popular societies, and individuals. Activities range from the political and judicial, at one extreme, to the unofficial and illegal, at the other. Popular attitudes towards planning proposals include everything from complete support, through partial approval, general indifference, and mild antagonism, to total antipathy. Historical, political, economic, religious, educational, judicial, and social factors all have to be disentangled. As a consequence, it is hardly surprising that those who study this subject have not yet reached the stage when they can explain why some planning proposals succeed, whereas others fail. The field of language planning, which dates only from the 1960s, is still largely at the stage of descriptive enquiry, with a continuing need for detailed case studies of the widely differing situations in individual countries; few general theoretical principles have been proposed. However, the area continues to attract a great deal of interest, for both applied and theoretical reasons.

Most obviously, its findings and analyses may

assist those (politicians, educators, lawyers, etc.) whose responsibility it is to make decisions about the development of languages in society, many of whom have no specialized knowledge of linguistic issues. But it also presents a fresh perspective for our understanding of linguistic change (§54). Many linguists have held the view that language change is a natural, spontaneous phenomenon, the result of underlying social and/or linguistic forces that it is impossible or undesirable to tamper with. We should ‘leave our language alone’ (p. 178). However, language planning studies have shown that it is quite possible for social groups to alter the course of a language, and that the question of desirability is a highly controversial one. It is still unclear how far languages can be permanently influenced by social manipulation, but there is now strong evidence that such factors must be taken seriously when considering historical linguistic matters.

Two kinds of language planning

Many analysts recognize a binary classification of language-planning activities, based on whether the changes affect primarily linguistic structure or linguistic use (§13). In *corpus planning*, the changes are introduced into the structure (or ‘corpus’) of a language/variety – as when changes are proposed in spelling, pronunciation, grammar, or vocabulary. In *status planning*, changes are proposed in the way a language/variety is to be used in society (thus altering its status) – as when it is permitted for the first time in law courts or in official publications. The distinction is not clear-cut, because not all kinds of planning activity can be neatly classified in this way, but it is widely encountered in language planning research.

Planning in practice

Selecting the norm

If several languages are spoken within a country, it is usually necessary to choose a single language as a norm for official, educational, and other purposes. It may prove possible to use one of the indigenous languages, but intergroup rivalry may make it necessary to introduce a language from elsewhere as a lingua franca (e.g. Hindi in India, English in Ghana), in which case the relative merits of these languages will need to be debated. In addition, it may be necessary to choose a particular variety of a language (Part II), or to construct a new variety, taking into account such factors as formality, social class, regional dialect, and previous literary use.

Codification

If an indigenous language is chosen, it will need to be developed to meet the demands placed upon it as a

medium of national or international communication. If the language has previously existed only in spoken form, or in an unusual writing system, an alphabet will have to be devised, along with rules of spelling and punctuation. An early aim will be the codification of the pronunciation, grammar, and vocabulary to provide a set of norms for standard use, especially if there is a great deal of local variation.

Modernization

The vocabulary will need to be modernized, to enable foreign material (in such areas as science, medicine, or the consumer society) to be translated in a consistent way. Principles will have to be agreed for the introduction of new terms; for example, should they be loan words, or coinages based on native roots? New styles of discourse may need to be de-

veloped, for use on radio or in the press. Decisions will need to be made about new or uncertain usages, especially in technical contexts (e.g. how to abbreviate scientific terms).

Implementation

The chosen standard will need to be officially implemented, by using it for government publications, in the media, and in schools. Inevitably, it will come to be viewed as the ‘best’ form of language in the speech community (§1), because it will be associated with educational progress and social status. It will also provide the norm for literary style, and may be associated with factors of a nationalistic, cultural, or religious kind. In due course, it is likely to be promulgated as a norm through an official body, such as an academy, or through prescriptive grammars, dictionaries, and manuals of usage.

Inventing an alphabet

One of the first tasks facing explorers, missionaries and administrators, when they encounter a new language, is to devise a means of writing it down. The basic linguistic task is to ensure that each phoneme is represented by a grapheme (§§28, 33). But there are hundreds of possible graphemic shapes: /tʃ/, for example, could be written as *c, ç, c, ch, ts, tch*, and in many other ways. The choice between them involves factors of a psychological, historical, social, and educational kind. Language-planning principles thus need to be borne in mind from the outset.

Political, religious, and other considerations may affect the choice of which kind of alphabet to adopt. A community may wish to 'align' with countries that use Roman, Cyrillic, Arabic, or other alphabets. It may also be important to choose a set of characters that can be used by all the languages throughout an area (as in the case of the All-India Alphabet). Written uniformity is often a powerful political symbol. It is also an economical measure, as it reduces the costs of printing and word processing.

For a language where there are many new sounds, a decision has to be made

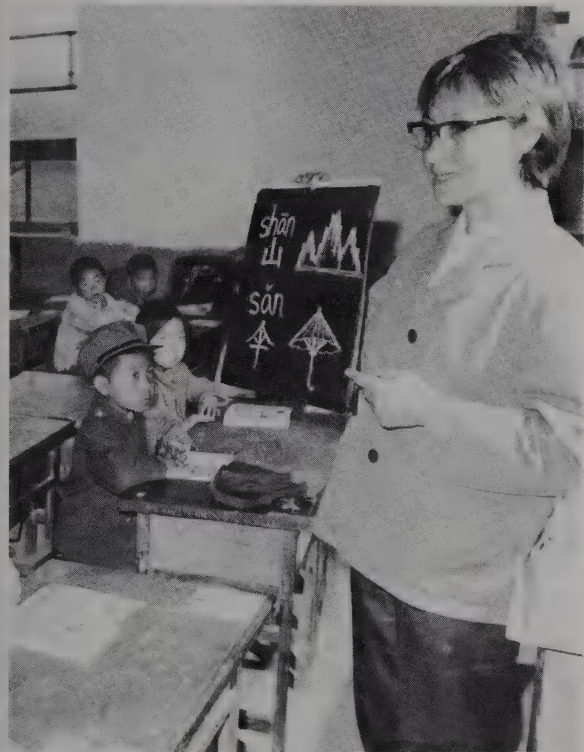
about whether to invent new letters, combine letters into digraphs, or go in for diacritics (such as accents). If the first path is taken, there is still the question of whether the new forms should be adaptations of familiar letters, or totally fresh inventions (as in the use of some phonetic symbols).

Many other questions need to be considered. For example, if some features of a language are only occasionally used to contrast meanings (as often happens with the tones of a tone language, p. 172), should they be systematically represented by some form of symbol, or can

they be ignored? Should grammatical differences be represented in the spelling (as in the case of English *find* vs *fined*)? And how should loan words, with their distinctive phonology, be written down? Even a well-established writing system can be faced with problems of this kind, as in the continuing debate over whether French loans in English should keep their accents (*rôle, cliché, résumé*, etc.).

A planning myth

Probably the best-known myth in the history of language planning is the story that German nearly became the national language of the U.S. in the 18th century, losing to English by only one vote in the legislature (the 'Muhlenberg' legend). In fact, all that was involved was a request, made by a group of Virginia Germans, to have certain laws issued in German as well as in English. The proposal was rejected by one vote, apparently cast by a German-speaking Lutheran clergyman, Frederick Muhlenberg (1750–1801). But the general status of English as the major language was never in doubt. (After S. B. Heath & F. Mandabach, 1983.)



Chinese language planning Some of the most ambitious programmes of language planning ever conceived have taken place in China since the 1950s, with hundreds of millions of people affected. The two main developments have been the provision of a romanized alphabet (*pīn-yīn*), and the promotion of a common spoken language, *pǔtōnghuà*, to provide a means of communication between the various regional languages (p. 312). Reports of early progress in the campaign are illustrated by Datian county in Fujian province, which has over a dozen dialects, and where it was said that 'people separated by a blade of grass could not understand each other'. A group of officials from the north on one occasion needed as many as seven interpreters to make a speech to the people in this area. But after an active teaching campaign, officials using *pǔtōnghuà* were able to address large crowds without any interpreter being needed. The picture shows a *pīn-yīn* class taking place in an experimental school in Ningwu County, Shanxi.

Alphabets in conflict

The Roman alphabet has been so successful that it has begun to threaten the status of other alphabets. A question mark hangs over the future of Chinese characters, now that the romanized system known as *pīn-yīn* has been brought into use (p. 313). And in India, there is a body known as Roman Lipi Parishad (RLP) campaigning for the adoption of the Roman alphabet for the main languages of the country.

The arguments are complex ones, as can be seen from the situation in India.

- The RLP argue that the country cannot afford the luxury of making machines for each of the alphabetic scripts used in India (p. 203). Already, some 70% of mechanical typewriters in India are made for English, and the rest for all the other scripts. Electronic typewriters are made

only for English.

- The RLP point to the need to anticipate the future use of computers, in relation to the country's economy. The Roman script is easier to adapt to electronic screens and keyboards than the various Devanagari scripts. A larger dot-matrix system (p. 193) would be needed, to cope with the diacritics that are used above, below, preceding, and following the Devanagari letters.

- It is claimed that there is a greater demand for material in the Roman alphabet. In Bombay, for example, there was an experiment in which telephone directories were printed using both the English and Devanagari alphabets. There was a demand of 300,000 for the former; but less than 50% of the 5,000 Devanagari copies were sold.

- On the other hand, the

Roman script is not accepted as an alternative by any of the 22 Indian languages recognized by the Sahitya Akademi, the highest body devoted to literature.

- The cultural identity of the main groups in India is very much bound up with the use of an individual alphabet.

Opponents therefore argue that the adoption of Roman script would diminish one of the most important symbols of identity (§§9–10), and perhaps be the thin end of the wedge towards the eventual supplanting of indigenous scripts. These are highly emotive issues, and it remains to be seen whether the economic arguments will be able to make much progress, given the highly charged atmosphere of linguistic debate in present-day India.

Capitals in Frisian?

Frisian, spoken in several dialects in the northern part of Schleswig-Holstein, provides a good example of the way the invention of spelling rules can reflect social forces. In devising an orthography for the language, the question arose as to whether nouns should

be written with a capital letter, as in German, or with a lower-case letter, as in other languages. Support for the capital letter proposal came from those who wished to see Frisian's ties with Germany strengthened. Opposition came from those who wished to

see a more autonomous future for Frisian. The issue remains unresolved, with both groups arguing the relative merits of each position, and producing publications that follow their favoured orthographic principle. (After A. Walker, 1984.)

Educational policy

One of the most important ways in which a country's language policy manifests itself is in the kind of provision it makes for the linguistic education of children. Which languages and language varieties are to be taught in schools, from what age, and for how long? These questions are only partly answerable with reference to the field of foreign-language learning and teaching (§62); far more fundamental are factors arising out of government policy and popular opinion, where a wide range of positions is found. Languages can be actively promoted, passively tolerated, deliberately ignored, positively discouraged, and even banned.

The results of active promotion are most clearly shown by the progress of English towards world-language status (§59). Many countries encourage the teaching of English in school, often at the expense of other languages: a recent case is Spain, where the early 1980s saw the widespread replacement of French by English as the first foreign language. At the other extreme, there are many examples of languages receiving official disapproval: a clear case is the reluctance of several countries to teach German since the Second World War (e.g. in France, Italy, Israel).

The fortunes of minority languages are closely bound up with the political aspirations of their speakers, and the extent to which the government of the day perceives these to be a threat. Again, the whole gamut of official attitudes can be found. There may be a strong local government policy of language maintenance (p. 360), as happens with the teaching of Welsh in Wales. On the other hand, there are many instances of languages being discouraged (e.g. Gaelic in 16th-century Ireland) or banned (e.g. Catalan in Franco's Spain).

Official attitudes today are generally sympathetic, with an increasing number of countries supporting (at least in principle) a bilingual or multilingual educational policy. In Europe, an EEC Council Directive has asked member states to promote the 'teaching of the mother tongue and culture of the country of origin' to all immigrants (p. 370). Progress varies greatly from country to country, however, with some countries (such as Britain) providing immigrants with relatively little by way of mother-tongue education, and others (such as Sweden) providing a great deal (p. 37). Conflict is never far away, as progress towards linguistic recognition inevitably proves to be too slow for some people, and too rapid for others. Vocal and vigorous objections to educational linguistic policies are thus commonly encountered all over the world. Regrettably, only the most violent tend to attract international attention.

BILINGUAL PROGRAMMES

There has been an extremely rapid growth in bilingual education programmes, with reference to minority languages, in recent years. Over \$1,000 million have been spent in this area in the USA alone. However, the reasons for introducing such programmes vary greatly. In some countries, the aim is to find a single language capable of unifying the nation (e.g. Bahasa Indonesian). In the USSR, the teaching of Russian to speakers of regional languages promotes ideological assimilation and national solidarity. The teaching of English in many African countries ensures greater access to world opportunities. The teaching of local African languages to minority groups in South Africa during the 1950s and 1960s was felt to be a way of consolidating the divisions within that society in relation to the Homelands policy of that time. In the USA, the primary concern is to guarantee the civil rights and equal opportunities of minority groups – rights that have been confirmed several times in the US Supreme Court since the 1970s. In all cases, it should be stressed, bilingual education is not simply a matter of *language* learning: it involves the acquisition of all the knowledge and skills that identify the minority culture.

Maintenance vs transitional

Bilingual programmes have always attracted controversy. Two main views are argued (with many variant positions). On the one hand, maintaining the mother tongue is said to develop a desirable cultural diversity, foster ethnic identity, permit social adaptability, add to the psychological security of the child, and promote linguistic (and perhaps even cognitive) sensitivity. To achieve this, bilingual instruction needs to be retained throughout the whole of a child's school career. On the other hand, it is pointed out that a permanent dual-language policy may foster social divisions and narrowness of outlook (through ethnocentric churches, media, schools, etc.); the children may become 'trapped' in their mother tongue, and fail to achieve in the majority language, thus reducing their access to prosperity; and where there is inadequate teacher preparation, timetabling, and materials, they may fail to achieve in their mother tongue also. They should therefore be educated in their mother tongue only until they are able to continue in the majority language. Although many bilingual programmes subscribe in principle to the former, 'maintenance' view of bilingual education, in practice the majority (in the USA and Britain, at least) are of the latter, 'transitional' type – though often accompanied by maintenance elements (e.g. in literature, music, dance) in a continuing parallel teaching programme.

Positive policies

In 1982, the Commission of the European Communities to the Council of Europe asked each EC member country to report on the progress it had made in providing education for the children of migrant workers. Several signs of progress were apparent. Special reception classes have now been created in many countries, and a number of types of provision exist at primary level (there is much less at secondary level). In France, for example, the language and culture of origin may be taught to immigrant primary school children for three hours each week, under the heading of 'environmental studies', as long as they come from countries with which France has a bilateral agreement. In Belgium, when the number of immigrant children in a nursery exceeds 30%, the number of these children is multiplied by two in order to establish the quota of nursery teachers required. (See also p. 37.)

The 7.44 from Mons to Brussels

Belgium has also taken up an idea first tried out on a commuter train from Brighton to London – language learning by train. In May 1984 the last carriage of the 7.44 a.m. Intercity train from Mons to Brussels (a French-speaking area) was reserved for passengers who wished to learn Dutch or English. They paid their normal fare plus a small fee for the tuition, given by teachers trained by the Belgian Centre d'Animation en Langues. The venture has proved to be extremely successful. By the beginning of 1987, there were four 'language trains' in operation, with more routes being considered.

These views about the nature of bilingual education continue to be emotionally debated, for they reflect fundamentally different conceptions of the kind of nation people want to see around them. Maintenance views anticipate a society that is characterized by cultural pluralism and linguistic diversity; transitional views look towards a culturally homogeneous society, characterized by minority assimilation and language 'shift' (p. 360). However, the issues are more complex than this simple opposition suggests, for there are many kinds and degrees of support for both positions, and compromise views have also been proposed.

Case studies show that the notion of 'language loyalty' is never a simple one. For example, within an immigrant group, some members may wish (with varying degrees of conviction) to have their children retain their linguistic identity; others may wish them to 'shift' to the majority language as quickly as possible in order to participate fully in the new society; and yet others may wish to have them use their new language in public, but to retain their mother tongue for a range of private occasions (e.g. home, church, club). There are many further possible positions, reflecting the different influences of racial, geographical, political, cultural, economic, religious, and other factors. Given the emotional and volatile state of mind with which people approach the problem, it is impossible to say whether a genuine 'integrated pluralism' can be achieved in modern educational programmes. But the need to counter this inherent subjectivity makes it even more desirable to carry out detailed and objective studies of linguistic attitudes, within the field of language planning.

LANGUAGE IMMERSION

In Quebec, in the 1960s, a new kind of bilingual education programme was introduced, which has since proved to be popular and successful. The proposal came from the English-speaking minority, who wished to make their children proficient in a second language, French, in order to cope with a society where the role of French was becoming increasingly dominant. The idea was to arrange for the whole of their children's first encounter with schooling to be in the second language (§62) – a programme of 'immersion'. The children would speak in their mother tongue to a bilingual teacher, who would reply in the second language. Gradually, the children would come to use the second language themselves. Then, at a later stage, English would be introduced into the classroom.

After several years of experimentation, two patterns have come to be established. 'Primary' immersion starts at kindergarten, entirely in French. Gradually an element of English is introduced, until by mid-primary level the children are taught 60% in English and 40% in French. 'Secondary' immersion usually starts in the first year of secondary school with a booster year in which all teaching is done in French. This is followed by a 'post-

immersion' teaching programme which follows the proportions of the primary school.

The approach continues to attract support. The children acquire a much higher level of competence than they would through traditional teaching methods (though this is still a long way from native-like proficiency, and doubts have been expressed over how effective the children's linguistic skills are outside of school). Their attitudes towards French-Canadian people tend to be more positive (though evidence is mixed on this point). And their mother-tongue abilities do not seem to suffer from the experience, but may even improve in certain respects. However, for this last outcome to be certain, there needs to be a supportive and strong first-language environment in the community. With speakers of minority languages where the home linguistic situation is weak or unstable, an immersion programme would be unlikely to result in maintenance, but would probably hasten the process of assimilation to the majority language.

A French immersion class taking place at a junior school in Montreal.



62 Foreign language learning and teaching

To many people, the most obvious way of reducing some of the power of the language barrier (§56) is to promote the teaching and learning of foreign languages in a variety of child and adult educational settings. This widely practised approach is undoubtedly very successful, as can be judged by the millions who succeed in mastering a foreign language, even to levels that are comparable to those achieved by 'natural' bilinguals (§60). English-speaking monoglots often express amazement at the linguistic proficiency displayed by foreigners – not least, the standards routinely achieved in English – and conclude that foreigners must have a 'gift' for language learning, which they lack, or that English must be a particularly easy language to learn. There is no basis for these suggestions. A few gifted language learners do exist (p. 362), but most people arrive at their fluency only as a result of hard work, expended over a considerable period of time.

On the other hand, there is also a great deal of educational failure and lack of achievement in the language-learning field, which also requires explanation. Many people, from a variety of linguistic backgrounds, are acutely embarrassed by their linguistic inadequacy when travelling abroad, and wish to overcome it. Many have tried to learn a foreign language, but have made little progress in it. 'I was never very good at languages in school' is a widely heard complaint. It is therefore important to study the factors that govern success or failure in this field – such as the soundness of teaching methods, the attitudes and motivation of the learner, the availability of time and opportunities to learn, the adequacy of resources, and the chance to put the language to active use. It is evidently a complex situation which, in view of the enormous amounts of time and money expended within the foreign language 'industry' all over the world, warrants careful investigation. And in recent years, the subject of foreign language teaching and learning has in fact developed to become today the largest domain of enquiry within applied linguistics (§65).

TEACHING AND LEARNING

The use of two headings for this section, *foreign language teaching (FLT)* and *foreign language learning (FLL)*, reflects an important development in the modern study of the subject. FLT was at one time thought to be exclusively a matter of teaching techniques; it was felt that, if teaching was above a certain minimum level of efficiency, learning would automatically follow. Teaching was the active skill; learning, the passive one. Today, the active role of the learner is an established principle. It is recognized that there are

important individual differences among learners, especially in personality and motivation, that can directly influence the teaching outcome. In this view, people are seen to be largely responsible for their own progress. Research is therefore now directed not only at the way teachers teach, but also at the way learners learn.

The term 'acquisition' (Part VII) is sometimes used to replace 'learning' in this context, when the emphasis is on the natural, unconscious way in which a learner can assimilate a foreign language (as in bilingual contexts, or when using one of the 'natural' approaches to FLT, p. 373). In several approaches, however, 'acquisition' and 'learning' are carefully distinguished: the former is then restricted to what takes place in 'natural' learning situations; the latter to what takes place in classrooms when following a structured course with a teacher.

FOREIGN AND SECOND

Several terminological distinctions are drawn within this field. A person's 'mother tongue' or 'first language' (L1) is distinguished from any further languages that may be acquired (L2, L3, etc.). The term 'foreign language' is popularly used to refer to any language that is not a native language in a country; and 'second language' is also commonly used in this way. But many linguists distinguish between 'foreign' and 'second' language use, recognizing major differences in the learning aims, teaching methods, and achievement levels involved.

A *foreign language (FL)*, in this more restricted sense, is a non-native language taught in school that has no status as a routine medium of communication in that country. A *second language (SL)* is a non-native language that is widely used for purposes of communication, usually as a medium of education, government, or business. English, for example, has foreign language status in Japan, but second language status in Nigeria. The latter term is also used with reference to immigrants and indigenous groups whose L1 is a minority language: in the USA, for example, English is a second language for millions of immigrants from a wide range of language backgrounds (p. 361) as well as for speakers of American Indian languages.

Language – and culture

Today, learning a foreign language is likely to mean learning a great deal about the foreign civilization and culture at the same time. Books and materials increasingly incorporate information about such matters as the physical geography, economy, history, politics, religion, social institutions, educational system, literature, art, music, science, technology, media, and sport, as well as about daily life-style, popular beliefs, folk customs, and social values. The material is inevitably very selective; but it helps the learner to become more fully aware of differing ways of behaviour, and reduces the risks of culture shock, foreigner stereotyping, and intolerance.

A cultural frame of reference becomes increasingly important the greater the 'distance' between languages. To succeed in an oriental language, for example, a westerner needs the support of several of the above studies. But a cultural perspective is needed even with 'nearby' languages, in order to grasp the social significance of a linguistic feature (e.g. slang, accents, or terms of address, p. 44) or to follow the subject matter of daily conversation. For example, in every country, knowing the names of the most famous men and women of a culture, whether they are political figures, folk heroes, or media stars, is a major factor in really understanding the meaning of a newspaper report, a debate on television, or the course of conversation.

Boulangerie = bakery?

At a purely linguistic level, French *boulangerie* translates into English as *bakery*. However, there is no cultural equivalence between the two notions: in many French villages, the bakery acts as a social centre in ways its English counterpart does not.

Why learn foreign languages?

The question requires an answer, in a world where we frequently find indifference or hostility expressed towards foreign languages and foreign people, where teaching resources are limited, and where other subjects clamour for extra slots within the school timetable. The criticisms come mainly from within the English-speaking world, where FLT has often been attacked on the grounds that the time would be better spent on science, mathematics, or the mother tongue. Many people think that FLT is unnecessary in a world where an increasing number of people understand English (§59).

Moreover, even in places where FL instruction is provided, the use of traditional teaching methods has meant that many pupils find FL work boring and difficult. In British secondary schools, for example, 60% drop their FL after three years, and even those who pass their exams are often unable to use the language for everyday purposes. Such facts fuel the arguments of those who think that FLT should become a minority subject or even be dropped from the curriculum altogether.

Arguments of this kind are rarely encountered in non-English-speaking countries, where there is a great demand for FL courses. In West German secondary schools, for example, all pupils take a foreign language to an advanced level. In France

the figure is around 85%. In Britain, the figures are much lower, but the climate is slowly changing. In the 1960s, only 20% of schoolchildren took a foreign language; in the early 1980s, well over 80% were taking one for up to three years. In the USA, a Commission on Foreign Language and International Studies was set up in 1978 to consider the FL situation: it concluded that American incompetence in FLL had reached the stage where it threatened national security and economic development (e.g. only 2% of American scientists could understand material published in Russian). Several recommendations have since been made to improve the status and facilities for FL work, at both school and college levels. Extra funding has been allocated, both federally and privately. Some states (e.g. Michigan) have already mandated an FL component as part of high school certification.

In Europe, the Committee of Ministers of the Council of Europe has recommended that FLT in schools should be increased and diversified, that children should learn more than one foreign language if possible, that they should start as early as possible, and that facilities should be made longer-term. There should be a single language policy for a school, in which all language work (L1 and L2) should be integrated. In the 1980s, several language associations and committees have reiterated this plea, though limited funding has led to limited implementation.

Which language?

In most non-English-speaking countries, English is first choice (§59). In English-speaking countries, this position is usually taken by French, which has a highly prestigious literature and culture, and which has been used as an international lingua franca since the 18th century (e.g. the official languages of the Council of Europe are English and French). In Britain, the proximity of France and numerous points of historical connection have led to the concentration on French in schools – and, once a subject is established, the need to provide continuity of teaching makes it difficult to displace.

After French, Spanish and German both have substantial followings in schools, the former especially in the U.S. because of the proximity of Spanish-speaking countries and the high level of immigration from these areas. Each language has considerable international status. Spanish is the world's third international language, being used in over 20 countries. German is an important lingua franca throughout much of Eastern Europe.

It is extremely difficult to predict which languages children will need most in adult life. Patterns of language choice in the various settings of adult education are quite different from those found in school. A recent BBC TV Italian series was watched by 1.8 million people, and a Russian series by about 1 million people, though neither language is much taught in British schools. Trade and tourism seem to be particularly influential factors.

Answering the critics

The FLT world has not been slow to meet the challenge of the critics. An enormous outpouring of intellectual and practical effort has been devoted to overhauling the traditional machinery of language teaching. At the same time, the rationale for FLL has come to be publicly defended.

- FLL is no longer a luxury, in an international world. It is a necessity, if a country is to exercise a role in world affairs. Especially in Europe, it is seen as a criterion of responsible international citizenship. It is a strength to be able to meet people from other countries on equal linguistic terms.

- FLL has an essential role in preparing children to cope with the new perspectives brought about by a rap-

idly changing society – not only abroad, but within their own community. It can help overcome their insecurity and develop their confidence as they face up to the demands of social and personal relationships not usually encountered in a mother-tongue context.

- There is no doubt that language is prerequisite for full mutual understanding and cooperation between nations. FLL promotes understanding, tolerance, and respect for the cultural identity, rights, and values of others, whether abroad, or at home in minority groups. People become less ethnocentric, as they come to see themselves and their society in the eyes of the rest of the world, and encounter other ways of

thinking about things. Language learning, as well as travel, broadens the mind.

- Success in the international world of commerce and industry is becoming more and more dependent on FLL (§56). Young people now find they have more career opportunities when they know a foreign language and are increasingly moving to localities where some degree of FL competence is required of them. This mobility is no longer something that affects only executives but is found with all grades and categories of personnel, such as marketing staff, legal specialists, secretaries, and technicians.

- FLL is becoming increasingly important as unemployment and reduced

working hours add to people's leisure time. Tourist travel is a major motivation, but many have come to find FLL a satisfying leisure activity in its own right, enabling them to have direct access to the world of foreign cinema, radio and television, vocal music, literature, and the history of ideas.

- FLL provides a valuable perspective for those whose interest is primarily in the mother tongue. Ultimately, the only way to appreciate the unique identity and power of a language is by contrasting it with others.

- FLL is a primary educational right, which should be made available to all people, whether they avail themselves of it or not.

THE COUNCIL OF EUROPE

Recommendation R (82) 18 of the Committee of Ministers of the Council of Europe, adopted in September 1982, is a clear statement of the issues involved in the teaching and learning of modern languages. The statement recognizes three general premisses, following these by a set of general and

specific recommendations to do with language learning in schools and higher education, language learning by migrants and their families, initial and further teacher training, and measures of international cooperation. The premisses, and the statement of general measures to be implemented, are given below.

The Committee of Ministers ...

Considering that the rich heritage of diverse languages and cultures in Europe is a valuable common resource to be protected and developed, and that a major educational effort is needed to convert that diversity from a barrier to communication into a source of mutual enrichment and understanding;

Considering that it is only through a better knowledge of European modern languages that it will be possible to facilitate communication and interaction among Europeans of different mother tongues in order to promote European mobility, mutual understanding and co-operation, and overcome prejudice and discrimination;

Considering that member states, when adopting or developing national policies in the field of modern language learning and teaching, may achieve greater convergence at the European level, by means of appropriate arrangements for ongoing co-operation and co-ordination of policies;

Recommends the governments of member states, in the framework of their national educational policies and systems, and national cultural development policies, to implement by all available means and within the limits of available resources, the measures set out in the appendix to the present recommendation.

Measures to be implemented concerning the learning and teaching of modern languages

General measures

1. To ensure, as far as possible, that all sections of their populations have access to effective means of acquiring a knowledge of the languages of other member states (or of other communities within their

own country) as well as the skills in the use of those languages that will enable them to satisfy their communicative needs and in particular:

1.1. to deal with the business of everyday life in another country, and to help foreigners staying in their own country to do so;

1.2. to exchange information and ideas with young people and adults who speak a different language and to communicate their thoughts and feelings to them;

1.3. to achieve a wider and deeper understanding of the way of life and forms of thought of other peoples and of their cultural heritage.

2. To promote, encourage and support the efforts of teachers and learners at all levels to apply in their own situation the principles of the construction of language-learning systems (as these are progressively developed within the Council of Europe 'Modern languages' programme):

2.1. by basing language teaching and learning on the needs, motivations, and characteristics and resources of learners;

2.2. by defining worthwhile and realistic objectives as explicitly as possible;

2.3. by developing appropriate methods and materials;

2.4. by developing suitable forms and instruments for the evaluation of learning programmes.

3. To promote research and development programmes leading to the introduction, at all educational levels, of methods and materials best suited to enabling different classes and types of student to acquire a communicative proficiency appropriate to their specific needs.



The Committee of Ministers of the Council of Europe meeting in Strasbourg

Successful language learning

There is as yet no single theory that can account for the diversity of FLL behaviour, and explain why some learners succeed in their task, whereas others fail. A hint of the complexity of the task facing researchers can be obtained from the résumé of relevant factors on this page.

- It is unclear how far there may be a genuine *aptitude* for FLL. Given sufficient motivation, intelligence, and opportunity, anyone can learn a language; but the task is likely to be less onerous if certain general personal qualities are present. Among these, it has been suggested, are empathy and adaptability, assertiveness and independence, with good drive and powers of application. People need to be capable of assimilating knowledge in difficult conditions. They should have a good memory, and be good at finding patterns in samples of data (non-linguistic as well as linguistic). Of particular importance is an ability to detect phonetic differences (e.g. of stress, melody, vowel quality) – something which can manifest itself in other domains, such as drama or music.

- Students can benefit from being taught to 'learn how to learn' foreign languages – useful strategies, such as silent rehearsal,

techniques of memorization, and alternative ways of expressing what they want to say (paraphrase). They may also benefit from training in the kinds of basic skills involved in FLL, such as those identified above.

- Exposure to the foreign language needs to be regular – a problem which particularly affects FLT in schools, where timetable pressure, examinations, and holidays may lead to discontinuities. Whenever possible, the aim should be to teach 'little and often'. Too much exposure at any one time can be as ineffective as too little, readily leading to fatigue and superficial assimilation ('quickly learned is quickly forgotten').

- Exposure to native users of the foreign language is a real benefit, through the use of authentic materials (e.g. audio tape, video tape, newspaper library) and, in school, foreign language teaching assistants. An important dimension is the use of educational visits abroad – but these need to be properly prepared and followed up in class, and the experience should enable children to be genuinely integrated within the FL environment. Out-of-school activities should be encouraged, such as pen friends, private exchanges, and weekend culture simulation courses.

- Teaching objectives need to be carefully selected and graded, to permit realistic progress with underachievers, as well as with the gifted. Different kinds of objectives should be explored. Are all four linguistic modes to be introduced (speaking, listening, reading, writing), and if so, in which order? Might limited competence in two languages be better than an excellent command of one? Should the learners be exposed to only certain varieties (§11) of the foreign language? Should the focus be on communicative skills or on formal techniques (such as translation) (p. 374)?

- Teaching methods need to be flexible to suit the needs of individual children (e.g. their interests and cognitive skills) and to make best use of classroom design and resources (e.g. the availability of audio-visual aids). There is no single 'formula' for successful FLT (p. 374). There should be opportunities for teachers to interact with children in groups, pairs, and individually. If classes are too big, it will be impossible to obtain genuine participation and practice.

- There should be an opportunity to take more than one foreign language in school, to follow them to an advanced level, and to con-

tinue with them after school. Special arrangements may need to be made, involving interschool and local government cooperation. New combinations of subjects, more suited to the needs of modern society, should be introduced, such as FL + science, FL + economics.

- Motivation is a central factor. Students need to see that foreign languages are taken seriously by those whom they respect, especially in the community at large (encouragement from local employers, civic interest in town twinning, etc.). It is critical to take the language out of the classroom, so that students see its use in a native community. Moreover, motivation applies to teacher as well as student: it is difficult to teach enthusiastically if it is known that most of the class are going to drop their language at the earliest opportunity, or that society places little store by it.

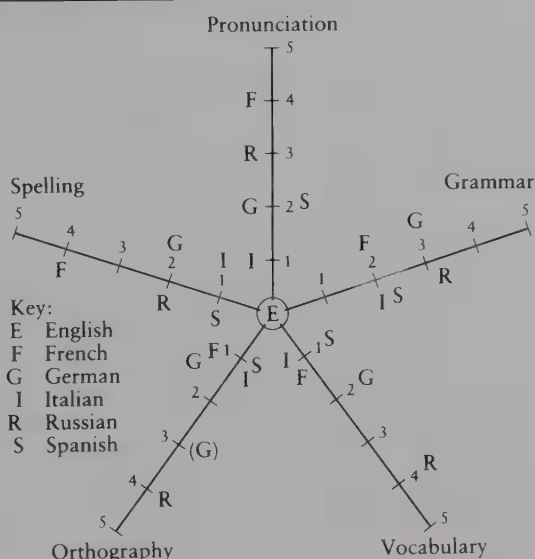
- Teacher training needs to continue at in-service as well as initial levels. Teachers need to be technically competent, that is they are able to teach *in* the foreign language, if required. They need to keep themselves up-to-date with the latest research into their language and society, as well as in FLT techniques.

When should L2s be taught?

Traditionally, L2s have been introduced at a relatively late stage of development – usually around the age of 10 or 11. In recent decades, the benefits of an early start have been urged, given the natural way in which young children learn language (cf. critical periods, p. 263), the positive results of immersion programmes (p. 367), and the likelihood that they can devote more time to the task. Several experimental FL programmes have been tried out in primary school, and their effectiveness evaluated.

The results have been mixed. FLT with young children can work well, but only if learning conditions are optimal. The teaching objectives need to be limited, graded, and clearly defined. Specialist teachers need to be available. Methods need to be devised that are appropriate to the interests and cognitive level of the children. And the transition to secondary school needs to be borne in mind, because a lack of continuity can negate previous work. Unfortunately, these conditions do not often obtain, and many early FLT projects have achieved disappointing results (the greatest success coming in second language situations, such as in Africa).

However, even if formal FLT is not introduced, it is still possible to develop young children's general language awareness – to sensitize them towards the existence and variety of the languages of others as well as of their own language – and to foster the enjoyment that can come from being in contact with foreign languages. Children can learn FL games, songs, rhymes, sayings, everyday greetings, and many basic notions (e.g. counting, parts of the body, telling the time). In particular, if pupils from other language backgrounds are present, the multilingual setting can be used to generate a mutual linguistic and cultural interest. The experience can provide a valuable foundation for the systematic study of foreign languages at later ages.



Interlingual distance The structural closeness of languages to each other has often been thought to be an important factor in FLL. If the L2 is structurally similar to the L1, it is claimed, learning should be easier than in cases where the L2 is very different. However, it is not possible to correlate linguistic difference and learning difficulty in any straightforward way (p. 372), and even the basic task of quantifying linguistic difference proves to be highly complex, because of the many variables involved.

The diagram shows one analyst's informal estimate of the structural distance between English and several other languages. Pronunciation, spelling, choice of alphabet (orthography), grammar, and vocabulary are each rated separately, using a scale from 1 (least distance) to 5 (greatest distance). On this basis, Italian comes closest to English (scoring 6), followed by Spanish (7), German (10), French (12), and Russian (15). German would score higher if Gothic script were taken into account (3 rather than 1 along the orthography scale). (After C. V. James, 1979.)

Theories of language learning

As with the study of first language acquisition (p. 234), several theories of the nature of the FLL process have been propounded, with similar issues being addressed. Indeed, comparisons are frequently made with the way children learn their first language (L1), as a means of providing hypotheses to guide FL research.

THE BEHAVIOURIST VIEW

A great deal of language learning and teaching in the 1950s and 1960s was influenced by the tenets of behaviourism (pp. 234, 408). In this view, FLL is seen as a process of imitation and reinforcement: learners attempt to copy what they hear, and by regular practice they establish a set of acceptable habits in the new language. Properties of the L1 are thought to exercise an influence on the course of L2 learning: learners 'transfer' sounds, structures, and usages from one language to the other. A widely used typology distinguishes two kinds of transfer. Similarities between the two languages cause 'positive transfer': it proves acceptable to use the L1 habits in the L2 setting (e.g. the assumption that the subject goes before the verb satisfactorily transfers from English to French). Differences cause 'negative transfer', generally known as 'interference': the L1 habits cause errors in the L2 (e.g. the same assumption about subject-verb order does not satisfactorily transfer into Welsh). Typical interference errors include: *I wait here since 3 hours* (from French) and *How long must my hand in plaster stay?* (from German). Problems of negative transfer are thought to provide a major source of FLL difficulty. The main aim of behaviourist teaching is thus to form new, correct linguistic habits through intensive practice, eliminating interference errors in the process.

There are several problems presented by this account of FLL. Imitation alone does not provide a means of identifying the task facing learners, who are continually confronted with the need to create and recognize novel utterances that go beyond the limitations of the model sentences they may have practised. Nor does imitation suffice as an explanation of the way learners behave: not many of the errors that are theoretically predicted by the differences between L1 and L2 in fact occur in the language of learners; and conversely, other errors are found that seem unrelated to the L1. In a frequently-cited early study (H. C. Dulay & M. K. Burt, 1973), 145 Spanish-speaking children aged 5 to 8 were observed while learning English. Six structures were selected and the error patterns analysed. It emerged that interference errors (such as *They have hunger* from *Ellos tienen hambre*) accounted for only 3% of the errors made. The majority of the errors (85%, with a further 12% unclear) were thought to resemble those that appear in the course of L1 acquisition (e.g. *They hungry*). Analyses of this kind have proved to be

controversial (largely because of difficulties in validating the error analysis – see below), but their general conclusion is widely supported. The systematic comparison of L1 and L2, in order to predict areas of greatest learning difficulty – a procedure known as *contrastive analysis* – explains only a small part of what goes on in FLL.

THE COGNITIVE VIEW

The main alternative to the behaviourist approach sees as central the role of cognitive factors in language learning (pp. 234–5). In this view, learners are credited with using their cognitive abilities in a creative way to work out hypotheses about the structure of the FL. They construct rules, try them out, and alter them if they prove to be inadequate. Language learning, in this account, proceeds in a series of transitional stages, as learners acquire more knowledge of the L2. At each stage, they are in control of a language system that is equivalent to neither the L1 nor the L2 – an *interlanguage* (L. Selinker, 1972).

Error analysis plays a central role in this approach. Errors are likely to emerge when learners make the wrong deductions about the nature of the L2, such as assuming that a pattern is general, when in fact there are exceptions. The errors provide positive evidence about the nature of the learning process, as the learner gradually works out what the FL system is. For example, learners who say *vous disez* instead of *vous dites* 'you say' have assumed, wrongly, that the *-ez* ending found after *vous* in most other French verbs (*marchez, donnez*, etc.) also applies to *dire* 'say'. The error in this case indicates that a faulty generalization (or analogy, p. 234) has been made.

Since the 1970s, cognitive approaches to FLL have been in the ascendant, and error analysis in particular has attracted a great deal of attention. However, the analysis of errors turns out to be a highly complex matter, involving other factors than the cognitive. Some errors are due to the influence of the mother tongue, as contrastive analysis claims. Some come from external influences, such as inadequate teaching or materials. Some arise out of the need to make oneself understood by whatever means possible (e.g. replacing words by gestures). Moreover, not all errors are equally

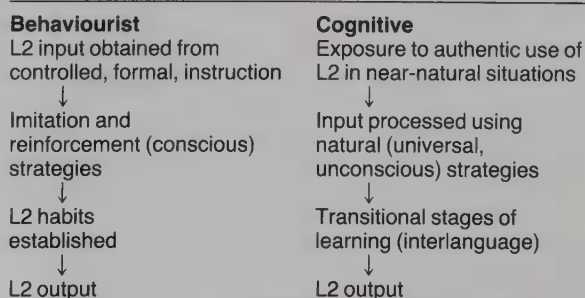
The monitor model

In the 1970s, an influential view of the relationship between acquisition and learning was propounded by the American linguist, Stephen Krashen (1941–). This account recognizes a sub-conscious, natural process ('acquisition'), which is the primary force behind FL fluency. 'Learning' is seen as a conscious process that monitors, or edits, the progress of acquisition and guides the performance of the speaker. Its role is – or should be – minor, being used only to correct errors in speech or to give speech a more 'polished' appearance.

In fact, traditional FLT provides learners with a great deal of conscious knowledge of linguistic rules. As a result, they may come to rely too much on this knowledge, so that it actually gets in the way of their ability to communicate. People who worry too much about making a mistake, and who thus are reluctant to use their FL ability, are in this view 'overusing' their monitor.

Theories of this kind are inevitably controversial, given our limited knowledge of the psychological processes involved in speech production. There is plainly a need to take into account the distinction between conscious and subconscious awareness in language processing, and between formal and informal settings, but the way these variables interact, it has been argued, is more complex than anything which has so far been proposed.

Two models of foreign language learning



systematic, disruptive, or unacceptable. Errors of vocabulary, for example, are less general and predictable than errors of grammar, but they are usually more disruptive of communication. Some errors, indeed, become so acceptable that they do not disappear: they become 'fossilized' – tolerated by learners (insofar as they are conscious of them) because they do not cause major problems of communication (e.g. the pronunciation errors that constitute a foreign accent).

Above all, error analysis is complicated by the fact that it is often unclear what the learner intended to say, and thus how to identify the error that has been made. For example, does *The lady eat it* display an error of the noun (*ladies*) or verb – and if the latter, should the correct form be *eats*, *is eating*, *ate*, or some other variant? And even if we assume that the speaker intended to say *eats*, we are still left with the question of whether the error is one of pronunciation (the speaker having difficulty with the [ts] cluster) or grammar – and, within the latter heading, whether the difficulty is one of morphology (lack of awareness of the ending) or syntax (lack of awareness of number agreement between subject and verb) (§16).

Despite the difficulties, research into errors continues to provide a fruitful way of investigating the processes underlying FL acquisition. However, as with contrastive analysis, the approach cannot provide a complete explanation. Most FLL settings do not constitute the kind of 'pure', natural linguistic situation that is presupposed by the cognitive approach, but contains elements of formal teaching, in which learners are systematically introduced to fragments of the L2 (e.g. one tense at a time). To understand the way languages come to be learned in these 'mixed' settings, it is thus proving necessary to devise more sophisticated models, which focus on the relationship between the processes of natural acquisition and those of formal learning, and which pay adequate attention to the needs and aims of the students, and to the nature of the social setting in which FLL interaction takes place.

The natural order hypothesis

During the 1970s, several studies drew attention to the fact that different FL learners make similar errors, regardless of their language background. Such errors as *I going* and *this a book* were observed in Spanish, Russian, Japanese, and several other learners of English. The conclusion was drawn that there must be a universal creative process at work; learners were said to be following a natural 'internal syllabus' (as opposed to the 'external' syllabus of the classroom). Several of the errors closely resembled those made by children learning their mother tongue. Analogies were therefore drawn with the 'language acquisition device' postulated by some child-language analysts (p. 234), and a parallel was proposed between the

natural order of L1 acquisition and the way people acquired a foreign language.

Particular attention was focussed on the way in which foreign learners of English used a set of grammatical morphemes (§16), such as *-ing*, *ed*, and plural *-s*, which L1 studies had already found to be acquired in a certain order (p. 242). The errors learners made with each item were counted, and the morphemes were ranked on the basis of how accurately they were used. This ranking was then assumed to reflect the order in which the learners were acquiring these morphemes. Similar orders were found in several different FLL contexts, in both spoken and written language, thus supporting the idea of a natural, universal sequence of acquisition

that was independent of the influence of the learner's first language.

However, criticisms have been made of this kind of approach. Order of acquisition as based on a cross-sectional study of speech samples may not correspond to the order of acquisition that would emerge from a longitudinal study (p. 229). The findings are of limited generality: only a very small number of grammatical items have been analysed, and there have been very few studies (most of which to date have focussed on English, so that it is unclear how genuine the claimed universals are). And differences in acquisition order have already begun to emerge, casting doubt on the universality of the natural order hypothesis.

Child vs adult acquisition

The similarities between L1 and L2 acquisition errors are striking, but there are many differences between the two kinds of learning situation, which makes it difficult to see a parallel between adult foreign language learners and young children acquiring their mother tongue.

- The adult has a set of formed cognitive skills and strategies that should make the FLL task easier (e.g. the ability to memorize, imitate, and use dictionaries). A major asset is the ability of most adults to read and write.

- Adults already have a language, and this inevitably reduces their motivation to learn another beyond minimal levels. Migrants, for example, generally learn only enough to enable them to survive in their new country.

- There are several emotional differences between adults and children when it comes to learning. In particular, adults are more self-conscious about FLL, and are less able to assimilate

cultural differences.

- Adults meet a greater variety of L2 situations than do children learning their L1. Children's needs are also very different (e.g. they need language for play and emotional expression). Accordingly, the range of teaching objectives will differ in each case.

- The adult has less time and opportunity than the child for FLL. Some estimates suggest that it takes well over a year to accumulate as much L2 experience as a young child gets from the L1 in a month.

- Adults invariably find themselves in a less natural learning environment than children. It is rarely possible to devise a teaching situation which closely resembles that encountered by the L1 child, with its one-to-one interaction and strong emotional (caregiver) support.

- There is an uncertain parallel between the way in which mothers talk to their children and the way in which people talk to adults using a foreign language

('foreigner talk'). Certainly, adult L1 speakers adapt to learners, and (often unconsciously) try to help them by speaking slower and louder, repeating words, simplifying their grammar, and using stereotyped expressions (of which pidgin savvy is probably the most famous). They also ignore many errors. But it is unclear how universal or how systematic these input strategies are.

- Similarly, it is unclear how far teacher language displays correspondences with motherese (p. 235); the differences, at present, are more striking than the similarities. To facilitate learning, in the early stages, teachers need to keep their input relatively simple, interesting, comprehensible, relevant to the learning task, sufficiently repetitive to enable patterns to be perceived, and capable of providing appropriate feedback. Generalization proves difficult, given the great variation that exists among teaching methods (p. 374).

There is something in the poetry of
Wordsworth which is always to live. He

Errors in language learning

The error in this sentence, written by a Swedish student, seems straightforward, but it is not easy to say exactly what the error is, why it was made, and whether the teacher has made the best correction. Is the student confusing *be to* and *will*? Or has he learned the past tense use of *be to* in this context (as in *There was something in the poetry which was to live forever*), and assumed that the present tense would work in the same way? If so, is there not an additional error in the position of *always*? And would not *forever* be a more idiomatic word? The corresponding construction in Swedish is *som alltid skall leva*, but this will not explain all that is going on.

Teaching methods

In the long search for the best way of teaching a foreign language, hundreds of different approaches, or *methods*, have been devised. Each method is based on a particular view of language learning, and usually recommends the use of a specific set of techniques and materials, which may have to be implemented in a fixed sequence. Ambitious claims are often made for a new teaching method, but none has yet been shown to be intrinsically superior. The contemporary attitude is flexible and utilitarian: it is recognized that there are several ways of reaching the goal of FL competence, and that teachers need to be aware of a range of methods, in order to find the one most appropriate to the learner's needs and circumstances, and to the objectives of the course. It is frequently necessary to introduce an eclectic approach, in which aspects of different methods are selected to meet the demands of particular teaching situations.

Several classifications of teaching methods have been made, in an attempt to impose some degree of order on what is a highly diverse and idiosyncratic field. Some analysts make use of the fundamental distinction between language structure (form) and language use (function) (§13). Under the first heading, they include those methods that focus on the teaching of formal rules and categories, and that emphasize the importance of accurate written translation and the understanding of literature. Under the second heading, they include methods that lay stress on the teaching of active participation in natural and realistic spoken language settings, and where the emphasis is on communicative success rather than on formal accuracy. Many approaches are biased in one or the other direction, though it is also common to find approaches that claim to integrate the strengths of both positions.

Certain methods are widely recognized because of their influential role in the history of ideas surrounding this subject.

Easy listening New FLT methods are invented every day. Many claim to provide remarkable progress – at a price. This advertisement, taken from a South American newspaper in 1984, is typical of its genre. What makes it especially intriguing is its proposed integration of behaviourist and mentalist linguistic theories (p. 408)!

**SPANISH GERMAN FRENCH
MASTER IT WITH NO COURSE OR TEACHER
UNBELIEVABLE?
BUT TRUE**

A successful application of B.F. Skinner's and
Noam Chomsky's Theories has resulted in a system
that makes it possible.

And to top it all, you'll do it in less than 90 days and
no more than 200 hours.

By appointment only. Please call us, Tel: **.*.*.*.
and ask for Mrs. ****.

We'll gladly show you how it works at no cost:

The grammar translation method This method derives from the traditional approach to the teaching of Latin and Greek, which was particularly influential in the 19th century. It is based on the meticulous analysis of the written language, in which translation exercises, reading comprehension, and the written imitation of texts play a primary role. Learning mainly involves the mastery of grammatical rules and memorization of long lists of literary vocabulary, related to texts which are chosen more for their prestigious content than for their interest or level of linguistic difficulty. There is little emphasis laid on the activities of listening or speaking.

This approach dominated early work in modern language teaching. A minority still find its intellectual discipline appealing; but the vast majority of teachers now recognize that the approach does little to meet the spoken language needs and interests of today's language students.

The direct method This approach, also known as the *oral* or *natural* method, is based on the active involvement of the learner in speaking and listening to the foreign language in realistic everyday situations. No use is made of the learner's mother tongue; learners are encouraged to think in the foreign language, and not to translate into or out of it. A great deal of emphasis is placed on good pronunciation, often introducing students to phonetic transcription (§27) before they see the standard orthography. Formal grammatical rules and terminology are avoided.

The direct method continues to attract interest and enthusiasm, but it is not an easy approach to use in school. In the artificial environment of the classroom, it is difficult to generate natural learning situations and to provide everyone with sufficient practice. Several variants of the method have thus evolved. In particular, teachers often permit some degree of mother-tongue explanation and grammatical statement to avoid learners developing inaccurate fluency ('school pidgin').

The audio-lingual method Also known as the *aural-oral* method, this approach derives from the intensive training in spoken languages given to American military personnel during the Second World War, which resulted in a high degree of listening and speaking skill being achieved in a relatively short time-span. The emphasis is on everyday spoken conversation, with particular attention being paid to natural pronunciation. Language is seen as a process of habit formation (p. 372): structural patterns in dialogues about everyday situations are imitated and drilled (first in choral speech, then individually) until the learner's responses become automatic. There is a special focus on areas of structural contrast between L1 and L2. There is little discussion of grammatical rules. Language work is first heard, then practised orally, before being seen and used in written form.

Communicative teaching

During the 1970s, there was a widespread reaction, in both L1 and L2 teaching (§44), against methods that stressed the teaching of grammatical forms and paid little or no attention to the way language is used in everyday situations. A concern developed to make FLT 'communicative', by focusing on learners' knowledge of the functions of language, and on their ability to select appropriate kinds of language for use in specific situations.

Increased interest was shown in the situations themselves, and in the kind of language the learner would be likely to meet (e.g. at a bank, eating out). 'Situational syllabuses' aimed to recreate these situations, and to teach the various linguistic activities involved, such as requesting, thanking, complaining, and instructing.

'Notional' (or 'functional') syllabuses provided a major alternative to the emphases of formal language teaching. Here, the content of a course is organized in terms of the meanings ('notions') learners require in order to communicate in particular functional contexts. Major communicative notions include the linguistic expression of time, duration, frequency, sequence, quantity, location, and motion. Major communicative functions include evaluation, persuasion, emotional expression, and the marking of social relations.

Communicative methods have attracted universal interest, and much influenced the practice of modern FLT. But there has also been a critical reaction, as linguists and teachers encounter problems in providing a principled basis for interrelating the proposed notions and functions. Of particular importance is the need to provide learners with principles that will enable them to make a 'bridge' between functional aspects of language and the correct use of formal structures. Proponents of the approach have recognized these problems, and there has been considerable discussion of the way communicative teaching might develop in the future. (After K. Johnson & D. Porter, 1983.)

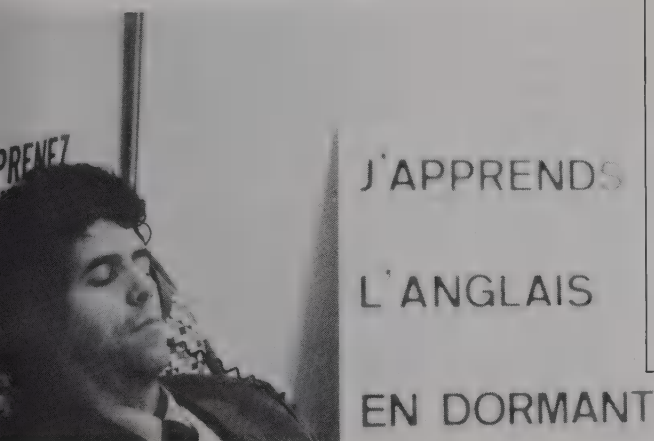
The approach can instil considerable conversational fluency in a learner, and was widely used, especially in the 1950s and 1960s. Its reliance on drills and habit-formation makes it less popular today, especially with learners who wish for a wider range of linguistic experience, and who feel the need for more creative work in speech production.

New methods

Since the 1960s, several fresh approaches to FLL have been devised, aiming to provide a radical alternative to traditional methods, which their proponents believe have failed. They draw attention to the success with which people acquire more than one language all over the world (§60), and contrast this with the limited achievements of the classroom situation, and the partial accounts of learning presented by the various theories (p. 372). If FLL can be made more natural, and the learner made more receptive to the task, it is argued, more efficient learning will result.

The effectiveness of the different methods remains to be thoroughly evaluated; but each has its reported successes, and some (especially the first two in the list (right) have come to be widely practised. The following outlines (with the originator's name in parentheses) indicate the thrust of each approach, but they convey nothing of the emotional atmosphere and sense of involvement promoted by these methods, which are central to their claims of success.

Learning by hypnosis An unorthodox method of foreign language learning – 'I am learning English while sleeping,' says the notice.



Humanistic approaches

Suggestopedia (Georgi Lozanov) An approach based on suggestology, the science of suggestion. Devised by a Bulgarian psychiatrist, it was originally used as a general teaching method in that country's primary schools; elsewhere, it has mainly been applied in the field of adult FLT. The method is based on the view that the brain (especially the right hemisphere, §45) has great unused potential, which can be exploited through the power of suggestion. Language learning can be promoted by drawing on the reserve capacities of the unconscious mind. Blocks to learning are removed (using 'desuggestion' techniques), and a positive attitude towards language learning developed ('resuggestion').

In their opening lesson (or 'concert'), learners are presented with large amounts of the foreign language. The text is translated, then it is read aloud in a dramatic way against a background of classical music. The aim is to provide an atmosphere of total relaxation and enjoyment, in which learning is incidental. After a session, there should be a sense of euphoria, reminiscent of the feelings that follow a visit to a health spa (the 'spa effect'). By using a large amount of linguistic material, the suggestion is conveyed that language learning is easy and natural. In a later session, students use the material in various communicative activities. The emphasis, then, is wholly on informal communication; no attention is drawn to grammatical errors. Learners, it is claimed, assimilate far more from such an 'immersion' than would traditionally be expected.

The silent way (Caleb Gattegno) This approach aims to provide an environment which keeps the amount of teaching to a minimum and encourages

learners to develop their own ways of using the language elements introduced. In the first lesson, the teacher introduces a small L2 vocabulary to talk about a set of coloured rods, using a few verbs (equivalent to 'take', 'give', 'pick up', and 'put'), adjectives, pronouns, etc., and gradually extending the length of the sentence (e.g. 'Take the green rod and give it to Michael'). The aim is to help the learners to become self-reliant – to select their own sentences and be in control of them, with good intonation and rhythm. The teacher does not repeat the material or provide sentences for students to imitate; and no use is made of the learners' L1. Charts containing vocabulary and colour-coded guides to pronunciation are made available to enable the teacher to guide the student's learning while saying as little as possible. As students say more to each other, so the teacher says less – hence the 'silent' way.

Community language learning (Charles A. Curran) This approach builds on the kind of 'whole person' relationship found in counselling therapy. The main aim is to foster strong personal links between the teacher/counsellor and the learners, and thus to eliminate whatever is found threatening in the FLL situation. There is no prepared material. The learners talk naturally in their L1, and seek from the teacher FL equivalents for what they want to say. The teacher provides the translation, and the students repeat it. Each session is tape recorded, and is followed by a discussion with the teacher of what went on. **Natural approach** (Tracy D. Terrell) This method emphasizes the role of 'natural' language acquisition, and underscores the parallels between L2 and L1. It stresses the importance of emotional rather than cog-

nitive factors in learning, and of mastering vocabulary rather than grammatical rules. There is no formal correction. The aim is to establish an ability to understand the basic content of a communication in informal settings. Learners use their L1 while their L2 comprehension is developing.

Language from within (Beverly Galyean) This method encourages learners to be introspective about their own needs, interests, values, and 'here and now' activities, and to talk about these emotional responses to others. All material comes from the students, as they become more self-aware, and build up a close relationship with each other. The aim is to enable the cognitive, affective, and interactive elements in learning to 'flow together' – hence the alternative name for this approach, 'confluent' teaching.

Delayed oral practice (Valerian A. Postovsky) This approach, often known as the 'comprehension approach', is based on the principle that it is far easier for learners to achieve competence in recognizing language, whether in speech or writing, than in producing it. A basic receptive competence is established, and this is used as a foundation for work involving retrieval skills.

Total physical response (James J. Asher) This method stresses the importance of aural comprehension as an exclusive aim in the early months of learning. The name derives from the emphasis on the actions that learners have to make, as they are given simple commands (e.g. 'stand', 'sit', 'stop'). More advanced language is introduced by building up chains of actions, using either spoken or written commands.

MATERIALS

The days are long gone when FLT materials consisted only of a grammar book and a dictionary. Today, there is a vast variety of printed materials – course books, workbooks, readers, programmed courses, collections of facsimile material, simplified literature, cue cards, charts, newspapers, magazines, posters, picture cards, cut-outs, and much more. These are supplemented by a range of materials using other media, such as records, audio tapes, slides, transparencies, filmstrips, video tapes, toys, games, and puppets. The advent of computer technology introduces a further potentially inexhaustible domain of ancillary equipment. In modern foreign language teaching and learning, materials design and implementation is a major enterprise – the area where the principles of applied linguistic theory, the demands of classroom practice, and the realities of commercial production lie uneasily together.

<p>ラ</p> <p>ト ラ キ ラ ン ラ ッ ク プ イ</p>	<p>ra</p> <p>ラ</p> <p>Hiragana: ら</p> <p>kirai dislike rampu lamp torakku truck</p> <p>(K-39)</p>
<p>ル</p> <p>タルア オスル ルイク</p>	<p>ru</p> <p>ル</p> <p>Hiragana: る</p> <p>aruku to walk rusui care-taker (during one's absence) taoru towel</p> <p>(K-41)</p>

Right: A page from Book 1, Lesson 1, of a popular 1930s German course, *Deutsches Leben*. The exercise drills questions and answers, and introduces the three forms of the definite article, *der*, *die*, and *das*.

Below: An ingenious way of providing practice in present-tense sentence patterns – Part of a unit from Book 1 of *The Cambridge English Course* (M. Swan & C. Walter, 1984).

A selection of *kana* cards (left), providing Japanese learners with practice in recognizing the symbols of the *katakana* and *hiragana* alphabets (p. 201). On one side, the symbol is given with three examples of its use; on the other side, there is the name of the symbol, the romanized version of each word, a translation, arrows showing how to write the symbol, and the equivalent symbol in the other *kana* system.

2
(Seite zwei)
FRAGE UND ANTWORT

Das ist das Papier. Was ist das? Das ist das Pa...

Das ist die Tafel.
Was ist das?
Das ist die Tafel.

Das ist die Tür.
Was ist das?
Das ist die Tür.

Das ist das Fenster.
Was ist das?
Das ist das Fenster.

Das ist der Fussboden.
Was ist das?
Das ist der Fussboden.

Das ist die Decke. Was ist das? Das ist die Decke.

Das ist die Wand.
Was ist das?
Das ist die Wand.

Das ist das Pult.
Was ist das?

NOTES AND VOCABULARY

Abbreviated words are given in full on their first occurrence.

petite mécanique light engineering
la formation training
la rentabilité profitability
avantages (m) sociaux fringe benefits
(restaurant, expenses, etc.)

Curriculum Vitae
prétentions (f) salary required
Publicité (f) advertising
un adjoint assistant commerciaux organisation (f)
un fichier card index, record

Some authentic written language materials. The materials are accompanied by lexical glosses for the less familiar items – one of the items in a textbook anthology for advanced students of French (D. E. Ager, 1970).

B The Swan-Walter Universal Holiday Postcard Machine

1 It's easy to write holiday postcards! Write one now and send it to a friend.

Dear N...
Well, here we are in
T... W... and we are
having a/an... time.
I am sitting/lying... Pr...
PI... writing postcards,
drinking... D... and looking
at... N... is... V...
and... PN... are... V...
Pr... PI...
Tomorrow we are going to
T... I'm sure it will
be... A...
Wish you were here,
Love, N...

POSTCARD DICTIONARY

N (name)
John
Mary
Alexandra
Mother
etc.

T (town, city, village)
Rome
Manchester
Honolulu
etc.

W (weather)
The sun is shining
It is raining
It is snowing
There is a hurricane
etc.

A (adjective)
wonderful
beautiful
lovely
exciting
interesting
magnificent
terrible
awful
horrible
catastrophic
boring
etc.

Pr (preposition)
in
on
at
under
by
near
opposite
etc.

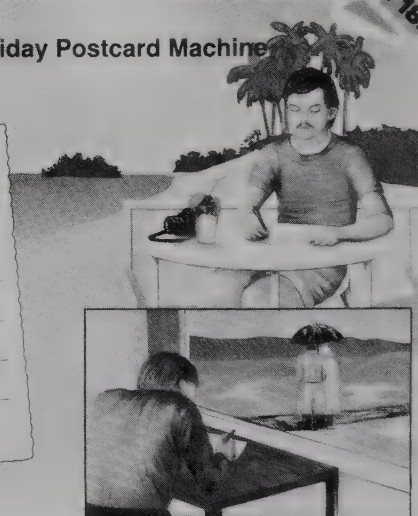
PI (place)
my room
their room
the bar
the beach
a café
a tree
a mountain
etc.

D (drink)
coffee
beer
wine
etc.

L (things to look at)
the sea
the mountains
the tourists
the rain
the sheep
etc.

V (verb)
shopping
sightseeing
sleeping
drinking beer
dancing
playing cards
having a bath
etc.

PN (plural noun)
the children
Mummy and Daddy
George and Sue
etc.



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POSSIBILITES LOGEMENT

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The language laboratory

The best-known technological aid in FLT is undoubtedly the language laboratory — a room, usually divided into booths, where students can listen individually to tape recordings of FL material, and where they may record and play back their own responses, while being monitored by a teacher.

When these laboratories were first introduced, they were heralded as a technique that would vastly improve the rate and quality of FLL. They would take the burden of repetitive drills away from the teacher, provide more opportunities for learners to practise listening and speaking, and enable them to develop at their own rates and monitor their own progress. Many schools were quick to install expensive laboratory equipment. However, within a few years, it became apparent that there would be no breakthrough. The expected improvements did not emerge, and the popularity of the 'language lab' showed a marked decline.

There were several reasons for the failure to live up to expectations. The taped materials were often poorly designed, leading to student frustration and boredom. The published programmes failed to reflect the kind of work the student was doing in class. Few modern languages staff had received training in materials design or laboratory use. And it proved difficult to maintain the equipment once it had been installed.

Today, the strengths and limitations of the laboratory are better realized, and the vastly increased potential of modern electronic hardware has led to a certain revival. There is now considerable interest in *language learning laboratories*, which contain much more than the traditional systems — in particular, the introduction of interactive computational aids and video materials has proved to be extremely popular.

It is now clear that, when used properly, laboratories can provide a valuable extra dimension to FLT. For example, the taped material can provide a variety of authentic and well-recorded models for the training of listening comprehension. And laboratories can be used as resource centres, or libraries, giving learners extra opportunities to practise at their chosen level.

At the same time, the limitations of laboratories must be borne in mind. Their value will always depend on the development of appropriate teaching materials which reinforce what has been taught in class and provide opportunities for creative use; and here there is an urgent need for research into the efficacy of the different approaches which have been devised. Laboratory software, it seems, has some way to go before it can compare in sophistication with the hardware.



A language laboratory that incorporates computer-assisted language learning (CALL) work stations. Microcomputers, used as word processors, complement the audio facilities, enabling interactive teaching of written language skills. Several kinds of FLT exercise can be computationally controlled, such as sentence restructuring, checking of translation or dictation tasks, and cloze testing (see below) using texts displayed on the screen.

	A		C	
Master track	The man is running. The men?	BLANK	The men are running.	BLANK
Learner track	BLANK	The men is running.	BLANK	The men are running.
	B		D	

A typical sequence of events on a language laboratory tape. In this illustration, the tape is double-track, enabling the foreign model to be recorded on one track, and the learner's voice on the other. An example of one kind of drill is given. Learners first hear a sample sentence, and are given a stimulus to respond to (A). They then record their response (B), hear the correct version (C), and have an opportunity to repeat it (D).

Testing

Teachers need to test student performance, or enter them for formal examinations. Test results are critical, not only because they affect careers, but because of the influence they exercise on motivation to learn.

It is now widely appreciated that tests perform a variety of functions. Four main types are usually recognized.

- **Proficiency tests** determine how much of the L2 a learner has mastered, regardless of the course of study followed, as in national examinations, and the international Test of English as a Foreign Language.

- **Achievement tests** determine how much of a particular course of study has been

mastered. These are commonly used at the end of school terms.

- **Diagnostic tests** aim to find out what a student still has to learn in a language. The results provide feedback for the teacher, by displaying the learner's strengths and weaknesses. Although they are very different from achievement tests (e.g. they are not always given marks or graded), students often fail to see the difference.

- **Prognostic (or aptitude) tests** try to predict how well a person will succeed in learning an L2. These tests focus on specific kinds of activity (e.g. sound imitation, pattern matching), and provide data about indi-

vidual difficulties.

Testing can focus on any linguistic skill (speaking, listening, reading, writing) and on any linguistic component (e.g. vocabulary, pronunciation, grammar, spelling).

Many ways of eliciting information have been devised; such as asking students to make a translation, carry out an action, or give a paraphrase. Anticipating the effects of a task is not easy, however; a question may be unnecessarily difficult, or an answer may require information that has not been taught. It is therefore always necessary to look critically at test procedures, and to aim for improvements in test design, selection, and administration.

Anyway, Susie said that there were no (1) — things as fairies, elves, this that and (2) — other. Well, the night she put her (3) — under the pillow we forgot to put (4) — money there and take it away — we (5) — all about it. (C laughs) So she got up (6) — the morning, 'My tooth's all gone and (7) — no money.' Dave said, 'Well, there you (8) — you see. You said you didn't believe (9) — fairies so how can you expect the (10) — to come and see you if...'. Oh (11) — I do believe in fairies (D laughs), you know (12) — really do.' (C laughs). So Dave said, 'Well, try (13) — tonight.' So that night, thank goodness, we (14) — (C laughs) So the next morning she gets up (15) — happy. 'Oh, they've been, they've been. I've (16) — my money.' And Dave said, 'Well there (17) — are. That

Cloze testing In this kind of language test, every *n*th word is omitted from a passage (the gaps are usually between five and seven words apart), and the student has to complete (or 'close') the gaps. This form of testing is widely used: it is good at establishing whether a student has a 'feel' for the language, and for testing awareness of points of detail. Several types of cloze test exist; for example, students can be given the omitted words below the passage, or they can be given an initial letter as a clue. In the example above, taken from a workbook on conversational English, there are no clues: the student must fill in any appropriate word, bearing in mind the informal style of the passage. (K. Morrow, 1978, p. 49.)

63 Language for special purposes

'They don't seem to be talking the same language.' This common observation acts as a reminder that barriers to communication exist, and indeed are commonplace, even within a language. Linguistic difficulties are inevitable when there is interaction between people from different racial, regional, cultural, social, or occupational backgrounds – something that is increasingly common in modern society as people become more mobile and come into contact with diverse forms of linguistic behaviour. A major aim of linguistic studies, accordingly, is to investigate the factors that promote and maintain the existence of varieties within a language (Part 11), and to provide descriptions of their use. These studies have an intrinsic intellectual interest, as they provide a means of observing change in contemporary culture and civilization. But they can also be of practical assistance, by clarifying the reasons for the use of unfamiliar language, and thus providing a perspective that may help to resolve cases of linguistic conflict.

There is no theoretical limit to the number of special purposes to which language can be put. As society develops new facets, so language is devised to express them. In recent times, whole new areas of expression have emerged, in relation to such domains as computing, broadcasting, commercial advertising, and popular music. Over a longer timescale, special styles have developed associated with religion, law, politics, commerce, the press, medicine, and science. A detailed linguistic account of any one of these areas would itself require an encyclopedia, as the analysis of the language used would require an exposition of the conceptual system that gave rise to it. The following illustrations of linguistic varieties and attitudes are inevitably highly selective, therefore, in both range and depth of treatment. But they do provide a hint of the extensive resources that language makes available to meet the special needs of developing societies, and of the complications that arise as people slowly come to terms with them.

Plain English campaigns

Popular anxiety over special uses of language is most markedly seen in the campaigns to promote 'plain' speaking and writing – notably, the Plain English movements of Britain and the USA. The main aim of these campaigns is to attack the use of unnecessarily complicated language ('gobbledygook') by governments, businesses, and other authorities whose role puts them in linguistic contact with the general public. The campaigners argue that such language, whether spoken or written, should be replaced by clearer forms of expression.

The movements took shape only in the late 1970s, so it is too soon to ascertain their long-term influence on the characteristics of language varieties. But they have certainly played a major part in promoting public awareness of the existence of communication problems, and have influenced many organizations to do something about it. In Britain, the campaign was launched in 1979 by a ritual shredding of government forms in Parliament Square, London. By 1982, the government had published a report telling departments to improve the design of forms, and to abolish those that were unnecessary. By 1985, around 15,700 forms had disappeared and 21,300 had been revised. In the USA, President Carter's Executive Order of March 1978 required regulations to be written in plain English, and although this was revoked by President Reagan in 1981, it promoted a great deal of legislation throughout the country, and an increase in plain English usage among corporations and consumers.

Today the Plain English campaigns continue to grow, focussing especially on such everyday consumer products as forms, official letters, licences, leases, contracts, insurance policies, and guarantees. In Britain, annual publicity is given to the Plain English Awards competition, which gives trophies to organizations that have produced the clearest documents, and booby prizes (the Golden Bull

Doublespeaking

negative patient care outcome (=death)

portable handheld communication inscriber (=pencil)

unlawful or arbitrary deprivation of life (=killing)

permanent pre-hostility (=peace)

revenue enhancement tax-base erosion control (=tax increase)

collateral damage (=civilians killed in a war)

A Golden Bull winner

One of the winners of the British Golden Bull awards in 1982 was a written decision made by a government insurance officer, which opened in the following way:

As insurance officer I have decided to review the decision dated 19.9.83 for the following reasons: that by its decision of 31.1.84 the

medical board varied the assessment of disablement resulting from the relevant loss of faculty and this constitutes a revision of a decision on a special question.

My revised decision is as follows: A disablement gratuity of £21.50 based on an assessment of 3% per week from 8.6.83 to 22.11.83 and £11.12 per

week from 23.11.83 to 6.12.83 based upon an assessment of 20% for the period 8.6.83 to 1.12.83 and a disablement gratuity of £52.75 based upon an assessment of 3% from 2.12.83 to 1.6.84 are awarded for the same accident for which a disablement gratuity of £21.50 based upon an assessment of 3% from

24.3.83 to 7.6.83 and a disablement pension of £10.72 per week from 8.6.83 to 22.11.83 and £11.12 per week from 23.11.83 to 13.12.83 (total £290.64) was awarded and paid... (Quoted in C. Maher & M. Cutts, 1986, p. 12.)

Awards) to those whose materials are least intelligible. In the USA, similar interest is shown in the annual Doublespeak Awards, awarded by the National Council of Teachers of English to 'American public figures who have perpetrated language that is grossly unfactual, deceptive, evasive, euphemistic, confusing, or self-contradictory'.

In these cost-conscious days, it is stressed that clear language not only avoids anxiety on the part of the recipient, it also saves time and money. The campaigns have large dossiers of problem cases. In one case, an official government letter provoked so many complaints and questions that a second letter had to be sent to explain the first. In another, an application form was wrongly filled in by 50% of the applicants, which resulted in a considerable outlay of effort in returning and reprocessing the form. On the positive side, there are cases of businesses revising their literature to avoid legal jargon, and benefiting from increased sales.

Particular concern is expressed about the ambiguities and omissions found in medical labels. For example, in one pharmaceutical survey, the instruction to 'use sparingly' was found to be misunderstood by 33% of patients. The instruction to 'take two tablets four hourly' received a variety of interpretations (e.g. to take eight tablets an hour). Related areas of concern include the use of warning labels on household goods (such as disinfectants) and on toys for children.

The instructions accompanying do-it-yourself products are also regularly cited as a source of unnecessary expense or frustration. Few companies seem to test their instructions by having them followed by a first-time user. Often, essential background information is omitted, steps in the construction process are taken for granted, and some degree of special knowledge is assumed. This is especially worrying in fields where any failure to follow correct procedures can be dangerous.

Objections to material in plain English have come mainly from the legal profession. Lawyers point to the risk of ambiguity inherent in the use of everyday language for legal or official documents, and draw attention to the need for confidence in legal formulations, which can come only from using language that has been tested in courts over the course of centuries (p. 386). The campaigners point out that there has been no sudden increase in litigation as a consequence of the increase in plain English materials. Similarly, professionals in several specialized fields have defended their use of technical and complex language as being the most precise means of expressing technical and complex ideas. This is undoubtedly true: scientists, doctors, bankers, and others need their jargon, in order to communicate with each other succinctly and unambiguously. But when it comes to addressing the non-specialist consumer, the plain English campaigners argue, different criteria must apply.

What is plain English?

It is not easy to devise precise, consistent, and acceptable guidelines for those who wish to write in plain English. One proponent of the Plain English campaign in the USA makes the following recommendations concerning readability and design. (For other views, see pp. 2, 252.)

Readability

- Prefer the shorter word to the longer one. Use simple, everyday words rather than fancy ones. Prefer verbs over nouns and adjectives. Prefer the specific word to the general.
- Write short sentences with an average of no more than 20 words. Use the active voice rather than the passive. Be a miser with compound and complex sentences and a spendthrift with simple sentences.
- Write short paragraphs with an average of about 75 words. Avoid paragraphs that exceed five typed lines for business letters and ten lines for longer compositions.
- Write with the ear. A sentence may look correct on paper but its cadence may be jarring. Listen to your sentences in your head as you write, and do not write anything that you could not comfortably say.

Design

Write for the eye as well as the mind. Prepare an overall design, positioning understandable headings, subheadings, and captions for each segment, showing the organization of the text. Make the whole document visually appealing.

- Use appropriate underlining, ink colour that contrasts sharply with the paper, lists, boxes or panels, bold or other typefaces to emphasize key points.
- Use 'white space' in margins, between sections, paragraphs and lines to make the document look good.

(J. Y. Dayananda, 1986, p. 13.)

Before and after

An illustration of plain English in action can be seen from the British campaign's version of a contract for moving goods from one house to another.

Original version

GENERAL LIEN – The contractor shall have a general lien upon all goods in his possession for all monies due to him from the customer or for liabilities incurred by him and for monies paid on behalf of the customer, and if part of the goods shall have been

delivered, removed or despatched or sold the general lien shall apply in respect of such goods as remain in the Contractor's possession. The Contractor shall be entitled to charge a storage charge and all other expenses during which a lien on the goods is being asserted and all these conditions shall continue to apply thereto.

Plain English version

OUR RIGHT TO HOLD THE GOODS – We have a right to hold some or all of

the goods until you have paid all our charges and other payments due under this contract. These include charges, taxes or levies that we have paid to any other removal or storage business, carrier or official body. While we hold the goods and wait for payment you will have to pay storage charges and all other necessary expenses. This contract will apply to the goods held in this way. (Quoted in C. Maher & M. Cutts, 1986, p. 12.)

The language of science

The aim of science is to determine the principles governing the physical universe. Progress towards this end, however, is to a large extent dependent on the use of language. The knowledge base of a subject, upon which all scientists depend, is accessible only if previous generations have managed to express their findings in a precise and unambiguous manner. Similarly, present-day scientists, hoping to make their own contribution to this knowledge base, must satisfy the same linguistic constraints if their work is to be correctly interpreted and accepted by their peers. Research findings are of limited value, until they are written up and published.

The methodology of science, with its demand for objectivity, systematic investigation, and exact measurement, has several linguistic consequences. There is an overriding concern for impersonal statement, logical exposition, and precise description. Emotional comment, humour, figurative expression, and other aspects of personal language are avoided (except in writing intended for a lay audience). The mathematical expression of relationships promotes an extensive use of numerals, operators, letters, and other special symbols, which are frequently used in word-like and sentence-like combinations (as formulae, equations, etc.). Lengthy sequences of text can be written in logographic form (p. 200), thus giving the language of science its highly valued status as a universal medium of expression.

Vocabulary and grammar

In addition to this distinctive graphology (§33), scientific language illustrates several important features of vocabulary and grammar. The large technical vocabulary is undoubtedly its most characteristic feature, reflecting the specialized subject matter of scientific domains of enquiry. Everyday words are too vague for many scientific purposes, so new ones have to be invented. This novel vocabulary is largely based on borrowings from Latin and Greek, showing the influence of Classical languages during the period of scientific discovery following the Renaissance. It contains many compound expressions, some of which (in such fields as chemistry) can be extremely long and unpronounceable, requiring abbreviation for practical use (a familiar example is *TNT*, short for *trinitrotoluene*). At the other extreme, some fields delight in using everyday words to identify new hypotheses and discoveries – notably, in contemporary particle physics, where we find such technical terms as *strangeness*, *flavour*, *colour*, and *charm*.

Moreover, scientific vocabulary requires continual updating in the light of the process of discovery. Science is in fact the main birthplace for new words in a language: in a comprehensive English dictionary (§18), the vast majority of the words would be scientific (or technological) terms. More

than 750,000 species of insect have been discovered, for example; and if all their names were incorporated into the largest available dictionaries, the books would immediately double in size.

The grammar of scientific language also contains several distinctive features. Sentences are often long and have a complex internal structure. The complexity is centred on the noun phrases (§16) rather than the verb phrases, as can be seen from the illustration below. But probably the best-known grammatical feature is the use of the passive construction: *The mixture was poured ...* instead of *We poured the mixture ...* The intention behind this usage is straightforward: as in this example, it enables a description to be made impersonally, without an agent being expressed (contrasting with the use of a personal pronoun in the corresponding active construction). However, the overuse of complex passive sentences in scientific writing has attracted considerable criticism in recent years, and there is now a marked tendency to avoid them. The *Handbook for Chemical Society Authors* (1961), for example, recommends: 'Before the final typing every paper should be scrutinised to see whether it cannot be improved by eliminating abstract words and passive voices.' But the weight of traditional usage is not easy to throw off, as illustrated by this very recommendation, which itself uses two passives!

An example

This short extract (G. H. Williams, 1960, pp. 252–3) illustrates well the nominal bias of scientific language. In the final sentence of the paragraph, for example, 16 of the 24 words are part of noun phrases: *Smaller quantities of tarry products ... the reported yields of diaryls ... the diazo- and azo-compounds discussed above*. By contrast, verb phrases are extremely short, and use a restricted range of items: in the whole extract we have *provide*, *be* (four times), *add*, *effect*, *obtain*, and *discuss* – typical of the 'manipulatory' meanings that the majority of the verbs in scientific language express (*adjust*, *align*, *arrange*, *begin*, *boil*, *bring*, *continue*, etc.). Note also the inverted commas, to identify the use of a vague word from everyday discourse.

(a) Preparative Use of Diacyl Peroxides

The thermal decomposition of diacyl peroxides provides what is undoubtedly the "cleanest", and, provided the required peroxide is readily available, most convenient source of aryl radicals for the arylation of aromatic substrates. The purified peroxide, which is generally crystalline, is added to the aromatic solvent, and the decomposition is effected by heating, usually to about 70–80°. Smaller quantities of tarry products are obtained, and the reported yields of diaryls are generally higher than with the diazo- and azo-compounds discussed above.

Scientific vocabulary

(Dates given are of the first recorded appearance in the *Oxford English Dictionary*)

16th century

1533	catarrh
1527	cornea
1543	cranium
1551	genus
1578	glottis
1598	mumps
1551	species
1531	temperature
1548	tibia
1550	vacuum

17th century

1626	acid
1605	acoustic
1628	apparatus
1694	axis
1601	cardiac
1638	formula
1641	gravity
1605	laboratory
1615	logarithm
1656	microscope
1626	pedicle
1693	pharynx
1601	rheumatism
1668	stamen

18th century

1751	antiseptic
1791	carbonic
1791	etiolate
1771	fauna
1791	hydrogen
1794	molecule
1759	nectary
1776	neurosis
1794	nitrogen
1704	nucleus
1790	oxygen
1726	thyroid

19th century

1849	allotropy
1867	aphasia
1865	barograph
1812	centigrade
1890	chromosome
1839	cirrhosis
1832	cretaceous
1882	dynamo
1856	gyroscope
1822	laryngitis
1878	metabolism
1892	micron

20th century

1913	allergy
1946	cybernetics
1901	genetics
1951	laser
1912	millibar
1929	penicillin
1934	positron
1910	quantum
1942	radar
1912	vitamin

Intelligibility gap

The gap between scientific and everyday language is a large one, which it is difficult to bridge. Scientists are often unable to express themselves in terms the lay person can understand, or are too busy to bother. There is frequently a need to maintain secrecy, in such areas as national security or industrial invention. Not surprisingly, therefore, there

is a widespread mistrust of scientific language, which is only partly alleviated through popular science publications and radio or television programmes. It is still the exception to find popularizations of science that maintain intelligibility while avoiding oversimplification, and that come to be acclaimed by specialist and lay person alike.

NONVERBAL EXPRESSION

A large part of scientific expression consists of representations that are wholly or partly non-linguistic in character – such as physical models, charts, pictures, maps, graphs, and diagrams. The immediacy and economy of presentation achieved by these methods is self-evident. It would be impossible to provide a coherent account in words of all the interrelationships found on a map, graph,

or tree diagram, for example, and verbal descriptions of formulae and equations are often highly complex and ambiguous (§33). On the other hand, linguistic and non-linguistic modes of expression are never totally independent of each other: verbal language is always needed in order to interpret and amplify the meaning or use of nonverbal representations.



Men of science In previous centuries, scientists from different subject areas were keen to follow each other's progress. Ideas and findings were exchanged and debated in scientific societies, as depicted in this early 19th century painting. Such 'communicative' meetings are rare events today. Scientists find it difficult enough keeping up with the specialized literature within their individual fields.

Alternative 'languages'

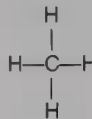
Chemists have four ways in which they can describe the substances they study: they can use a verbal label, write a formula, draw a structural diagram, or build a structural model. Each has its strengths and weaknesses. Verbal labels are basic, but their length (often several dozen morphemes, p. 90) can make them

unusable. Formulae are shorter; but whereas these can display the elements of a substance, they do not show their physical relationship. The internal structure of a substance can be shown using a structural diagram; but this is restricted to two dimensions. Only structural models provide a three-dimensional picture.

Label: METHANE

Formula: CH₄

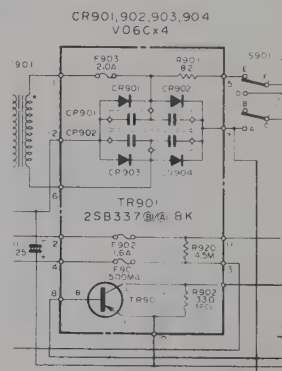
Structural diagram:



Structural model:



Explain this!



It would be possible to provide a verbal description for this electronic circuit, but it would be so long and complex as to be unintelligible. On the other hand, the verbal description of the elements of such circuits is an essential feature of training programmes in the subject.

Mathematical expressions

$$\sqrt{\frac{250}{3}} + 7$$

This simple mathematical expression is unambiguous, in its non-verbal form, with all elements simultaneously present. But as soon as we attempt to read it aloud, in a serial way, complications arise. The verbal version would be: 'the square root of two hundred and fifty divided by three plus seven'. But this written formulation could be interpreted in several ways, such as:

$$\frac{\sqrt{250}}{3} + 7$$

$$\text{or } \frac{\sqrt{250}}{3+7}$$

$$\text{or } \sqrt{200} + \frac{50}{3} + 7$$

$$\text{or } \sqrt{200} + \frac{50}{3+7}$$

In speech, careful use of intonation and rhythm could distinguish some of these interpretations, but the risk of ambiguity would always be present.

The language of medicine

The field of medicine, more than any other, forces a confrontation between scientific and everyday language. Outside the world of the research laboratory and clinic, there exists the daily routine of medical practice – a communication situation in which a doctor attempts to understand the problems of a patient, and the patient attempts to understand the doctor's diagnosis. Language is involved at all points in the medical consultation. The initial statement of symptoms is of critical significance, as it guides the doctor's search for the clinical signs of the condition. Similarly, the doctor's explanation of a problem, and the recommendations for treatment, need to be clear and complete if the patient is to understand and follow the correct course of action (p. 379).

Communication problems

The need for careful listening and expression by both parties should be self-evident in a field as sensitive and serious as health. In practice, many problems arise. Patients worried about their health are often uncertain or confused in their accounts. Busy doctors will not have the time to take up every point the patient has alluded to. Moreover, there is a tradition of medical interviewing which hinders the development of a genuine communicative interaction. One study of ten major medical journals in the 1960s found general agreement about the following characteristics of doctor–patient communication (after S. B. Heath, 1979):

- 1 Topics of conversation should be restricted to those dealing with the patient's body and conditions contributing to disease.
- 2 Conversation should only be with the patients, not with relatives or friends.
- 3 It is the task of the doctor, not the patient, to ask questions.
- 4 The doctor should avoid telling all the truth, and discourage the elaboration of information from other sources.
- 5 Patients should be told that they are ultimately responsible for the improvement of their own health, which will occur only if they follow the doctor's advice.

This tradition is still widely encountered, though it has attracted criticism from both within and outside the medical profession in recent years.

Studies of medical communication have brought to light several types of situation in which there has been a breakdown of communication, and where the consultation has had an unsatisfactory outcome. Regional, social, and cultural differences between doctor and patient can all be sources of

linguistic difficulty (especially in the case of immigrant patients). Even age can intervene. In one American study, the problem was so serious that it was found helpful to devise a questionnaire phrased in appropriate slang to enable older doctors to communicate with inner city teenage patients (C. C. Levine, 1970).

The careful analysis of medical interviews, using audio- or video-recorded samples, has brought to light many instances of these difficulties. Some people are naturally taciturn in formal situations, because their social or cultural background has developed in them a sense of 'knowing their place'. Some find it necessary to talk at length about unrelated topics as a preliminary to introducing their symptoms. Some play down the importance of these symptoms, because they have been brought up 'not to make a fuss'. Each type of case presents doctors with a problem of communication analysis.

But linguistic problems continue to occur even when doctor and patient share the same social background. Doctors need to be alert to pick up the linguistic cues that may express the patient's real reason for coming to the surgery ('By the way, doctor ...') or the issue that is causing most subconscious worry (such as repeatedly referring to the heart during the conversation). They also need to anticipate points of potential misunderstanding – such as the common patient interpretation of the word *growth* ('You have a small growth here') to mean 'cancer', or *thrombosis* to mean 'heart disease'.

Medical communication researchers have also drawn attention to several areas where medical staff could promote their own communicative skills – for example, by providing explanations of what they are doing to a patient while they are doing it, by welcoming questions from patients (rather than fostering the 'Doctor knows best' attitude), and by avoiding patronising or discourteous language (e.g. 'Drink it down like a good girl', said to an older female hospital patient).

Above all, medical staff need to be aware of the many functions that language can perform (§4), and in particular that language may be used to signal the desire for social contact, and need not be taken literally. For example, in one study, 40 hospital patients who asked for relief from pain were given either routine nursing attention or a visit from a nurse specially trained in communication skills: only two of the former group obtained immediate relief from their 'pain', whereas 14 of the latter group did so; and all of the former group required analgesics, compared with only six of the latter (M. B. Tarasuk *et al.*, 1965). Such findings illustrate the need for a perspective on communication to be a routine part of medical training.

Symptoms of breakdown

Several studies have collected data that indicate the kinds of communication problem that frequently arise in hospitals. Typical quotations include:

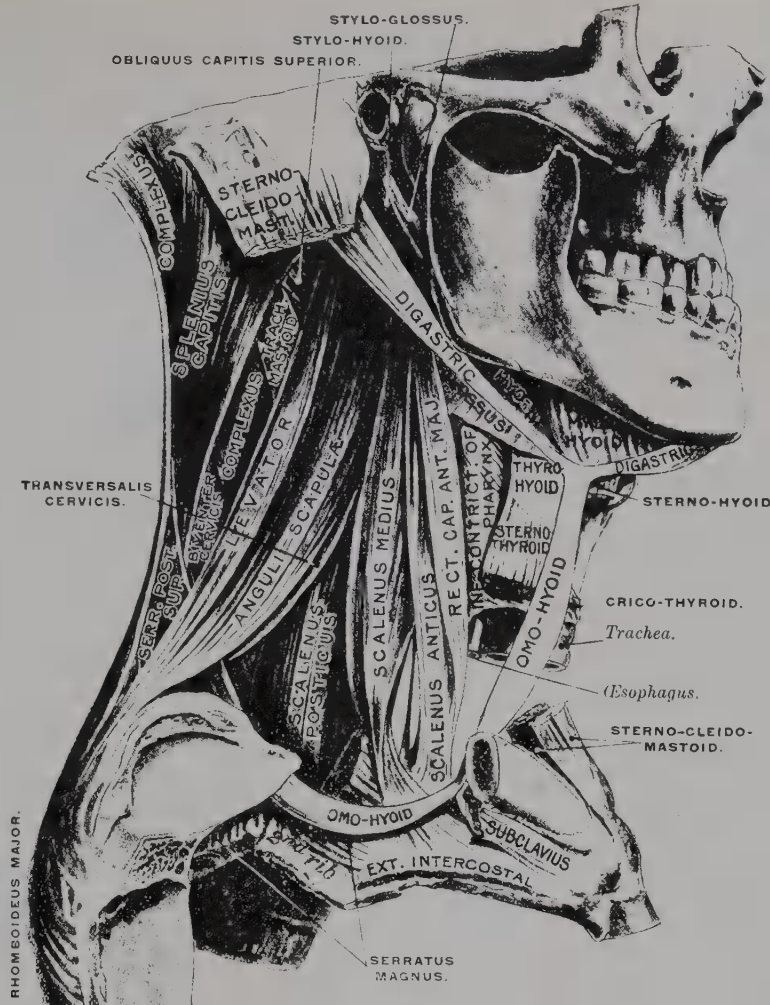
- I didn't like to ask; perhaps it's just me; I felt they might think I was prying or being nosy.
 - I was strung up when the doctors were there, and forgot things.
 - They would give you pills and if you asked what they were for you were told to take it and never mind. You were treated like a child, as if it was nothing to do with you if the medicine was changed. There was no reason given.
 - They leave you in the dark too much. If only they treated you as if you could understand something.
 - I feel better knowing. You always imagine things are worse than they are.
- Many hospitals now give patients an information booklet telling them what they need to know in advance. Several researchers believe that a paragraph about communication should be a routine feature of such literature. One suggestion reads as follows:
- Don't be afraid to ask the doctors or the nursing staff any questions you want to ask about your illness or its treatment or about anything else that worries you. Some people find it difficult to remember all they want to ask when the doctor or sister comes round. You may find it helpful, and it will help them, if you make a list of your questions to show them when they visit you. (C. M. Fletcher, 1973.)

The final breakdown

Nowhere has this communication gap been greater than in the management of the terminally ill patient. According to one (1970) estimate, 80% of dying patients know that they are dying and want to talk about it; whereas 80% of doctors deny this, and believe that the patient should not be told. Fortunately, the present-day climate of medical opinion seems to be changing, slowly, for the better. (W. A. Cramond, 1970.)

Naming of parts

A diagram of the muscles of the neck, taken from one of the classical accounts of human anatomy, *Gray's Anatomy*, and showing the traditional use of Latin nomenclature. Most people identify medical language with this kind of terminology, or its vernacular equivalent; and indeed, the labels of anatomy and physiology do form the core of the subject. However, the kinds of conversation that take place in hospitals and clinics introduce a wide range of additional terminology. People, locations, routine objects, and daily activities all have their special labels, idioms, or abbreviations, e.g. *intern*, *registrar*, *SRN*, *ENT*, *path lab*, *sluice*, *day room*, *theatre*, *medical records*, *op*, *scrub up*, *drawsheet*, *sample*, *drainage tube*. It is not difficult to hear sentences that are unintelligible, save to the initiated (e.g. *Staff wants you to do the TPRs on the four hourlies* (i.e. 'The staff nurse wants you to take the temperatures, pulses, and respirations of those patients who need this information recorded every four hours'))).



Consultation styles

Analyses of the language used in consultations have brought to light great differences in styles of interaction. In one study, patient comments of the type 'I'm feeling run down. I've got a pain in my back, and I feel tired all day' were found to elicit a wide variety of responses, such as:

- Mmmm. Right, just go into the next room and get undressed. I'll be along in a minute.
 - Tell me. Just where is this pain?
 - When do you feel tired? In the morning when you get up or in the afternoon?
 - Do you have headaches and pains behind the eyes?
 - I think you're depressed. How do you feel about that?
 - What sort of pain is it?
 - What do you mean by 'I feel tired all day'?
 - Yes, go on.
 - You look very pale.
- (P. S. Byrne & B. E. L. Long, 1976, pp. 22-3.)

The responses vary enormously. At one extreme the doctor's mind seems already made up; at the other, the doctor is ready to enter into a long discussion about further symptoms.

Computer-aided diagnosis

The range of medical conditions is now so vast, and the doctor's time so limited, that several clinical centres have begun to introduce computer-assisted diagnostic systems. In an extension of this procedure, it is even possible in some centres for patients to begin the diagnostic process by themselves. They are presented with a series of questions about their medical history and symptoms on a computer screen. They are given sets of possible answers, and they make their selection by pressing buttons on their console. There is no time constraint, and they may change their answers at any time, or simply leave questions blank. The answers are then stored in the computer, to be printed out when the doctor is ready to analyse them.



Language and religion

IN THE BEGINNING

The close relationship between language and religious belief pervades cultural history. Often, a divine being is said to have invented speech, or writing, and given it as a gift to mankind. One of the first things Adam has to do, according to the Book of Genesis, is name the acts of creation:

And the Lord God having formed out of the ground all the beasts of the earth, and all the fowls of the air, brought them to Adam to see what he would call them: for whatsoever Adam called any living creature the same is its name...

Many other cultures have a similar story. In Egyptian mythology, the god Thoth is the creator of speech and writing. It is Brahma who gives the knowledge of writing to the Hindu people. Odin is the inventor of runic script, according to the Icelandic sagas. A heaven-sent water turtle, with marks on its back, brings writing to the Chinese. All over the world, the supernatural provides a powerful set of beliefs about the origins of language (§49).

Religious associations are particularly strong in relation to written language, because writing is an effective means of guarding and transmitting sacred knowledge. Literacy was available only to an elite, in which priests figured prominently. Echoes of this link reverberate in English vocabulary still, through such connections as *scripture* and *script*, or the reference to *scripture* as *Holy Writ*. And there are widespread sanctions for human action expressed authoritatively in phrases of the form: 'for it is written'.

Sacred writings

At the centre of all the world's main religions lies a body of sacred writing, revered by believers. Scrupulous attention is paid to identifying or preserving the linguistic features of the original texts. Often, the texts are accompanied by a long tradition of commentary, which may itself take on special religious significance.

Buddhism The Pali Canon, based on oral tradition, containing the teaching of the Buddha. Pali became the canonical language for Buddhists from many countries, but comparable texts came to exist in other languages, such as Chinese and Japanese, as the religion evolved.

Christianity The Bible, consisting of the 39 books of the Old Testament, written in Hebrew, and the 27 books of the New Testament, written in Greek. Several other writings, known collectively as the Apocrypha, and preserved only in Greek, have controversial status. A Latin translation of the Bible, known as the Vulgate, is prominent in the Roman Catholic tradition.

Hinduism The Vedas, a wide range of texts, written in Sanskrit, and preserved largely through a meticulous oral tradition, which takes particular care over accuracy of pronunciation (p. 405).

Islam The Qur'an, or Koran, which Muslims believe was dictated to the Prophet Mohammed by Allah, during the month of Ramadan. It is written in classical Arabic, in a style which is considered miraculous, beyond ability to imitate. The memorization of the text in childhood acts simultaneously as an introduction to literacy.

Judaism The Hebrew Bible, or Old Testament, especially as found in its first five books, traditionally said to be written by Moses. Later varieties of Hebrew, and some Aramaic, form the language of the large collection of oral and written commentaries on the Bible, known as the Talmud.

Literacy is often introduced into a community by the spread of a religion. As a result, the distribution of writing systems in the world today reflects the distribution of world religions far more clearly than it does the distribution of language families.

TRANSLATING THE WORD

Not all religions favour the translation of their sacred books. Judaism, Hinduism, and Islam stress the sacredness of the language itself and resist translation, whereas Buddhism, and especially Christianity, actively promote it. But ultimately, all major religious works are translated – either from one language into another, or from an older variety of language into a modern variety.

The formal process of religious translation is a long-term, painstaking and frustrating task, usually carried out by committee. Translators have to satisfy two criteria, which are always incompatible, because one looks backwards and the other forwards. First, the translation must be historically *accurate*, faithfully representing the meaning of the source, insofar as this can be known, and integrated within the religious tradition of which it is a part. Secondly, it must be *acceptable* to the intended users of the translation – which, in practice, means that it must be intelligible, aesthetically pleasing, and capable of relating to current trends in religious thought, social pressures, and language change. No translation can ever satisfy the demands of all these factors, and all translations are thus to some extent controversial (§57).

The linguistic issues involved may relate to major conflicts of cultural or historical interpretation, or be localized problems of style. A phrase such as 'Give us this day our daily bread' is not easy to translate into a language such as Eskimo, where the staple food is not bread; nor is it easy to handle the Biblical parable of the fig-tree, which refers to seasonal change, in a language where there are no words for seasons, such as Yucatec. But even subtle, apparently minor, linguistic differences can become major points of controversy. To address the divinity as *thou* will satisfy those who feel that



The Egyptian god, Thoth, represented with the head of an ibis, and here surmounted by a crescent moon. As inventor of hieroglyphs, he was named 'lord of holy words'. He is said to have accomplished the work of creation by the sound of his voice alone. The Egyptian goddess of writing, Seshat, was Thoth's principal spouse.

religious language should adhere closely to tradition and be special, set apart from the everyday language; but *you* will be preferred by those who wish religious language to have an immediate contemporary meaning and application. The *thou/you* debate has rumbled on for decades in English – with echoes in other languages that use a second-person-pronoun distinction.

From the invention of printing until the mid-1980s, some or all of the Bible has been published in about 2,000 languages, with several hundred new translation projects ongoing; but a major language with a long literary tradition will itself contain many translations. Some English translations have proved to be specially influential, such as the Great Bible (Cranmer's Bible) of 1539, the Authorized Version (or King James Bible) of 1611, and the Douai Bible of 1609–10. The chief points of controversy then were partly doctrinal, partly stylistic, but both stemmed from the major changes in Christian belief taking place at the time in Europe – changes which led William Tyndale, for example, to claim that his translation, unlike previous ones, would enable the Bible to be understood by all, even by 'a boy that driveth the plough'.

Questions of level and accessibility remain central today. Nor can the religious translators ever rest, for at their shoulder is the demon of language change (§54). What might seem a 'safe' word today may be loaded with irrelevant meaning tomorrow. A contemporary example is *soul*, which has developed fresh meanings in black-American English, and which would require translators to look carefully at any version they produced in which the traditional senses of *soul* might seem misleading or laughable.

VARIETIES OF RELIGIOUS LANGUAGE

The most striking feature of a religious language is its heterogeneity, deriving from the wide range of activities involved in public and private worship, and the involvement of religion in all aspects of daily living and thinking. Several varieties, all distinctive in their use of linguistic structure, are widely encountered.

Liturgical forms both spoken and sung, produced by individuals and in unison, as monologue and dialogue, and including such acts as invocations, petitions, doxologies (statements of glory or praise), intercessions, thanksgivings, rosaries, litanies, chants, hymns, psalms, and canticles.

Preaching from formal written sermon to spontaneous monologues or even dialogues (as the congregation reacts), and sometimes involving elements of song or chant (as in black American preaching, or the *hwyl* heard in Welsh).

Ritual forms used in relation to cultural or social practices, such as baptisms, funerals, confessions, meal-times, remembrance services, weddings, initiation ceremonies, circumcisions, invocations, meditations, cleansing rites, oaths, vows, exorcisms, and the blessing of people, objects, or places.

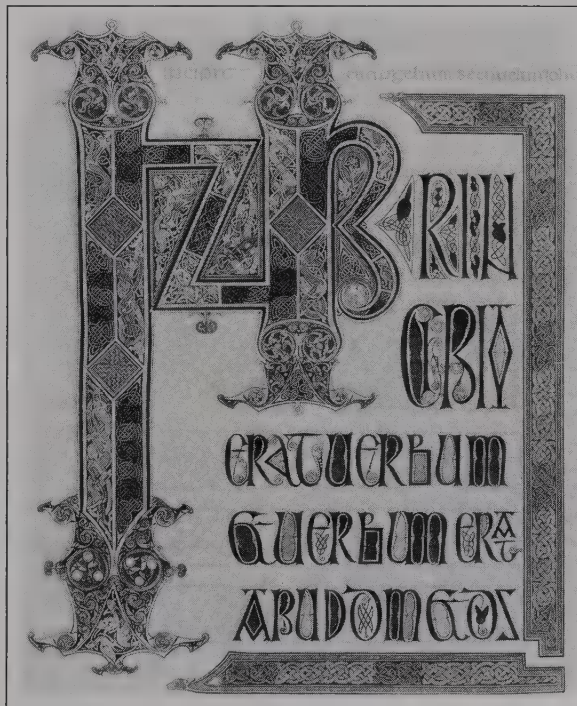
Readings from sacred texts, in an original language or in translation, and with varying degrees of literalness, formality, and modernity. The texts themselves will contain a wide range of varieties, such as parables, psalms, historical narrative, apocalyptic description, poetry, and paradox.

Doctrinal statements as expounded in official 'canonical' documents, creeds, articles of faith, sutras, expository pamphlets, courses of instruction, catechisms, and, these days, teach-ins on cable television. Closely associated with this, there is the dimension of theological language, as expounded by theologians, biblical scholars, and other religious professionals (p. 51).

Private affirmations of belief in supernatural beings, expressions of mystical power (such as the Hindu mantras), expressions of identity and conversion (such as glossolalia), ecstatic prayers, prophesying, oracles, spirit possession, and testimony giving.

Many communities use a totally different language for religious purposes – such as Ge'ez in the Ethiopian Church, or the traditional use of Latin in western Christianity. At the opposite extreme, there are those communities who recommend plain speaking, or even no speech at all. The distrust of earthly languages, and the power of silence in spiritual matters, is especially evident in 17th-century Quakerism: 'All languages are to me no more than dust', wrote George Fox in 1660, and repeated use was made of the exhortation from Ecclesiastes to 'let your words be few'.

Before printing, Bibles had to be copied by hand – a vast undertaking for a work whose English translations generally contain over ¾ million words and 3½ million letters. This is a page from an 8th century Bible, showing the care with which monks 'illuminated' the text. In this case, the page is largely taken up with the initial phrase, *In principio*.



The language of the law

'The law is a profession of words.' This dictum opens David Mellinkoff's classic study *The Language of the Law* (1963), and it is not possible to find a more succinct way of introducing the present section. Whatever the legal domain – government legislation, courtroom activities, or the documentation that constrains our daily lives (contracts, conveyances, regulations, by-laws, etc.) – we are faced with this fundamental principle: the words of the law are, in fact, the law. There is no other variety where the users place such store on the nuances of meaning conveyed by language, where unstated intentions are so disregarded, and where the history of previous usage counts for so much.

The overriding concern for precise and consistent linguistic interpretation has, over the centuries, produced a highly distinctive style whose complexity is particularly apparent in the written language. This style has frequently been criticized by the lay public, on the ground that much of legal language is unnecessarily complex, and could be simplified without loss (p. 378). The point is, indeed, often made by lawyers themselves. Mellinkoff, a professor of law, considers his profession to display four linguistic 'mannerisms' that warrant criticism: wordiness, lack of clarity, pomposity, and dullness (see right).

Historical factors explain the character of present-day legal language. Stylistic tradition is a major influence here, as with several other varieties (e.g. religious language, p. 384): *each and every, have and hold, null and void, rest residue and remainder*, and many other phrases can be traced back to Anglo-Saxon, Old French, or Medieval Latin. The repetition, alliteration, and rhythm of many expressions (e.g. *the truth, the whole truth...*) reflect the need, in an age before printing and general literacy, for the law to be remembered clearly, and passed on consistently. The use of tautologous expressions in English documents is often due to the influence of different languages: for example, a French or Latin term used alongside an Anglo-Saxon one (e.g. *made and signed, breaking and entering, will and testament*) reflects the uncertainty of early draftsmen as to whether the two terms had the same meaning. In such cases, the safest course of action was to include both.

Historical explanation, however, does not stop the persistent call for change in legal language by eliminating archaic or Latinate expressions, simplifying grammatical structure, and adding punctuation. Those in favour of change argue that this would make legal language more intelligible to consumers, saving much time, anxiety, and money, and would also greatly simplify the job of lawyers themselves. Those who defend the complexity of legal language argue that its characteristics are the product of centuries of effort to devise an unambiguous, reliable, and authoritative means of regulating human society and resolving conflict. In their

view, the need for consistency in legal interpretation, and for confidence in judgments (which, they argue, can save much time, anxiety, and money), far outweigh the gain that would come from an increase in popular understanding.

While many lawyers these days accept the desirability of some degree of simplification, there is a natural caution about leaving the safe, charted domain of traditional legal language, and entering into a world that may be hiding a host of undiscovered linguistic pitfalls. Doubtless a certain amount of planned change could be introduced without harm (simplified documents have in fact increased in currency in recent years); but this is inevitably a slow process, given the need to think through carefully the consequences of every change.

7. (1) MONEYS to be invested under this Settlement may be invested or otherwise applied on the security of or in the purchase or acquisition of real or personal property (including the purchase or acquisition of chattels and the effecting or maintaining of policies of insurance or assurance) rights or interests of whatsoever kind and wheresoever situate including any stocks funds shares securities or other investments of whatsoever nature and wheresoever whether producing income or not and whether involving liability or not or on personal loan with or without interest and with or without security to any person (other than the Settlor or any Spouse of the Settlor) anywhere in the world including loans to any member of the Specified Class and the Trustees may grant indulgence to or release any debtor (other than as aforesaid) with or without consideration and may enter into profit sharing agreements and give and take options with or without consideration and accept substitution of any security...

This extract illustrates the traditional style of legal language. An important feature is the distinctive graphology (§33). Certain conventions of layout and typography are present, but there is a total lack of punctuation.

The reasons for this distinctive feature of legal style are not entirely clear, but they probably have to do with the early use of punctuation as a graphic device to help people read texts aloud. Most legal documents are purely written records, so there would have been little need to punctuate them. When these documents came to be printed, compositors – doubtless influenced by the inconsistency of manuscript punctuation – developed the practice of printing texts without any punctuation at all. Gradually, the tradition grew that punctuation had no part to play in legal writing.

Legal 'mannerisms'

Wordiness

annul and set aside = annul
entirely and completely remove = remove
totally null and void = void
without let or hindrance = without hindrance

Lack of clarity

The use of lengthy sentences containing obscure words and awkward constructions:

Although the will itself was silent as to who would take if the son predeceased the mother, she not having at the time of the son's death remarried, and the son leaving issue at his death, which event occurred, this omission by itself, in the will only, cannot aid the son and defeat the testator's clear intention that the son should take only in the event he survived the death or remarriage of his mother...

Pomposity

the people in their wisdom; in the discharge of that important duty; trifles with justice; the result will be to weaken or subvert what it conceives to be a principle of the fundamental law of the land.

Dullness

Partly due to the above features, but also a consequence of the tendency to go into the minutiae of a procedure, as part of its justification:

The reason for denying an appeal in the latter case is not because the order on the motion to vacate is not within the terms of section 963 of the code allowing appeals, for it may be, and indeed, an order refusing to vacate a final judgment is in its very nature a special order made after the judgment, but because it would be virtually allowing two appeals from the same ruling, and would, in some cases, have the effect of extending the time for appealing contrary to the intent of the statute.

(After D. Mellinkoff, 1963, Ch. 3.)

SPOKEN LEGAL LANGUAGE

The language of the courtroom is familiar to millions (if only through the media of films and television), but only recently has there been any systematic research into the complex rules of linguistic behaviour that participants are expected to follow. Most lay people fail to grasp the extent of these rules until they have had the experience of acting as a witness. After the event, the almost universal reaction is frustration – of not being allowed to say what they wanted in the way they wanted. Once people are in court, they must follow its procedures, and use its language; if they do not, they may be held ‘in contempt’.

There are several everyday functions of language that witnesses are not allowed to use. They must not report what other people have said (‘hearsay’), evaluate other people or events (‘opinion’), give their listeners extra context (i.e. they must simply ‘respond to the question’), or show such emotions as humour. Similarly, the legal experts are subject to linguistic constraints, such as how to introduce evidence or cross-examine witnesses. Books have been written on court ‘tactics’ – how to manipulate witnesses, impress judges, and influence juries.

At a trial, language counts for everything. In terms of structural analysis (p. 79, §20), a trial is little more than a giant narrative, with a beginning (the opening statements), middle (the presentation of evidence), and end (the closing arguments and verdict). However, unlike most stories, this one is told by many people, including two ‘official’ story-tellers (counsel for the defence and for the prosecution), and exists in at least two conflicting versions. Resolving the conflict depends totally on the linguistic skills of all concerned.

The characteristics of legal language

- Common words with uncommon meanings:
action = law suit
avoid = cancel
hand = signature
presents = this legal document
said = mentioned before
specialty = sealed contract

- Old and Middle English words no longer in general usage:

aforesaid	thenceforth
forthwith	thereby
hereafter	theretofore
heretofore	whereby
said (adjective)	wisneseth

- Latin words and phrases, including some that have become part of the language as a whole (e.g. *affidavit, alias, alibi*):
corpus delicti *per stirpes*
ejusdem generis *quasi*
 res gestae
ex post facto *retraxit*
in personam *sui juris*
lex loci actus *vis major*
nolle prosequi

- Words derived from French (many now in general use, e.g. *appeal, assault, counsel, crime, plaintiff, verdict*):
demurrer fee simple
easement lien
estoppel tort

- Technical terms with precise and well-under-

stood meanings (‘terms of art’):
appeal defendant
bail felony
contributory injunction
negligence libel

- Less precise terms and idioms, in standard use in daily legal discussion (sometimes referred to as legal ‘argot’):
alleged
issue of law
objection
order to show cause
strike from the record
superior court
without prejudice

- Formal or ceremonial words and constructions in written documents and in spoken courtroom language:
Signed, sealed, and delivered
Whereas . . . (in contracts)
You may approach the bench
Comes now the plaintiff
Your Honour
May it please the court
Hear ye, hear ye, hear ye
I do solemnly swear. . .
The truth, the whole truth, and nothing but the truth

- The conscious use of vague words and phrases to permit a degree of flexibility in interpretation:
adequate cause
as soon as possible
fair division
improper

malice
nominal sum
reasonable care
undue interference

- The use, conversely, of words and phrases to express precise meaning:
irrevocable
in perpetuity
nothing contained herein
This convention motivates the use of long lists of near synonyms in documents, as in these phrases from a standard form, in which a person is released:

from any and all manner of action or actions, cause and causes of action, suits, debts, dues, sums of money, accounts, reckonings, bonds, bills, specialties, covenants, contracts, controversies, agreements, promises, trespasses, damages, judgments, executions, claims, and demands whatsoever, in law or equity, which against him I have had, now have, or which my heirs, executors, or administrators, hereafter can, shall, or may have, for or by reason of any matter, cause, or thing whatsoever, from the beginning of the world to the day of the date of these presents . . .

Fairly comprehensive, one imagines!
(After D. Mellinkoff, 1963, Ch. 2.)

Effective courtroom strategies

Lawyers

- Vary the way in which you ask questions.
- Give your own witnesses a chance to speak at length; restrict the opportunity of witnesses under cross-examination to short, direct answers to the specific questions asked.
- Convey a sense of organization in your interviews of witnesses and your remarks to the jury.
- Adopt different styles of questioning with different kinds of witnesses, e.g. women, the elderly, children, expert witnesses.
- Remain poker-faced throughout; do not reveal surprise even when an answer is totally unexpected; save dramatic reactions for special occasions.
- Rhythm and pace are important; do not bore the jury with slowness; use silence strategically.
- Repetition can be useful for emphasis but it should be used with care so as not to bore the jury.
- Avoid interrupting a witness, especially when being given a responsive answer; it gives the impression you want to hide some of the facts.
- Use objections sparingly; they not only call attention to the material being objected to, but also convey an impression of attempting to conceal information.

Witnesses

- Vary the way in which you give answers.
- Give long answers wherever possible; make the opposition lawyer stop you frequently during cross-examination, to give the impression of reluctance to have your full story placed before the jury.
- Try to confuse the organization that the opposition lawyer has planned for the cross-examination.
- Adopt different styles of answering questions asked by different questioners (e.g. deference to the judge, no rehearsed answers while under direct examination, no hostility to the opposition lawyer).
- Do not show surprise even when questions are unexpected; save dramatic reactions for special moments.
- Use rhythm and pace to advantage. Upset the opposition lawyer’s pace with variations in response timing (e.g. asking *Would you please repeat the question?* after an especially long or complex question).
- React to a cross-examiner’s repetition of material, e.g. by saying *Why do you keep asking me the same question?*
- Interrupt the opposition lawyer by volunteering answers, as soon as you can see the drift. This gives the impression that you are cooperative and serves to confuse the lawyer’s style.
- Blurt out relevant facts and opinions on cross-examination, even though the opposition lawyer may attempt to limit your answer. These attempts will give the impression that the lawyer is trying to conceal some of your evidence.

(After W. M. O’Barr, 1982, Table 7.1.)

Language and the press

The world of modern newspaper and magazine publishing presents a wider range of linguistically distinctive varieties than any other domain of language study. Within the pages of a daily paper there will be juxtaposed such diverse categories as news reports, editorial comments, imaginative articles, reviews, letters, captions, headlines, sub-headings, announcements, television programme descriptions, lists of sports results, cartoon dialogues, competitions, crossword clues, and many kinds of advertising. Sunday papers in some countries are even more diversified, providing a variety of supplements on different topics.

With such a range of content, there is no likelihood of finding a single style of writing used throughout a paper, nor of finding linguistic characteristics that are shared by all papers. Although each paper has its distinctive visual 'house style' (p. 13) and follows a set of general norms laid down by its editorial staff, the idea that there is a homogeneous method of writing used by all journalists ('journalese') seems to have little foundation. 'Journalese', like 'jargon' and several other labels, is for many people no more than a loaded word, identifying a style of newspaper writing they dislike.

There are of course certain superficial similarities between newspaper styles arising out of the fundamental constraints of the medium. Information has to be compressed into a limited space, usually in columns, and without loss of legibility. Interest has to be focused, captured, and maintained through the use of large type, dramatic headlines, frequent sub-headings, short paragraphs, and succinct sentences. The occurrence of photographs, the recency of the information reported, and the need to maintain human interest will in various ways influence the choice of vocabulary and grammar. For example, most sentences will be narrative statements (rather than questions or exclamations); and the use of the past tense will dominate (except in headlines and captions). But within general constraints of this kind, stylistic preferences vary enormously.

In just a few instances, features of style have developed that are idiosyncratic to the genre of newspaper/magazine writing and are frequently used, thus giving credence to the notion of 'journalese'. Well-known examples from English are the altered order of subject and verb (e.g. ... *commented Dr Brown*), and the use of long lists of descriptive adjectives (e.g. *Tall, blue-eyed, 32-year-old publisher John Brown said ...*). The distinctive grammar of headlines provides a further illustration. But, on the whole, there are few linguistic features that are restricted to the world of journalistic writing.

If the weather's bad. . .

BLAME THE COMPUTER IN FUTURE

THAT big black cloud for ever hanging over the heads of Britain's weathermen has vanished.

Those "Yah, ha-ha-got-it-wrong-again" remarks from the weather-conscious public won't trouble them too much any more.

For should that "continuing dry" forecast develop into a depressing downpour they can blame the new member of the staff: Mr. Comet.

Mr. Comet—a £500,000 computer,

joined the ranks of the Meteorological Office, Bracknell, Berkshire, yesterday.

He can scan half a million weather reports from all over the world—and come up with the answers in one and a half hours: Blow, blaze, or below freezing.

He requires an operating staff of three and another 50 processors to feed in weather statistics. But he can cope with 1 million calculations a second.

And he is hardly ever wrong.

(*Daily Express* 3 November, 1965)

Weather Forecasting by Numbers

From Our Science Correspondent

Revolutions can begin quietly. One began yesterday at the Meteorological Office headquarters at Bracknell. For the first time in routine procedure an electronic computer contributed to the forecast chart published today on this page. To look at there is nothing special about the chart. The change for the forecaster was only that an extra

aid was given him. As well as preparing his own forecast chart of pressure distribution—always the first step in forecasting—he received a second chart drawn from the computer-made calculations. For the issued chart he could make use of either or both as he pleased.

(*The Times*, 3 November, 1965)

Style wars The contrast in newspaper styles is best seen when different papers deal with the same story. The opening lines of a 1965 news item, taken from two London papers — *Daily Express* (top) and *The Times* (bottom) — demonstrate the difficulty of arriving at satisfactory generalizations about 'newspaper language'.

Headlines

*Complaint on eggs upheld
Man finds girl in car*

Most headlines differ from everyday language by omitting many of the less important words in a sentence, to produce an elliptical, 'telegrammatic' construction. They also display a very restricted range of sentence structures. In recent decades, for example, the English press has made considerable use of *on* (in the sense of 'about') as part of 'headlines':

Bishops disagree on divorce

Protest on rail cuts

New move on libraries

Concern on smoking

(Quoted in G. W. Turner, 1972.)

However, despite the syntactic restrictions, there is still an opportunity for variation, and in fact the style chosen for headlines and sub-headings often provides one of the most distinctive features of a newspaper. At one extreme we find such plain, unemotional wordings as *Christmas unemployment total at record level*. At the other, we find such dramatic (and, out of context, unintelligible) items as *Crash, bang, wallop! or Oh yes she is!* Several papers also add interest to their head-

lines by making a distinctive use of word play, such as these items taken from recent issues of the *Guardian* (London):

Plans for chess fight unchecked

(Arrangements for a chess match are to go ahead)

Getting a true bill of fare
(Foreigner who can't afford his fare home tries to be deported by deliberately not paying a restaurant bill)

Give us this way our daily bread

(Article on breadmaking)
How to compose yourself
(A young composer's attitude to life)

The language of advertising

The aim of advertising is to draw attention to a product or service in order to sell it. Whether we are shopping, reading the paper, travelling to work, watching television, or simply lazing around, we cannot avoid seeing advertisements – probably, if we bothered to count, several hundred every day. They come in an extraordinary range of forms and contexts. The largest and most noticeable group belong to commercial consumer advertising; but there are also such categories as trade advertising (from manufacturers to retailers), retail advertising (from shops to customers), prestige advertising (e.g. by government departments), classified advertising (want ads, house sales, etc.), and direct mailing. The activities involve posters, signs, notices, showcards, samples, circulars, catalogues, labels, wrapping paper, price tags, tickets, footballers' shirts, and many other devices. The ears can be assailed as well as the eyes, with slogans, jingles, street cries, loudspeaker messages, and the range of auditory effects heard in radio and television advertising.

In most cases, it is the visual content and design of an ad that makes the initial impact and causes us to take note of it. But in order to get people to identify the product, remember its name (or at least make them feel that it is familiar), and persuade them that it is worth buying, ads rely almost totally on the use of language. Both elements,

A late 18th- early 19th-century theatre poster. The densely packed language of this advertisement was typical of the period. The long messages in small print provide a sharp contrast with the short messages in large print which are typical today.

Theatre Royal
 For the BENEFIT of
MR JOHN JOHNSTON,
 And positively his Last Appearance here this Season.
SATURDAY, July 29. 1815.
 Will be presented (by particular Desire of several Ladies and Gentlemen) the Comedy of
The West Indian.
 In which Characters will introduce the famous Song of
The Sprig of Shillelah and Shamrock so Green.
 At the End of the Play, Mr J. JOHNSTON will sing (in Character) a New Comic Song entitled expressly
A DUEL,
 Or, A new Method of taking a long Shot;
 With the Death of Mr MCKIRKINCROFT, and the happy Nuptials of
Paddy Whack M'Crack and Miss O'Donoughoo.
 To which will be added, for the first Time these Four Years, the favourite Entertainment of
FALSE & TRUE;
 Or, the Irishman in Italy.
 In which Mr J. JOHNSTON, in which character he will introduce the favourite Comic Song of
"London's the Devil's own Shop,"
 Which was received with such unbounded Applause Last Night,
O'RAFFERTY'S CHRISTENING,
 And by particular desire,
"I was the Boy for bewitching 'em;"
 As performed by Mr J. JOHNSTON, in which character he will introduce the favourite Comic Song of
"On Monday and Tuesday the THEATRE will be closed."
 Doors open at Six, to Begin precisely at Seven.
 Tickets and Plans for the Boxes to be had of Mr GARRATT, at the Box-Office, from Eleven to Three o'clock

psychological and linguistic, are essential: they combine to produce a single 'brand image' of a product. However, little objective evidence is available to show how (or whether) ads succeed in their aims. A great deal of market research is carried out by firms and advertising agencies (e.g. asking people whether they can recall the content of an ad), but the link between language and sales remains unclear.

Analyses of advertising style by linguists and professional copywriters have drawn attention to several important features of this variety. Most obviously, the language is generally laudatory, positive, unreserved, and emphasizing the uniqueness of a product (*There's nothing like X...*). The vocabulary tends to be vivid and concrete. Figurative expressions are common (*eating sunshine* (cereals), *smiling colour* (hair shampoo)). Rhythm, rhyme, and other phonetic effects are noticeable (*Wot a lot I got, Milk has gotta lotta bottle*). There may be deviant spellings, especially in the brand names (*Rice Krispies*, p. 204). And considerable use is made of inexplicit grammatical constructions, which lend an air of vagueness – and thus safety – to the claims for the product: *X gets clothes cleaner* (than what?), *X costs less* (than what?), *Many people say...* (who?), *X treats aches and pains* (all?).

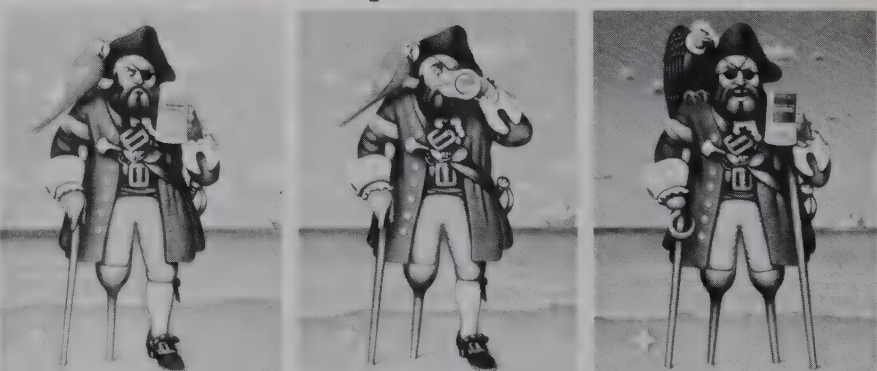
The field of advertising is a controversial one, as people dispute the ethics and effects of 'hard' selling tactics, fraudulent claims, commercial sponsoring in sport, the intrusiveness of advertisements, and their effect on children. Its language therefore needs careful investigation and monitoring. But it is not an easy field to make generalizations about. Its boundaries blur with other forms of persuasive language, such as speeches, sermons, and public announcements. And within the genre, there is so much variation in subject matter that it is impossible to maintain a single attitude that will encompass everything. Whatever our view about advertisements for cigarettes, washing powders, or cough remedies, it is unlikely to be the same as the view we hold about advertisements dealing with the dangers of smoking, the sale of houses, or the needs of the Third World.



Poster pillars These advertisements for theatres, restaurants, political parties, and other local issues, are a common sight in several European countries.

An ad from a successful modern campaign, where the language counted for everything. The original slogan, launched by the lager firm, Heineken, read: 'Heineken refreshes the parts other beers cannot reach'. This slogan was so successful that it became possible for the firm, within a very short time, to assume everyone knew it, and to introduce a series of linguistic jokes based on the word *part*, e.g. 'Heineken refreshes the parrots other beers cannot reach', and the illustration below. This is an unusual use of language, and an uncommon advertising technique. Anyone lacking a knowledge of the original version would find it very difficult to see the point of such sentences!

Heineken refreshes the pirates other beers cannot reach.



Fair advertising

An illustration produced by the Equal Opportunities Commission of Britain, showing the force of the Sex Discrimination Act of 1975. This act states that it is unlawful to treat anyone, solely because of his or her sex, less favourably than anyone of the opposite sex. Apart from its relevance in employment, education, and training, the act applies to the public provision of goods, facilities, services,

and premises, and thus bears directly on advertising language.

In an advertisement checklist issued by the Commission, five guidelines are recommended:

- Watch out for words like *Salesman, Storeman, woman*. If these are used, make sure the ad also clearly offers the job to both sexes.
- Make sure that advertise-

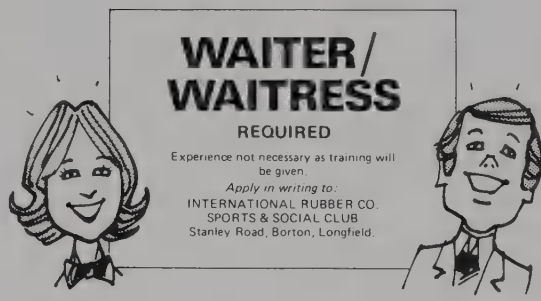
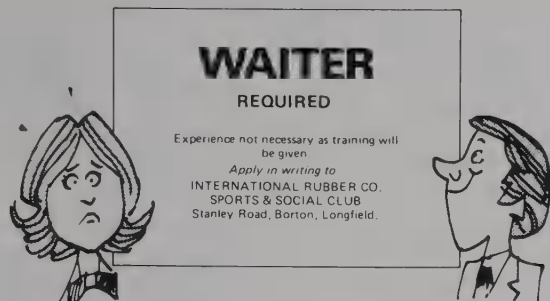
ments for jobs which have in the past been done mainly by men or women only (e.g. mechanic, typist) could not be understood to indicate a preference for one sex.

- If the ad contains words like *he, she, him, her*, make sure that they are used as alternatives, e.g. *he or she* or *him/her*, and are consistent throughout the advertisement.

- If your client does not

agree, point out that, in one way or another, the ad must make clear that the vacancy is open to both men and women.

- Pictures can give a biased impression too. If they are used, ensure that men and women are shown fairly, in both numbers and prominence. Otherwise a bold disclaimer should be placed as close to the illustration as possible.



Advertising compounds

Novel compound words, used as adjectives, are probably the most noticeable feature of advertising language. Such compounds do occasionally become part of the everyday language, such as *top-quality, economy-size*.

day-in-day-out protection
satin-soft skin
craftsman-made furniture
top-quality bulbs
economy-size packet
feather-light flakes
creamy-mild soap
chocolate-flavoured cereal
relief-giving liquid
longer-lasting shave
coffee-pot-fresh
all-purpose fertilizer
ready-to-eat cereal
up-to-the-minute styling
go-anywhere refrigerator
(After G. N. Leech, 1966.)



The daily barrage of advertising in London's Piccadilly Circus. A walk through the centre of any city places us in contact with thousands of advertisements, in the form of posters, physical models, and neon signs. But it is unlikely that we 'see' (that is, consciously register) more than a tiny fraction.

TELEVISION ADVERTISING

This form of advertising shares many of the linguistic features of consumer advertising in general, but there are certain important differences. Less use is made of written language, partly because of the limited size of screen, but also because there is no time for the viewer to read lengthy material. On the other hand, the medium makes available the infinite possibilities of the spoken language, with its reliance on voice qualities, spoken dialogues, adventure dramas, and many other kinds of interaction.

The simultaneous use of sound and vision can present problems, however. Most advertisements use speech to make their main linguistic claims, and use writing to reinforce what is said, or to add any disclaimers (e.g. *Battery not included, While supplies last*). But it is easy to ignore the 'small print' on the screen. It is not there for long, and the viewer may turn away at the crucial moment. Also, the fact that television advertising takes place in real time can lead to difficulties of comprehension and evaluation. In printed advertising, there is always time to reread the material, and thus to analyse what the ad actually says. On television, this opportunity is lacking, and there is thus little chance of evaluating the nature of the claims that are made. Some analysts have argued that these issues pose a particular problem when considering the kind of advertising that is aimed at children (M. L. Geis, 1982).

Top twenties

In a study of the vocabulary used in television advertising, the 20 most common adjectives and verbs, in order of frequency, were:

Adjectives	Verbs
1 new	1 make
2 good/better/best	2 get
3 free	3 give
4 fresh	4 have
5 delicious	5 see
6 full	6 buy
7 sure	7 come
8 clean	8 go
9 wonderful	9 know
10 special	10 keep
11 crisp	11 look
12 fine	12 need
13 big	13 love
14 great	14 use
15 real	15 feel
16 easy	16 like
17 bright	17 choose
18 extra	18 take
19 safe	19 start
20 rich	20 taste

Good and *new* were over twice as popular as any other adjective. The verbs seem unremarkable, until we recall the special contexts in which they are used in this variety, e.g.

Made by Smith's.
Get XXX today.
X gives you everything.
When you have an X...
(After G. N. Leech, 1966.)

The language of broadcasting

Broadcasting, as a national medium, has existed only since the 1920s; but its popularity and power have been so great that it has already given language several new varieties. People now take for granted such styles as newsreading, weather reporting, programme announcing, disc-jockey patter, and sports commentary, and they can easily forget that these styles are only about two generations old. The medium has also greatly increased popular awareness of linguistic diversity. An evening's listening or viewing provides an encounter with many regional accents, social dialects, and occupational uses of language (Part 11). Only the seasoned traveller would have encountered such a linguistic range a century ago.

There is, accordingly, no such thing as a single homogeneous 'language' of broadcasting. In aiming to inform, educate, and entertain, the medium reflects all aspects of contemporary society and incorporates most of its language. The result is a range of linguistic variety that exceeds even the heterogeneity of the press (p. 388): discussions, news reports, soap operas, situation comedies, games, popular science, cartoons, plays, children's programmes, and much more – including, of course, a considerable proportion of recent cinema output.

The uniqueness of radio

Because we can see speakers and context, the language used in television programmes plays a less prominent role than it does on the radio. Here, speech is everything. Sound effects, music, and

silence are of course important; but radio is *par excellence* the speaker's medium. Nowhere else does the human voice receive such undivided attention. And as a consequence, great care is needed both to maximize its effects (especially through a lively use of prosody, §29) and to avoid idiosyncrasies (which radio tends to exaggerate). Above all, broadcasters have to pay special attention to the problem of how much listeners can hear and take in at a time. There is no opportunity for immediate playback if something is misunderstood. As far as possible, therefore, broadcasting language has to be clearly organized, and make use of sentences that are relatively short and uncomplicated.

For the linguist, radio has uniquely interesting features. It is person-to-person communication that is mouth-to-ear, but not face-to-face, and where direct feedback is not possible. The totally auditory world of disembodied sound can involve the emotions and imagination of the listener in ways that have no parallel. Its simultaneous reception by millions promotes the language it uses as a standard (e.g. 'BBC English') and gives it an unequalled status and authority within a community (§61). The question of the kind of language professional broadcasters should use is therefore a controversial one, and in several countries the relative merits of standard vs regional and formal vs informal usage continue to be debated.

Editing

Much of the professional 'finish' of many radio and television programmes is achieved by tape editing. Even spontaneous interviews and talks can be 'cleaned up' before being broadcast by removing major non-fluencies (such as too many 'ers and ums' – a technique sometimes called 'de-umming').

In films, *dubbing* is another much-used technique – modifying or adding to the sound track. When a change of language is involved, this is one of the most complex linguistic operations imaginable. Accents have to be matched to convey similar social effects, and words have to be found that look like the originals. One writer clearly illustrates the extent of the problem:

Yes can easily become *ja*, especially when the speaker is a slack-lipped American, but it is hard to turn it into *igen* or *kyllä* or *naam* or *ne* or *evet*. A cowboy saying *yah* or *yeah* might just about be saying *ouais*, if not *oui*, but Sir John Gielgud affirming with precise actor's diction in close-up is excruciating to dub. (Anthony Burgess, 1980, p. 302.)



A BBC newsreader of the 1950s, dressed in a suit for the occasion, spoke in a correspondingly formal style. But the old order changeth . . . Fashions of radio language (and, indeed, of clothing) have altered, just as in other areas of language use. In Britain, these changes have been particularly noticeable in recent years, where there has been a strong trend towards the introduction of regional and informal speech. However, the new styles have not gone unnoticed by those who see themselves as defenders of traditional linguistic values. The BBC continues to receive a large postbag from people complaining about what they see as a decline in linguistic standards (§1).

Screenplays

Broadcasting language has its written side too, in the form of the scripts that provide the basis of the programmes. These display several interesting linguistic features of layout and terminology, as can be seen from this extract from a script by Dennis Spooner for a TV series (*Jason King*). This is one of several possible formats in current use, but several of its conventions are standard. Each shot is numbered and headed: *Ext* ('Exterior') vs *Int.* ('Interior'), the scene location, *Night* vs *Day*, the type of set, and the time it should last. The change of shot is indicated by *cut to* (vs *dissolve*). Camera positions and movements are identified using such phrases as *another angle*, *on . . .*, and *POV* ('point of view', i.e. the scene is shot as it would be seen by the character). Directions are in capitals. (After M. Hulke, 1982, p. 205.)

13. INT. HOTEL CORRIDOR. NIGHT. STUDIO. (0.10) 13.

REYNOLDS IS RAPPING AT KING'S DOOR, OBVIOUSLY NOT FOR THE FIRST TIME. HE WAITS, LISTENS AT THE DOOR, AND THEN, DECIDING THAT KING MUST BE ASLEEP, HE TAKES A PLASTIC CARD, OR AN IMPLEMENT, FROM HIS PERSON, AND UNLOCKS THE DOOR.

CUT TO:

14. INT. KING'S HOTEL ROOM. NIGHT. STUDIO. (0.20) 14.

REYNOLDS MOVES INTO KING'S ROOM, AND CLOSSES THE DOOR BEHIND HIM. HE LOOKS AROUND THE ROOM.

ANOTHER ANGLE

REYNOLDS MOVES ACROSS THE LIVING ROOM, PART OF THE SUITE, AND OPENS A DOOR THAT LEADS INTO THE BEDROOM.

ON REYNOLDS

AS HE LOOKS INTO THE (UNSEEN) BEDROOM, AND NOTES THAT KING IS NOT THERE. HE CLOSSES THE DOOR, AND TURNS AWAY.

ANOTHER ANGLE

REYNOLDS CROSSES TO THE DESK, LOOKING FOR A CLUE AS TO WHERE KING HAS GONE. AT THE DESK, WHICH IS BY THE WINDOW, HE HEARS THE MURMUR OF VOICES BELOW. REYNOLDS TURNS TO THE WINDOW. WE ARE ON HIM AS HE LOOKS OUT.

CUT TO:

15. EXT. LONDON HOTEL. NIGHT. LOCATION. (0.05) 15.

REYNOLD'S P.O.V.

WE SEE KING BELOW, MOVING AWAY, AND GIVING A SALUTORY WAVE TO THE COMMISSIONAIRE. WE HEAR, IN MUFFLED TONES:

KING:

. . . A walk round the Park might help me sleep . . .
AND KING TURNS, AND MOVES AWAY.

The power of language

A recurrent theme of the present section has been the concern and controversy that can arise when people encounter the powerful influence of language in special settings. Between professionals, of course, there is no problem: whether the subject matter is medicine, science, or baseball, the ability to use a specialized variety of language is a necessary part of professional competence. The difficulties arise only when others come into contact with it, by accident or design, and find themselves threatened by its lack of familiarity or clarity – as happens so often in such fields as science, medicine, religion, and the law. Proposed solutions are complex, and range from large-scale recommendations for reform to proposals that accept the linguistic complexity, and introduce children to these varieties while at school.

In the case of the mass media, the issues are somewhat different. Here the chief anxiety relates to the use of language to convey the truth. Whether we are faced with a newspaper editorial, a radio news report, a film documentary, or a piece of television advertising, we are confronted with the results of language selection: someone has made a decision about what shall be communicated and what withheld. Inevitably, then, questions arise about the reasoning used, and the form of its linguistic expression. Suspicion about motives is universal: 'Don't believe everything you read/hear.'

These issues vary in seriousness, depending on the subject matter, and the kind of society in which they are raised. There is an extensive everyday terminology that illustrates the many ways in which the abuse of linguistic power shows itself. At one extreme we are faced with such 'mild' notions as salesmanship, exaggeration, and sensationalism; at the other we find a wide range of strongly pejorative labels, such as bias, prejudice, propaganda, misinformation, censorship, indoctrination, brainwashing, and psychological (which usually means linguistic) warfare. These words are used in all kinds of social situations where people are in conflict – most commonly when the conflicts are 'organized', as in politics, religion, and trade union negotiations. However, it is impossible to agree about their meaning, as they often function only as emotional 'snarl words'.

Ironically, there is a far less extensive vocabulary available to express the various kinds of freedom and openness of expression that people aspire to. In a democratic society, there are of course many kinds of activities that represent freedom in action, such as public enquiries, opinion polls, and press conferences. But the concept of openness in public debate and dissemination seems not to have motivated a corresponding supply of 'purr words' for everyday use.

General semantics

Alfred Korzybski (1879–1950) A Polish–U.S. scientist and philosopher whose system of linguistic philosophy, known as *general semantics*, attracted considerable popular interest in the 1930s and 1940s (notably through his book *Science and Sanity* (1933) and the popularizations that ensued). It still has a certain following, especially in the U.S., though its emphasis on word meaning (rather than on sentences or contexts) has not made the approach appeal to modern semanticists (§17).

General semantics looks critically at the way people use words without carefully considering what they mean. It recommends the analysis of meaning as a way of promoting mutual understanding, both between individuals and across generations. Words are seen as deceptively stable entities, which obscure the variety of meanings that people give to them. People continue to use the same word even though there may have been a major change in the reality to which it once referred. One proposed solution is the indexing of ver-

bal labels: different senses can be distinguished by numbering (e.g. *fascism*₁ and *fascism*₂) or dating (e.g. *Hitler*₁₉₃₀ vs *Hitler*₁₉₃₉), to distinguish exactly which aspect of a notion is being referred to.

Several attempts to apply these ideas followed, in such fields as psychotherapy and language teaching. One of Korzybski's popularizers, Stuart Chase, illustrated the kind of practical level of analysis involved. In *The Tyranny of Words* (1938), he investigated the way nearly 100 people used the word *Fascism*: everyone he asked disliked it (it was a 'snarl' word), but there was little agreement as to what it meant, as can be seen from the following selection of comments:

A dictator suppressing all opposition.
One-party government.
Obtaining one's desires by sacrifice of human lives.
Hitler and Mussolini.
War. Concentration camps.
Empiricism, forced control, quackery.
Same thing as communism.
Exaggerated nationalism.
Lawlessness.

Terrorism, religious intolerance, bigotry.
A large Florida rattlesnake in summer.

Chase found 15 distinct concepts in the answers. he comments: 'Multiply the sample by ten million and picture if you can the aggregate mental chaos. Yet this is the word which is so soberly treated as a definite thing by newspapers, authors, orators, statesmen, talkers, the world over.' He concludes that only a programme of semantic training can help people to control their reliance on words at the expense of realities. 'What the semantic discipline does is to blow ghosts out of the picture and create a new picture as close to reality as one can get . . . The probability of better judgements is greatly improved, for [a person] is now swayed more by happenings in the outside world than by reverberations within his skull.' (S. Chase, 1938, pp. 129–30, 141.)

Speakers' Corner, Hyde Park A place universally recognized as a symbol of free speech, and used as such by dozens of amateur orators each week.



THE XIIIth INTERNATIONAL CONGRESS OF LINGUISTS





PART XI

Language and communication

In this final Part, the aim is to place the study of language in a broader intellectual perspective. This is done, first of all, by showing how language relates to other modes of communication, within the more general heading of semiotics. The main 'design features' of human language are reviewed, and compared with the properties displayed by animal communication. There seems to be little in common: the creativity and structural complexity of language cannot be found in the natural communicative behaviour of other species (though the extent to which language can be taught to chimpanzees requires our separate consideration). There is a clear contrast, also, with the various domains of nonverbal expression. We look at such areas as facial expression, bodily gesture, and tactile communication, as well as at some of the language-based codes and surrogates that are in use around the world. By noting the similarities and differences between language and these other areas, we can more easily identify the subject's boundaries – though the search for a clear definition of 'language' seems no nearer as a result.

The second and final section outlines the development and current scope of linguistics, the science of language study. The opening perspective is historical, dealing with the emergence of systematic ideas about the nature of language among the scholars of Ancient Greece, Rome, and India, and tracing the persistent interest in language through the middle ages and the Renaissance to modern times. The most rapid period of development has been the 20th century, where we find unprecedented progress in linguistic scholarship. A brief account is given of the history of ideas from the pioneering statements of Ferdinand de Saussure to the present day, in particular recognizing the influential role played by Noam Chomsky in giving direction to the modern subject. A separate section deals with the nature of linguistic data, and with contemporary methods of handling it computationally. Part XI then concludes with a summary of the main branches of linguistics, and of the various points of contact the subject has with other academic fields.

A plenary session on syntax and semantics at the XIII International Congress of Linguists, held in Tokyo in 1982.

64 Language and other communication systems

A widely recognized problem with the term 'language' is the great range of its application. This word has prompted innumerable definitions. Some focus on the general concept of 'language', some on the more specific notion of 'a language'. Some draw attention to the formal features of phonology (or graphology), grammar, and semantics (Parts III–VI). Some emphasize the range of functions that language performs (Parts I, II). Some stress the differences between language and other forms of human, animal, or machine communication (see below). Some point to the similarities. At one extreme, there are definitions that are highly technical in character; at the other, there are extremely general statements, reflecting the way in which the notion has been applied figuratively to all forms of human behaviour, such as the 'language' of music, cookery, or the cinema.

Most textbooks in the subject avoid the problem, preferring to characterize the notion of language rather than define it. They recognize that the question of identifying an individual language has no single, simple answer, because formal and social criteria are often in conflict (§47). Similarly, they note the correspondingly complex problems that arise when attempting to construct a definition of language in general that makes a precise and comprehensive statement about formal and functional universal properties. The set of definitions given below exemplifies the way different writers have attempted to tackle the problem, and illustrates some of the difficulties involved. There seems little to be gained by trying to summarize the content of the present volume in a single sentence – unless it is the banal observation that 'language' is what this encyclopedia is about!

A more useful approach to language, and one

used by most modern linguists, is to identify the various properties that are thought to be its essential defining characteristics. The aim is to determine what 'counts' as a human language, as opposed to some other system of communication. Two main kinds of enquiry have been used. One focusses upon identifying the universal structural properties of language, and this is discussed in Part III (§§13–15). The other is to contrast language with non-human forms of communication and with other forms of human communication.

DESIGN FEATURES OF COMMUNICATION

The most widely acknowledged comparative approach has been that proposed by the American linguist Charles Hockett (1916–), who used a zoological mode of enquiry to identify the main points of connection between language and other systems of communication, especially those found in animals. His set of 13 design features of communication using spoken language were as follows:

- **Auditory-vocal channel** Sound is used between mouth and ear, as opposed to a visual, tactile, or other means (pp. 401–3).
- **Broadcast transmission and directional reception** A signal can be heard by any auditory system within earshot, and the source can be located using the ears' direction-finding ability (p. 142).
- **Rapid fading** Auditory signals are transitory, and do not await the hearer's convenience (unlike animal tracks, or writing, §31).
- **Interchangeability** Speakers of a language can reproduce any linguistic message they can understand (unlike the differing courtship behaviour of males and females in several species).

Language definitions

'Language is a purely human and non-instinctive method of communicating ideas, emotions and desires by means of voluntarily produced symbols.' (E. Sapir, 1921.)

'A language is a system of arbitrary vocal symbols by means of which the members of a society interact in terms of their total culture.' (G. Trager, 1949.)

A language is 'a set (finite or infinite) of sentences, each finite in length and constructed out of a finite set of elements'. (A. N. Chomsky, 1957.)

Language is 'the institution whereby humans communicate and interact with each other by means of habitually used oral-auditory arbitrary symbols'. (R. A. Hall, 1964.)

A dictionary definition

1. the words, their pronunciation, and the methods of combining them used and understood by a considerable community and established by long usage.

2a. audible, articulate, meaningful sound as produced by the action of the vocal organs.

2b. a systematic means of

communicating ideas or feelings by the use of conventionalized signs, sounds, gestures, or marks having understood meanings.

2c. an artificially constructed primarily formal system of signs and symbols (as symbolic logic) including rules for the formation of admissible expressions and for their transformation.

2d. the means by which animals communicate or are thought to communicate with each other.

3. the faculty of verbal ex-

pression and the use of words in human intercourse ... significant communication.

4. a special manner or use of expression. (Webster's Third New International Dictionary, 1961.)

And a comment

'The question "What is language?" is comparable with – and, some would say, hardly less profound than – "What is life?", the presuppositions of which circumscribe and unify the biological sciences ... it is not so much the question itself

as the particular interpretation that the biologist puts upon it and the unravelling of its more detailed implications within some currently accepted theoretical framework that nourish the biologist's day-to-day speculations and research. So it is for the linguist in relation to the question "What is language?"' (J. Lyons, 1981, p. 1.)

- **Total feedback** Speakers hear and can reflect upon everything that they say (unlike the visual displays often used in animal courtship, which are not visible to the displayer).
- **Specialization** The sound waves of speech have no function other than to signal meaning (unlike the audible panting of dogs, which has a biological purpose).
- **Semanticity** The elements of the signal convey meaning through their stable association with real-world situations (unlike dog panting, which does not 'mean' a dog is hot; it is 'part of' being hot).
- **Arbitrariness** There is no dependence of the element of the signal on the nature of the reality to which it refers (unlike the speed of bee 'dancing', which directly reflects the distance of the nectar from the hive).
- **Discreteness** Speech uses a small set of sound elements that clearly contrast with each other (unlike growling, and other emotional noises, where there are continuous scales of variation in strength).
- **Displacement** It is possible to talk about events



remote in space or time from the situation of the speaker (unlike most animal cries, which reflect immediate environmental stimuli).

- **Productivity** There is an infinite capacity to express and understand meaning, by using old sentence elements to produce new sentences (unlike the limited, fixed set of calls used by animals).
- **Traditional transmission** Language is transmitted from one generation to the next primarily by a process of teaching and learning (unlike the bee's ability to communicate the source of nectar, which is passed on genetically).
- **Duality of patterning** The sounds of language have no intrinsic meaning, but combine in different ways to form elements (such as words) that do convey meaning (unlike animal calls, which cannot be analysed into two such levels of structure).

The 'language' of bees One of the most closely investigated forms of animal communication is the 'dance' performed by a honey bee when it returns to the hive, which conveys precise information about the source and amount of food it has discovered. Several kinds of movement pattern have been observed. In the 'round dance' (above, left) used when the food source is close to the hive, the bee moves in circles alternately to left and right. In the 'tail-wagging dance' (above, right), used when the source is further away, the bee moves in a straight line while wagging her abdomen from side to side, then returns to her starting point. The straight line points in the direction of the food, the liveliness of the dance indicates how rich a source it is, and the tempo of the dance provides information about its distance. For example, in one study, an experimental feeding dish 330 metres from the hive was indicated by 15 complete runs through the pattern in 30 seconds, whereas when the dish was moved to 700 metres distance, only 11 runs were carried out in that time. No other animal communication system seems able to provide such a quantity of precise information – except human language. (After K. von Frisch, 1962.)

The applicability of the 13 design features to six systems of communication (after C. F. Hockett, 1960, pp. 10–11). The music column refers only to western music since the time of Bach. A question mark indicates that it is unclear or unknown whether a system has a particular feature. A blank space indicates that a feature cannot be determined because other information is lacking.

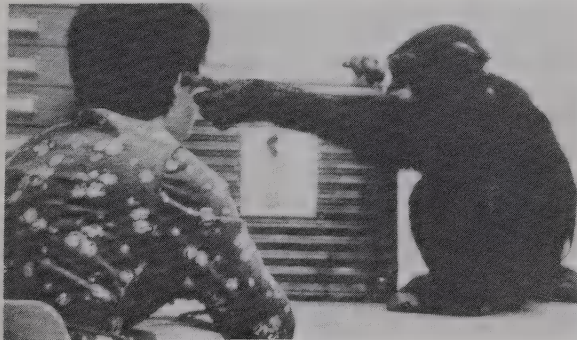
	Bee dancing	Stickleback courtship	Western meadowlark song	Gibbon calls	Language	Instrumental music
The vocal-auditory channel	no	no	yes	yes	yes	auditory, not vocal
Broadcast transmission and directional reception	yes	yes	yes	yes	yes	yes
Rapid fading	?	?	yes	yes, repeated	yes	yes
Interchangeability	limited	no	?	yes	yes	?
Total feedback	?	no	yes	yes	yes	yes
Specialization	?	in part	yes?	yes	yes	yes
Semanticity	yes	no	in part?	yes	yes	no (in general)
Arbitrariness	no		if semantic, yes	yes	yes	
Discreteness	no	?	?	yes	yes	in part
Displacement	yes, always		?	no	yes, often	
Productivity	yes	no	?	no	yes	yes
Traditional transmission	probably not	no?	?	?	yes	yes
Duality of patterning	no		?	no	yes	

CHIMP COMMUNICATION

The formal and functional complexity of language is such a distinctive human trait that many scholars think the designation *homo loquens* ('speaking man') to be a better way of identifying the species than any other single criterion that has been suggested (such as tool using) (p. 291). This is not to disregard the complex patterns that have been observed in the natural communicative systems of birds, insects, apes, and other animals (the subject matter of the field of *zöosemiotics*). But no animal system remotely compares with the level of sophistication found in human language. The evolutionary gap is very wide. Only the recent experiments in teaching language to chimpanzees have suggested that this gap may be somewhat narrower than has traditionally been assumed.

Early experiments to teach chimpanzees to communicate with their voices failed because of the insufficiencies of the animals' vocal organs (p. 290). However, when attempts were made to communicate with them using the hands, by teaching a selection of signs from American Sign Language (ASL, see Part VI), dramatic progress was claimed. The first subject was a female chimpanzee named Washoe, whose training began in 1966 when she was less than a year old. It took her just over four years to acquire 132 ASL signs, many of which bore striking similarities to the general word meanings observed in child language acquisition (Part VII). She also began to put signs together to express a small set of meaning relations, which resembled some of the early sentences of young children, such as *want berry*, *time drink*, *there shoe* (B. T. & R. A. Gardner, 1975).


























Since then, several other chimpanzees (and also gorillas) have acquired a vocabulary of signs, and alternative teaching procedures have been tried. For example, in the case of the chimps Moja and Pili, sign language teaching began soon after birth, and training was carried out by native signers. Both chimps began to sign when they were about 3 months old, and had over a dozen signs by the age of 6 months – a marked contrast with Washoe, who had only 2 signs after 6 months of training.



'Peony nose touch' Peony, one of the 'second generation' of chimps trained in the Premack study, carries out this instruction, which her trainer has placed on the magnetic board. (D. Premack & A. J. Premack, 1983, p. 29.)

A quite different way of proceeding was introduced in the case of a 5-year-old chimpanzee called Sarah, in a research programme that began in 1954 (D. & A. J. Premack, 1983). She (and, later, several others) was taught a form of written language – to arrange and respond to vertical sequences of plastic tokens on a magnetic board. Each token represented a word, e.g. small blue triangle = *apple*, small pink square = *banana*. In due course, the trainer was able to teach Sarah to respond correctly to several basic semantic sequences (e.g. 'give Mary apple'), including a number of more abstract notions, such as 'same/different' and 'if/then' (e.g. ? *apple different banana*).

Chimp language research attracted considerable media publicity in its early years, with reporters focussing on the implications of the work. What would chimps say if they could use language? What would they think of the human race? Would they claim civil rights? Such speculations were wholly premature, given the limited findings of the research to date. These findings are in any case controversial, receiving a range of reactions extending from total support to total antipathy. A variety of interpretations seems possible. It is evident that chimps can learn to imitate signs, combine them into sequences, and use them in different contexts, but the explanation of this behaviour is less clear. Many scholars believe that the chimps' behaviour can be explained as a sophisticated imitation ability rather than as evidence for some form of linguistic processing, and they argue the need for fuller accounts to be provided of chimp behaviour, and of the training methods used, in order to evaluate the claims being made about learning. More systematic data have begun to be collected, but it will be some time before these questions can be resolved.

NOUNS	VERBS	CONCEPTS/CONDITIONALS	ADJECTIVES (COLOURS)
 Sarah	 is	 same	 red
 chocolate	 give	 different	 yellow
 apple	 take	 no-not	 brown
 Mary	 insert	 name of	 green
 banana	 wash	 colour of	
 pail	 dish	 ?	
 apricot	 rasin	 if-then	

Washoe's words

Washoe's typical vocabulary can be seen from the signs she used in a study of her responses to 500 questions. The signs were grouped into 13 general types:

Proper names (her companions)
Don, Dr G, Greg, Roger, Linn, Mrs G, Susan, Washoe

Pronouns
me, we, you

Common nouns

baby	dirty	nut
bath	drink	pants
bed	flower	pencil
berry	food	purse
bird	fruit	ride
blanket	gun	shoe
book	hammer	smoke
brush	hat	spoon
bug	ice	swallow
car	key	sweet
cereal	leaf	tree
chair	listen	water
cheese	lollipop	window
clothes	look	wiper
comb	man	woman
cow	meat	

Possessives
mine, yours

Traits
funny, good, hungry, stupid

Colours
black, white, green, red

Temporal
time

Negative
can't, enough, no

Imperative
gimme, help

Appetitive
please, want

Quantitative
hungry, more

Verbs
bite, catch, cry, go, hug, open, peekaboo, smile, tickle

Locatives
in, out, up, there

Typical sequences
Me Washoe Food fruit
You me out Time drink
Susan bite Good me
there

Sarah's symbols (left)
Symbols used in communicating with Sarah and the other chimps (colour is not shown). (From D. Premack & A. J. Premack, 1983, p. 21.)

Semiotics

Language can also be studied as part of a much wider domain of enquiry: *semiology*, or *semiotics*. This field investigates the structure of all possible sign systems, and the role these play in the way we create and perceive patterns (or ‘meanings’) in sociocultural behaviour. The subject is all-inclusive, therefore, dealing with patterned human communication in all its modes (sound, sight, touch, smell, and taste) and in all contexts (e.g. dance, film, politics, eating, clothing). The subject matter of the present book would form but a small section of any proposed encyclopedia of semiotics.

AUDITORY–VOCAL

The diagram below shows the relationship between language, as identified in Parts III–VI, and other aspects of human communication. The structured use of the *auditory–vocal* mode, or channel (p. 400), results in the primary manifestation of language: speech. But non-linguistic uses of the vocal tract are also possible: physiological reflexes, such as coughing and snoring; musical effects, such as whistling; and the communication of identity, in the form of voice quality (§6). The suprasegmental aspects of vocal expression (§29) are usually included within the study of language, though it is difficult to draw a clear-cut boundary line between some of these effects (those placed under the heading of ‘paralanguage’, such as giggling and whispering) and those that clearly fall outside language.

VISUAL

The visual mode is used for a variety of purposes, some linguistic, some not. The primary way in which visual effects have a linguistic use is in the various deaf sign languages (Part VI). In addition, there is the historically derivative use of the visual mode that resulted in the development of written

language. Further writing-based codes, such as semaphore and morse, would also be included here. Non-linguistic forms of visual communication include the systems of facial expression and bodily gesture, which are the subject matter of *kinesics* (p. 402).

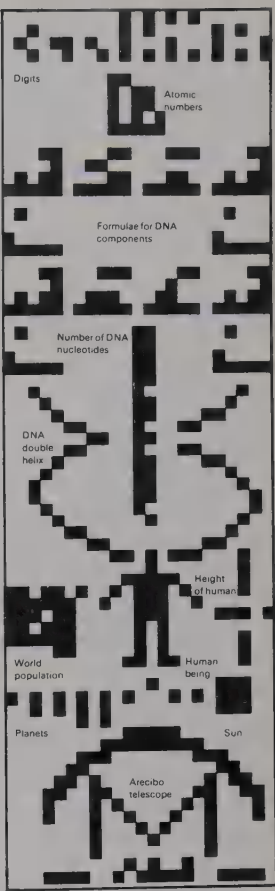
TACTILE

Tactile communication has very limited linguistic function, apart from its use in deaf–blind communication and in various secret codes based on spoken or written language (p. 58). Its main uses are non-linguistic, in the form of the various ways in which bodily contact and physical distance between people can signal contrasts of meaning – the subject matter of *proxemics* (p. 401).

The communicative use of the visual and tactile modes is often referred to as ‘nonverbal communication’, especially in academic discussion. In everyday terms, it is the area of ‘body language’.

OLFACTORY AND GUSTATORY

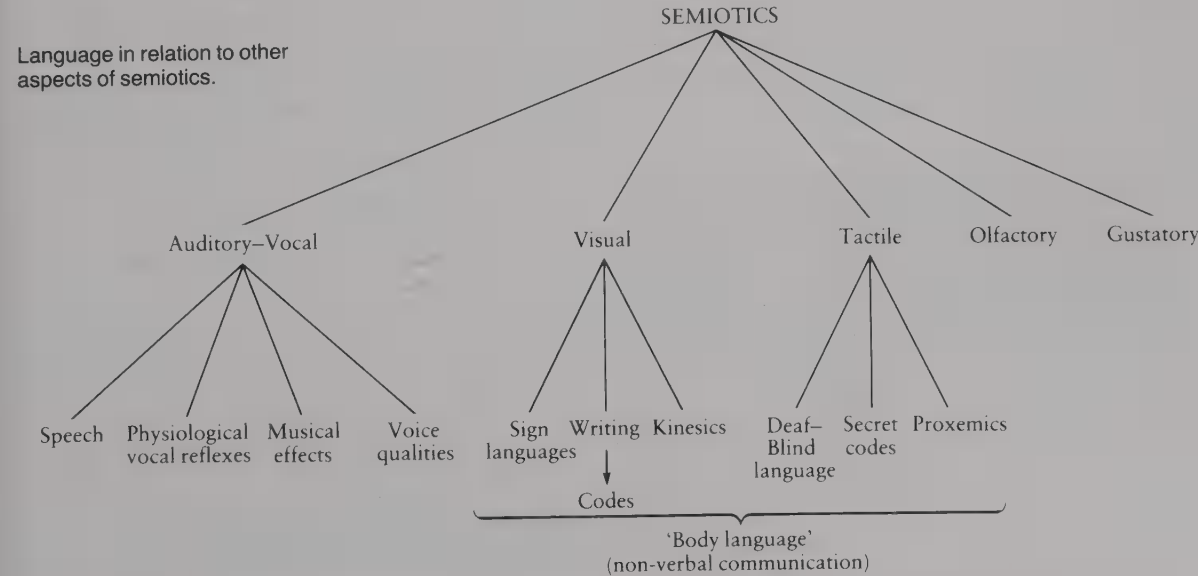
There seems to be little active role for the olfactory and gustatory modes in human communication (a marked contrast with the important use of these senses for communicative purposes in the animal kingdom). However, they do play an important part in our reception of information about the outside world (e.g. in smelling and tasting food). The communicative use of body odour seems to have a mainly sexual role in human society; but there are several anecdotes of its use in other domains. One linguist even claimed to be able to tell when his informants (p. 410) were under strain (and perhaps therefore were being less reliable) by the different body odour they exuded!



Other modes? This is the pictographic message transmitted into space by the Arecibo radio telescope in Puerto Rico in 1974. The signal was aimed at the cluster of 300,000 stars, known as M13, in the Hercules constellation.

The message consists of a series of radio pulses which can be arranged into a pictogram. It includes data on the chemical basis of life on earth, the human form, and the solar system. It assumes, of course, that the communicative system of the receiving species is capable of responding to the same semiotic contrasts as are displayed in the pictogram (shape, length, etc.). If the entity receiving the signal happens to have a communicative system based on, say, heat, the astronomers will have wasted their time!

The Hercules constellation is 24,000 light years away – which means that, if any one or thing is there to receive it, and chooses to reply, the response should arrive in about 50,000 years’ time.



AUDITORY-VOCAL EFFECTS

The main systems of communication using the auditory-vocal channel have been described elsewhere in this volume (Part IV). However, from time to time linguists have reported types of auditory communication that fall outside the normal use of the vocal apparatus – notably, the whistled speech of several rural populations. This is found in some Central and South American tribes, as well as in the occasional European community (e.g. in Turkey and the Canary Islands, based on Turkish and Spanish respectively).

Whistled speech

Eusebio Martinez was observed one day standing in front of his hut, whistling to a man a considerable distance away. The man was passing on the trail below, going to market to sell a load of corn leaves which he was carrying. The man answered Eusebio's whistle with a whistle. The interchange was repeated several times with different whistles. Finally the man turned around, retraced his steps a short way and came up the footpath to Eusebio's hut. Without saying a word he dumped his load on the ground. Eusebio looked the load over, went into his hut, returned with some money, and paid the man his price. The man turned and left. Not a word had been spoken. They had talked, bargained over the price, and come to an agreement satisfactory to both parties – using only whistles as a medium of communication. (G. M. Cowan, 1948, p. 280.)

This conversation took place between Mazateco speakers, members of a tribe that lives in and around the State of Oaxaca, Mexico. The whistled conversations closely correspond to patterns of spoken language, as has been shown by having the whistlers translate their tunes into speech. It is thus quite unlike the unstructured whistling patterns used as attention signals (e.g. 'wolf-whistling') in Euro-American culture. For example, in the following sequence of whistled utterances (where the tones are classified from 1 (high) to 4 (low), and glides between tones are marked by a dash), quite specific meanings are signalled, as the following transcription of Mazateco shows:

- 1,1,3,3,2,4 *hme*¹ *č*²*a*¹ *š*³ *k*³ *č*²*a*² *-ve*⁴
'What did you bring there?'
- 1,4,1,1 *č*²*a*¹ *na*⁴ *hme*¹ *ni*¹
'It is a load of corn.'
- 1,3,3,4,3 *hna*¹ *ti*³ *mi*³ *koai*⁴ *ni*³
'Well where are you going with it?'
- 3,2,4,2,3,4 *te*³ *na*² *nko*⁴ *ti*² *-vhi*³ *koa*⁴
'I am taking it to Tenango.'
- 3,3,3,3,2,2-4,3 *na*³ *ti*³ *mi*³ *ka*³ *te*² *na*³ *ni*²⁻⁴ *ni*³
'Are you going to sell it then?'
- 2,3,3,2,2-3 *ti*² *-vhi*³ *ka*³ *te*² *na*²⁻³
'I am going to sell it.'
- 1,1,3,2,4,4,2,3,1-3,4 *ho*¹ *th*¹ *č*²*a*³ *ni*²
*ni*⁴ *ta*⁴ *te*² *na*³ *ni*¹⁻³ *vi*⁴
'How much will you take then? Sell it to me here.'
- 4-3,4,3,3,2,4 *ka*⁴⁻³ *ta*⁴ *ko*³ *na*³ *hko*³ *ka*² *ša*⁴
'I will take \$2.50 a box.'
- (G. M. Cowan, 1948, pp. 284-5.)

The whistled tunes are based on the patterns of tone and rhythm used in the spoken language, and

can convey precise distinctions. With very few exceptions, each 'syllable' of whistle corresponds to a syllable of speech. Ambiguity is uncommon, because the topic of the conversation is usually something evident in the situation of the speakers. However, it is important for both speakers to use the same musical key, otherwise confusion may arise.

Whistled dialogues tend to contain a small number of exchanges, and the utterances are short. They are most commonly heard when people are at a distance from each other (e.g. when working the land), but they can also be found in a variety of informal settings. Although women are able to understand whistled speech, it is normally used only by and between males.

Drum signalling

In several parts of the world – notably Africa, the Americas, and the Pacific – drums, gongs, horns, and other musical instruments have been used to simulate selected features of speech (primarily, tones and rhythms). In Africa, drums are the usual instruments involved, and quite elaborate systems of communication have developed.

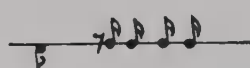
One system, used among the Jabo tribe of Eastern Liberia, makes use of a wooden signal 'drum' (actually, more like a bell, as it has no skin covering) – a hollowed tree trunk, often over 2 metres in length. This has a longitudinal slit


with lips varying in thickness, thus allowing several different tones to be produced. Two straight sticks are used for beating, and further tonal variations can be made by altering the way these sticks hit the drum. Other types of drum are also used for different purposes (such as dancing).


The drummer, an official of the town's law-enforcing authority, controls the way meetings take place, using special signals to do such things as call for order, summon people, and end the meeting. These signals consist mainly of fixed formulae, with a few varia-


tions and additions. The Jabo rarely use these drums for communicating with other villages (unlike the drum signalling found in many other parts of Africa).

The words and syllables of Jabo are tonal (§29): there are four basic tones, which are often linked by glides, and these interact with aspects of the vowel and consonant system. There is also considerable variation in the length of these tonal contrasts, which accounts for several of the drum patterns used. Some examples of these signals, with a transcription in Jabo, are given below. (From G. Herzog, 1945.)

1. 
*nā*⁴ *wi*¹ *ε*¹ *o*²
'Greetings!'

2. 
*ba*² *di*²² *le*¹ *ba*² *po*² *le*² *kpe*² *le*¹
'Come ye quick! Put ye your effort there!'


*cla*² *wle*¹ *'Gb*² *nā*⁴ *ba*² *te*² *'Zle*² *le*² *ba*² *b*² *dō*³ *dō*³
'Soldiers all! Stop ye the noise. Speak ye one by one! (Played in the men's assembly when the discussion threatens to get out of hand.)'


*'Du*² *i*² *blo*² *ε*³ *ka*² *nō*²⁻¹ *'Gwe*² *nē*¹ *u*³ *mī*² *'Du*² *i*² *blo*² *ε*³ *(c)*¹
'To collect fines – hunger is raging – we are going to collect fines (indeed)' (Played before the assembly sends out a group to collect fines imposed by the court.)

TACTILE EFFECTS

The communicative use of touching behaviour, proxemics, has in recent years attracted a great deal of research by psychologists, sociologists, and anthropologists. A very wide range of activities is involved, as is suggested by this small selection of terms expressing bodily contact:

embrace	lay on (hands)	punch
guide	link (arms)	shake (hands)
hold	nudge	slap
kick	pat	spank
kiss	pinch	tickle

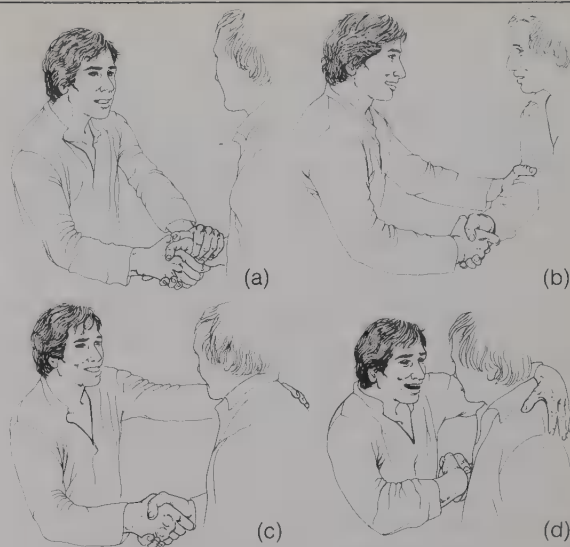
The communicative value of tactile activities is usually fairly clear within a culture, as they comprise some of the most primitive kinds of social interaction (several of the activities are found between animals). They express such 'meanings' as affection, aggression (both real and pretend), sexual attraction, greeting and leave taking, congratulation, gratitude, and the signalling of attention. They operate within a complex system of social constraints: some of the acts tend to be found only in private (notably, sexual touching); some are specialized in function (e.g. the tactile activities carried on by doctors, dentists, hairdressers, or tailors); and some are restricted to certain ceremonies (e.g. weddings, graduation, healing). Everyone has a subjective impression about how these activities take place, and what they mean. But there are many differences in behaviour between individuals and groups, and it is not easy to make accurate generalizations about society as a whole.

It is difficult to study tactile activity in an objective way: a basic problem is how to obtain clear recordings in which the participants are unaware of the observer (especially if the behaviour is being filmed). There are thus few detailed accounts of the range of communicative tactile acts in a society, and of the factors governing their use. It is evident, however, that some societies are much more tolerant of touching than others, so much so that a distinction has been proposed between 'contact' and 'non-contact' societies – those that favour touching (such as Arabs and Latin Americans), and those that avoid it (such as North Europeans and Indians). In one study of couples sitting together in cafés, it was found that in Puerto Rico the people touched each other on average 180 times an hour; in Paris it was 110 times an hour; whereas in London there was no touching at all (S. M. Jourard, 1963).

The distance people stand from each other, and the way they hold their bodies when interacting, are other important facets of proxemic behaviour. There are norms of proximity and orientation within a culture that communicate information about the social relationship between the participants. A common research procedure is to observe the point at which people are made to feel uncomfortable when others invade their 'body space', by moving too close to them (e.g. in a queue, outside a cinema, on a beach). Any cultural variations can

The amplified hand-shake

In a culture where hand-shaking is a normal formality, extra warmth can be expressed only by extra activity, such as increased firmness, longer duration, and more vigorous vertical movements. The second hand may also be brought into play, as shown in the diagrams, which illustrate increasing warmth: (a) hand clasping, (b) arm clasp, (c) shoulder clasp, and (d) shoulder embracing. (From D. Morris, 1977, p. 93.)

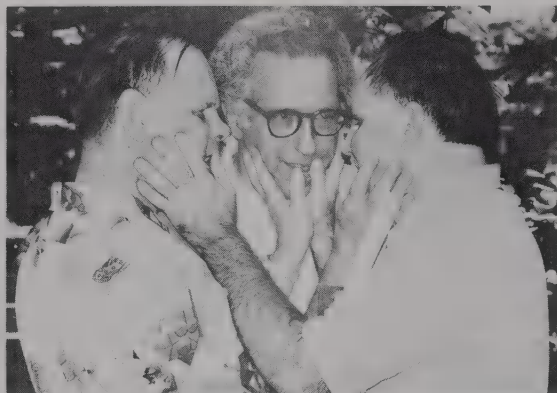


easily lead to conflict and misinterpretations. Latin Americans, for example, prefer to stand much closer to each other than North Europeans, so that when the former and the latter converse, there may be a problem. The present author recalls one such conflict during a conversation with a student from Brazil, who came and stood before him at some 45 cm distance – a normal interaction distance for her, but much too close for him. He instinctively moved back to the distance he found most comfortable – nearer 1 metre. However, as he did so, the student moved forward, unconsciously maintaining her own norm. He retreated further, not wishing to be so close to the student. After both had circled the desk several times, he capitulated, and asked her to sit down!

Tadoma communication

Tadoma is a method of tactile speech communication that has evolved between people who are both deaf and blind. Speech is perceived by placing a hand against the face of the speaker and monitoring the articulatory movements involved. Usually, the thumb is used to sense the movements of the lips, and the fingers fan out over the side of the face and neck. Devised in Norway in the 1890s, it got its name from its first use in the U.S. with two deaf-blind children, Tad Chapman and Oma Simpson. (R. Vivian, 1966.)

Several other tactile methods of communication are used with the handicapped, such as braille (p. 280). It is also possible to 'translate' such codes as morse and finger spelling (p. 225) into tactile form.



Distance zones

An American study suggests that there may be four proximity zones when people interact:

- *Intimate* Less than 45 cm, used for intimate relationships.
- *Personal* Between 45 cm and 1.3 metres, for reasonably close relationships.
- *Social consultative* Between 3 and 4 metres, for more impersonal relationships.
- *Public* Above 4 metres, for public figures and public occasions. (E. T. Hall, 1959.)

The rules of Indian caste (p. 38) illustrate the point even more precisely. According to tradition in one part of India, members of each caste may not approach each other within the following distances:

Brahmins – Nayars: 2 metres
Nayars – Iravans: 8 metres
Iravans – Cherumans: 10 metres
Cherumans – Nayadis: 20 metres

The rules, which are still followed in some areas, work in an additive way: thus, a Nayadi may not come closer to a Brahmin than 40 metres (M. Argyle, 1975).

VISUAL EFFECTS

The field of non-verbal visual communication, kinesics, can be broken down into several components: facial expression, eye contact, gesture, and body posture. Each component performs a variety of functions. Movements of the face and body can give clues to a person's personality and emotional state. The face, in particular, signals a wide range of emotions, such as fear, happiness, sadness, anger, surprise, interest, and disgust, many of the expressions varying in meaning from culture to culture. In addition, the face and body send signals about the way a social interaction is proceeding: patterns of eye contact show who is talking to whom; facial expression provides feedback to the speaker, expressing such meanings as puzzlement or disbelief; and body posture conveys a person's attitude towards the interaction (e.g. relaxation, interest, boredom). Several kinds of social context are associated with specific facial or body behaviours (e.g. waving while taking leave). Ritual or official occasions are often primarily marked by such factors as kneeling, standing, bowing, or blessing.

Visual effects interact very specifically with speech. Gestures and head movements tend to coincide with points of emphasis. Hand movements in particular can be used to add visual meaning to what has been said ('drawing pictures in the air'). Patterns of gaze distinguish the participants in a conversation: a listener looks at a speaker nearly twice as often as the speaker looks at the listener. They also assist in marking the structure of a conversation (§20): for example, speakers tend to look up towards the ends of their utterances, thus giving their listeners a cue that an opportunity to speak is approaching.

Several visual effects may well be universal, but the focus of interest in recent years has been on the cultural differences that can be observed in face and body movements. Some societies use many gestures and facial expressions (e.g. Italian); others use very few (e.g. Japanese). Moreover, a visual effect may seem to be shared between societies, but in fact convey very different meaning. Thus, in France, using a finger to pull down the eyelid means that the speaker is aware of something going on, whereas in Italy the same gesture means that the listener must *become* aware. Cultural variations in visual effects are among the first things a foreigner notices, but it can be very difficult working out what they mean, and even more difficult deciding whether one is permitted to use them.

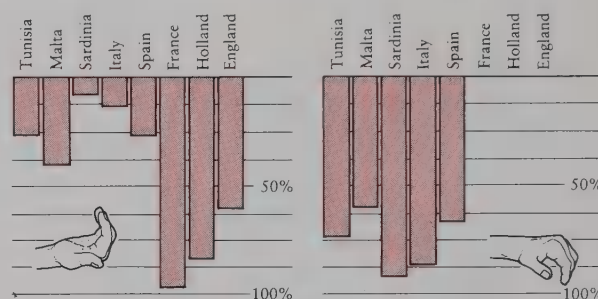
Eyebrow flashing

When people greet each other at a distance, wishing to show that they are ready to make social contact, they raise their eyebrows with a rapid movement, keeping them raised for about one-sixth of a second. The behaviour has been noted in many parts of the world, and is considered universal (though some cultures suppress it, e.g. the Japanese, who consider it indecent). We are not usually aware that we use this signal, but it evokes a strong response in a greeting situation, and is often reciprocated. To receive an eyebrow flash from someone we do not know is uncomfortable, embarrassing, or even threatening. (After I. Eibl-Eibesfeldt, 1972.) Below: an eyebrow flash made by a Samoan (left) and a Waika Indian (right).



Come here?

Beckoning can be carried out with the palm of the hand facing up or down. People used to the former could interpret the latter to mean 'Go away!' The chart shows the preferred pattern in countries between Britain and North Africa. (After D. Morris *et al.*, 1978.)



Body transcription

Some of the symbols, or *kinegraphs*, which have been used in order to transcribe the various movements of face and body. Different sets of symbols have been devised for different areas of the body: head, face, trunk, shoulder/arm/wrist, hand/fingers, hip/leg/ankle, foot activity, and neck. The symbols below are from the set for facial activities. (From R. L. Birdwhistell, 1952.)

—○—	Blank-faced	⌘ ⌘	Slitted eyes
—∩	Single raised brow (∩ indicates brow raised)	⊙ ⊙	Eyes upward
—∪	Lowered brow	—⊙—	Shifty eyes
∨	Medial brow contraction	“⊙ ⊙”	Glare
⋯	Medial brow nods	⌘	Tongue in cheek
—∩—	Raised brows	⌘	Pout
○ ○	Wide eyed	+++	Clenched teeth
—○	Wink	⌘	Toothy smile
⊙ ⊙	Sidewise look	⌘	Square smile
↗ ↗	Focus on auditor	⊙	Open mouth
∞ ∞	Stare	⌘	Slow lick—lips
⊙ ⊙	Rolled eyes	⌘	Quick lick—lips
		⌘	Moistening lips
		⌘	Lip biting

Being humble

Points of similarity as well as difference can be seen in the expression of an attitude among various cultures. In one early study, the communication of humility was found to make use of such body postures as the following:

- Join hands over head and bow (China).
 - Extend or lower arms (Europe).
 - Stretch arms towards person and strike them together (Congo).
 - Crouch (Fiji, Tahiti).
 - Crawl and shuffle forward; walk on all fours (Dahomey).
 - Bend body downward (Samoa).
 - Permit someone to place a foot on one's head (Funda, Tonga).
 - Prostrate oneself, face down (Polynesia).
 - Bow, extend right arm, then move it down, up to head, and down again (Turkey, Persia).
 - Throw oneself on the back, roll from side to side, and slap outside of the thighs (Batokas).
- (After M. H. Krout, 1942.)

Tick-tack talk

One of the most intriguing sights at dog tracks and racecourses in Britain is the system of tick-tack signing used to circulate information about the way bets are being placed. A signer acts as an agent for a group of book-makers who have bought his 'twist card', on which the dogs or horses are given different numbers to those on the official race card. The same set of tick-tack signs is used by all signers, identifying the amount of a bet, a horse or dog number, and the number of a race; but only those who have an individual signer's twist card will be able to interpret what a number refers to.

Number Signs

1	right hand on top of hat
2	right hand on nose
3	right hand under chin
4	right hand sweeps a curve
5	right hand on shoulder
6	sign 5 then 1
7	sign 5 then 2
8	sign 5 then 3
9	sign 5 then 4
10	clap hands
£5	right hand held up, palm outwards, fingers spread
£10	both arms held up with fingers spread
£50	clenched fists held together
£100	left hand held up with fingers spread
£500	hands outline a circle
£1,000	hands play imaginary piano ('grand piano' = 'a grand' = £1,000)

Some signs for odds

Evens arms held in front, moving up and down
 11/10 hands together, forming a pyramid
 6/4 one right finger in the left ear-hole



No bet. I don't want it!

Nine to four against

Evens

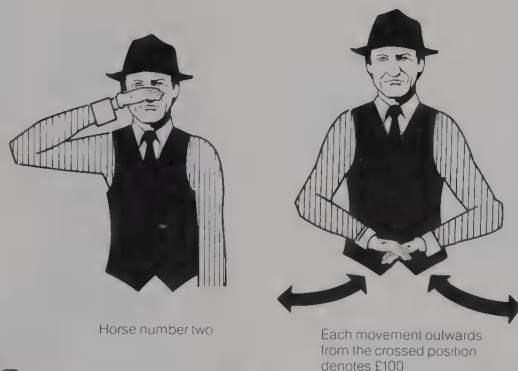
I want to pay to lose!

Sign 'language'

Many gestural systems have evolved to facilitate communication in particular situations. They are often referred to as 'sign languages', but few have developed any degree of structural complexity or communicative range, and it is therefore important to distinguish them from 'sign language proper' – the natural signing behaviour of the deaf (Part VI). Several might properly be described as 'restricted languages' (p. 56).

In many parts of the world, such as India, Thailand, and Japan, pantomime and dance have come to use complex systems of symbolic hand gestures in association with facial expressions and body movements. The events of a story, its deeper meaning, and the emotional states of the characters may all be conveyed in this way. For example, in the *Bhārata Nāṭya-śāstra* ('principles of dramatic art'), the 6th-century BC manual of Hindu dance, there are over 4,000 picture patterns for the hands (*mud-rās*).

- Religious or quasi-religious groups and secret societies often develop ritual signing systems so that members can recognize and communicate with each other. Such signs are used in Freemasonry, practised by some 6 million people mainly in the USA and Britain, and in many of the secret societies of the Far East, such as the Hung Society.
- Several monastic orders developed signing systems of some complexity, especially if their members were vowed to silence, as in the case of the Trappist monks, a development of the medieval Cistercian order.
- Simple signing systems are found in a wide range of professions:



Horse number two

Each movement outwards from the crossed position denotes £100

sports players or officials can signal the state of play, or an intention to act in a certain way.

entertainment a group of performers can coordinate their activities, such as acrobats, musicians.

theatres/cinemas ushers can signal the number and location of seats.

casinos officials can report on the state of play, or indicate problems that might affect the participants in a game.

sales/auctions auctioneers can convey the type and amount of selling and buying.

aviation marshalling ground staff can send information about the position of an aircraft, the state of its engines, and its desired position.

radio/television direction producers and directors can signal to performers the amount of time available, instructions about level of loudness or speed of speaking, and information about faults and corrections.

diving divers can communicate depth, direction, time, and the nature of any difficulties they have encountered.

truck driving drivers can exchange courtesy signals, give information about the state of the road, or show they are in trouble.

heavy equipment drivers people controlling cranes, hoists, and other equipment signal the direction and extent of movement.

fire service firemen can send directions about the supply of water, water pressures, and the use of equipment.

bookmaking bookies send signals about the number of a race or horse, and its price (see left).

noisy conditions environmental noise may make verbal communication impossible (e.g. in cotton mills) and a signing system may result.

Eurhythm

The bodily representation of the sound *a*, expressing the meaning of astonishment and wonder, as recommended in eurhythm (R. Steiner, 1931, p. 40).

This approach, developed by the founder of anthroposophy, Rudolf Steiner (1861–1925), aimed to promote a close harmony between the sounds of speech and patterns of body movement. Eurhythm was seen as 'visible speech', with the body reflecting in its physical shape the forms of sounds as they are articulated. The different sounds are interpreted symbolically (§30), e.g. *u* is seen as the expression of something which chills or stiffens, and this is shown in the body by a pressing together of the arms and legs. According to Steiner, 'The entire universe is expressed when the whole alphabet is repeated from beginning to end.'



65 Linguistics

Language has been an object of fascination and a subject of serious enquiry for over 2,000 years. Often, the observations have been subjective and anecdotal, as people reflected on such topics as the nature of meaning, ideals of correctness, and the origins of language (§§1, 49). But from the earliest periods, there has also been an objective approach, with scholars investigating aspects of grammar, vocabulary, and pronunciation in a detailed and organized way. At the end of the 18th century, the subject attracted an increasing number of specialists (§50), so much so that it rapidly became possible to see the emergence of a new field of scientific research with language analysis as its focus. This approach, first known as *philology*, dealt exclusively with the historical development of language. In the present century, the subject has broadened to include the whole range of subject matter represented in this book, and it is now generally called *linguistics* (or *linguistic science*). Linguistics today is a widely practised academic discipline, with several domains of application (p. 408).

Early history

A religious or philosophical awareness of language can be found in many early civilizations (p. 384). In particular, several of the important issues of language analysis were addressed by the grammarians and philosophers of Ancient Greece, Rome, and India.

THE GREEKS

The earliest surviving linguistic debate is found in the pages of Plato (c. 427–347 BC). *Cratylus* is a dialogue about the origins of language and the nature of meaning – first between Socrates and Hermogenes, then between Socrates and Cratylus. Hermogenes holds the view that language originated as a product of convention, so that the relationship between words and things is arbitrary: ‘for nothing has its name by nature, but only by usage and custom’. Cratylus holds the opposite position, that language came into being naturally, and therefore an intrinsic relationship exists between words and things: ‘there is a correctness of name existing by nature for everything: a name is not simply that which a number of people jointly agree to call a thing.’ The debate is continued at length, but no firm conclusion is reached.

The latter position is more fully presented, with divine origin being invoked in support: ‘a power greater than that of man assigned the first names to things, so that they must of necessity be in a correct state.’ By contrast, Aristotle (384–322 BC) in his essay *De interpretatione* (‘On interpretation’)

supported the former viewpoint. He saw the reality of a name to lie in its formal properties or shape, its relationship to the real world being secondary and indirect: ‘no name exists by nature, but only by becoming a symbol.’

These first ideas developed into two schools of philosophical thought, which have since been labelled *conventionalist* and *naturalistic*. Modern linguists have pointed out that, in their extreme forms, neither view is valid (p. 101). However, various modified and intermediate positions were also argued at the time, much of the debate inspiring a profound interest in the Greek language.

Another theoretical question was discussed at this time: whether regularity (*analogy*) or irregularity (*anomaly*) was a better explanation for the linguistic facts of Greek. In the former view, language was seen to be essentially regular, displaying symmetries in its rules, paradigms, and meanings. In the latter, attention was focussed on the many exceptions to these rules, such as the existence of irregular verbs or the lack of correspondence between gender and sex (p. 93). Modern linguistics does not oppose the two principles in this way: languages are analysed with reference to both rules and exceptions, the aim being to understand the relationship between the two rather than to deny the importance of either one. The historical significance of the debate is the stimulus it provided for detailed studies of Greek and Latin grammar.

In the 3rd century BC, the Stoics established more formally the basic grammatical notions that have since, via Latin, become traditional in western thought. They grouped words into parts of speech, organized their variant forms into paradigms, and devised names for them (e.g. the cases of the noun). Dionysius Thrax (c. 100 BC) wrote the first formal grammar of Greek – a work that became a standard for over 1,000 years.

The focus throughout the period was entirely on the written language. The word *grammar* (Greek: *grammatike*) in fact originally meant ‘the art of writing’. Some attention was paid to basic notions concerning the articulation of speech, and accent marks were added to writing as a guide to pronunciation. But the main interests were in the fields of grammar and etymology, rather than phonetics. A doctrine of correctness and stylistic excellence emerged: linguistic standards were set by comparison with the language of the ancient writers (e.g. Homer). And as spoken Greek (the *koine*) increasingly diverged from the literary standard, we also find the first arguments about the undesirable nature of linguistic change (§1): the language had to be preserved from corruption.



Plato (c. 427–c. 347 BC)

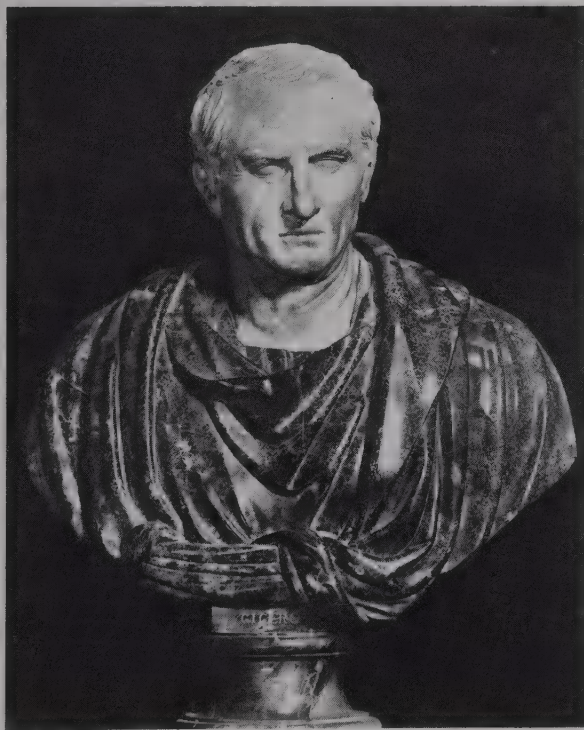


Aristotle (384–322 BC)

THE ROMANS

Roman writers largely followed Greek precedents and introduced a speculative approach to language. On the whole, in their descriptive work on Latin, they used Greek categories and terminology with little change. However, the most influential work of the Roman period proved to be an exception to this trend: the codification of Latin grammar by Marcus Terentius Varro (116–27 BC) under the headings of etymology, morphology, and syntax. *De lingua latina* ('On the Latin language') consisted of 26 books, though less than a quarter of these survive. Varro's work takes into account several differences between Latin and Greek (e.g. the absence of the definite article in the former). He also held the view (which is remarkably modern) that language is first and foremost a social phenomenon with a communicative purpose; only secondarily is it a tool for logical and philosophical enquiry.

Especially towards the end of the millennium, several authors wrote major works in the fields of grammar and rhetoric (§12) – notably, Cicero (106–43 BC) on style, and Quintilian (1st century AD) on usage and public speaking. Julius Caesar wrote on grammatical regularity – it is said, while crossing the Alps on a military campaign. Aelius Donatus (4th century AD) wrote a Latin grammar (*Ars maior*) that was used right into the middle ages, its popularity evidenced by the fact that it was the first to be printed in wooden type, and had a shorter edition for children (the *Ars minor*). In the 6th century, Priscian's *Institutiones grammaticae* ('Grammatical categories') was another influential work that continued to be used during the middle ages: it contains 18 books, and remains the most complete grammar of the age that we have.



The main result of the Roman period was a model of grammatical description that was handed down through many writers in Europe, and that ultimately became the basis of language teaching in the middle ages and the Renaissance. In due course, this model became the 'traditional' approach to grammar, which continues to exercise its influence on the teaching of English and other modern languages (§§1, 62).

THE INDIANS

During the above period, techniques of minute descriptive analysis were being devised by Indian linguists, which could have been of great influence had these descriptions reached the western world (something that did not take place until the 19th century). The motivation for the Indian work was quite different from the speculative matters that attracted Greek and Roman thinkers (though they did not ignore those topics). The Hindu priests were aware that their language had diverged from that of their oldest sacred texts, the Vedas (p. 384), in both pronunciation and grammar. An important part of their belief was that certain religious ceremonies, to be successful, needed to reproduce accurately the original form of these texts. Change was not corruption, as in Greece, but profanation. Several ancillary disciplines (*Vedāṅga*, 'limbs of the Vedas'), including phonetics, etymology, grammar, and metrics, grew up to overcome this problem.

Their solution was to establish the facts of the old language clearly and systematically and thus to produce an authoritative text. The earliest evidence we have of this feat is the work carried out by the grammarian Pāṇini, sometime between the 5th and 7th centuries BC, in the form of a set of 4,000 aphoristic statements known as *sūtras* ('threads'). The *Aṣṭādhyāyī* ('Eight books'), dealing mainly with rules of word formation, are composed in such a condensed style that they have required extensive commentary, and a major descriptive tradition has since been established. The work is remarkable for its detailed phonetic descriptions: for example, places of articulation are clearly described, the concept of voicing is introduced, and the influence of sounds on each other in connected speech is recognized (the notion of *sandhi*). Several concepts of modern linguistics derive from this tradition.

Cicero (Roman Imperial copy of a late contemporary portrait)

THE MIDDLE AGES

Very little is known about the development of linguistic ideas in Europe during the 'Dark Ages', though it is evident that Latin, as the language of education, provided a continuity of tradition between classical and medieval periods. Medieval learning was founded on seven 'arts', of which three – grammar, dialectic, and rhetoric – formed one division, known as the *trivium*. Grammar (mainly using Priscian and Donatus) was seen as the foundation for the whole of learning. A tradition of 'speculative' grammars developed in the 13th and 14th centuries, in which grammatical notions were reinterpreted within the framework of scholastic philosophy. The authors (the 'Modistae') looked to philosophy for the ultimate explanation of the rules of grammar. A famous quotation from the period states that it is not the grammarian but 'the philosopher [who] discovers grammar' (*philosophus grammaticam invenit*). The differences between languages were thought to be superficial, hiding the existence of a universal grammar (§14).

The middle ages also saw the development of western lexicography (§18) and progress in the field of translation, as Christian missionary activity increased. In the East, Byzantine writers continued to expound the ideas of the Greek authors. There was a strong tradition of Arabic language work related to the Qur'an (which was not to be translated, p. 384). From around the 8th century, several major grammars and dictionaries were produced, as well as descriptive works on Arabic pronunciation. For a long time, these remained unknown in Western Europe. Opportunities for contact with the Greek, Arabic, and Hebrew linguistic traditions only came later, as a result of the Crusades.

THE RENAISSANCE

The rediscovery of the Classical world that came with the 'revival of learning', as well as the discoveries of the New World, transformed the field of

language study. Missionary work produced a large quantity of linguistic material, especially from the Far East. The Chinese linguistic traditions were discovered. Arabic and Hebrew studies progressed, the latter especially in relation to the Bible. In the 16th century, several grammars of exotic languages came to be written (e.g. Quechua in 1560). There was a more systematic study of European languages, especially of the Romance family. The first grammars of Italian and Spanish date from the 15th century. Major dictionary projects were launched in many languages. Academies came into being (p. 4). The availability of printing led to the rapid dissemination of ideas and materials.

As we approach modern times, fresh philosophical issues emerged. The 18th century is characterized by the arguments between 'rationalists' and 'empiricists' over the role of innate ideas in the development of thought and language. Such ideas provided the basis of certainty in knowledge, according to Cartesian philosophy, but their existence was denied by philosophers (such as Locke, Hume, and Berkeley) for whom knowledge derived from the way the mind operated upon external sense impressions. The issue was to resurface in the 20th century (p. 409).

Several other important trends have been noted during the 17th and 18th centuries: the breakdown of Latin as a universal medium of communication, and its replacement by modern languages (§59); the many proposals for universal languages, shorthand systems, and secret codes (§§33, 58); the beginnings of a systematic approach to phonetics (§27); the development of 'general' grammars, based on universal principles, such as the 17th-century grammar of Port Royal (§14); and the major elaborations of traditional grammar in schools (§1). Then, as the 19th century approached, the first statement about the historical relationship between Sanskrit, Greek, and Latin was made, ushering in the science of comparative philology (§50).

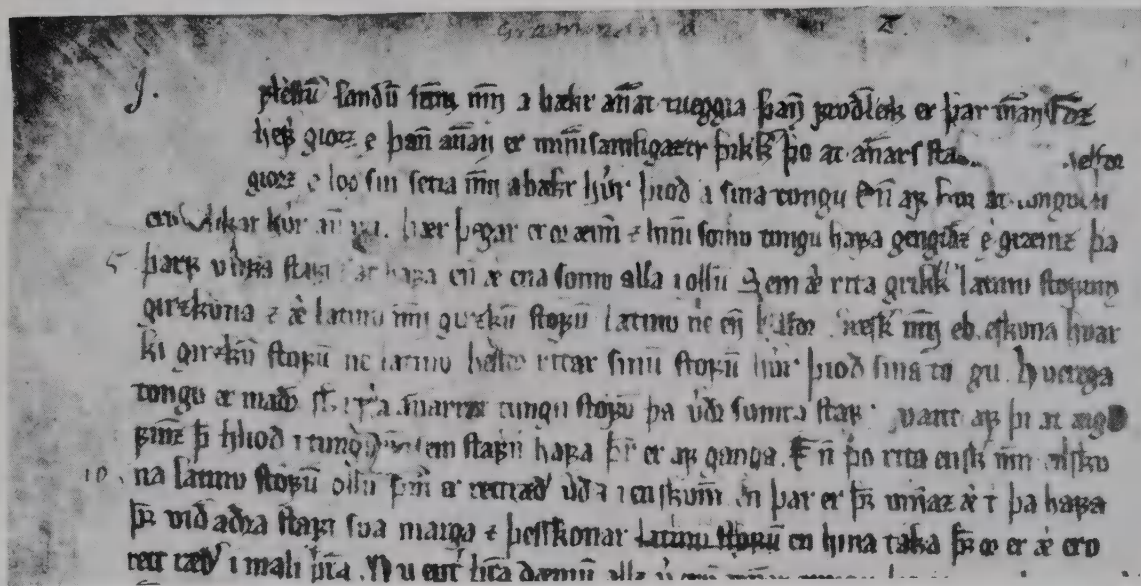
The 'first grammarian'

The *Prose Edda* is a 13th-century textbook on poetic style and construction, written by the Icelandic chief, Snorri Sturluson. Appended to the manuscript are four treatises on grammar, written in the mid-12th century, the first of which has attracted special attention because of the originality of its thought. The authorship of this 'First Grammatical Treatise' is unknown, but the writer has come to be known as the 'first grammarian'. The picture shows part of the opening leaf of the manuscript.

This early exercise in spelling reform (p. 215) summarizes and illustrates the principles needed to improve the use of the Latin alphabet for writing Old Icelandic. It is the only work of this period to draw attention to the problems involved in applying Latin letters to a vernacular language. It contains several acute phonetic observations, and, in its emphasis on finding symbols to express sound contrasts, anticipates the basis of 20th-century phonological theory (§28).

A translation of part of the opening page (E. Haugen, 1972):

I have written an alphabet for us Icelanders also, in order that it might become easier to write and read. . . I have used all the Latin letters that seemed to fit our language well and could be rightly pronounced, as well as some other letters that seemed needful to me, while those were taken out that did not suit the sounds of our language. Some of the consonants of the Latin alphabet were rejected, and some new ones added. No vowels were rejected, but a good many were added, since our language has the greatest number of vowel sounds.



Twentieth-century linguistics

The growth of modern linguistics, from the end of the 18th century to the present day, has in large part already been summarized in earlier sections of this volume. The majority of the concepts used in the discussion of language history, acquisition, structure, substance, and use stem from this perspective (reflecting the background of the author). However, there remain several loose ends of a historical and theoretical nature that need to be drawn together in this final part of the book.

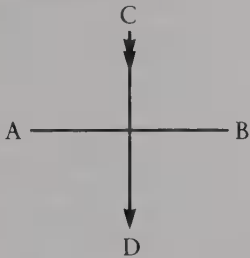
EUROPE AND AMERICA

Two main approaches to language study, one European, one American, unite to form the modern subject of linguistics. The first arises out of the aims and methods of 19th-century comparative philology (§50), with its focus on written records, and its interest in historical analysis and interpretation. The beginning of the 20th century saw a sharp change of emphasis, with the study of the principles governing the structure of living languages being introduced by the Genevan linguist, Ferdinand de Saussure (1857–1913). Saussure's early work was in philology, but he is mainly remembered for his theoretical ideas, as summarized in the *Cours de linguistique générale* ('Course in general linguistics'), which is widely held to be the foundation of the modern subject. This book was in fact published posthumously in 1916, and consists of a reconstruction by two of Saussure's students of his lecture notes and other materials.

The second approach arose from the interests and preoccupations of American anthropologists, who were concerned to establish good descriptions of the American Indian languages and cultures before they disappeared. Here, there were no written records to rely on, hence historical analysis was ruled out. Also, these languages presented very different kinds of structure from those encountered in the European tradition. The approach was therefore to provide a careful account of the speech patterns of the living languages. A pioneer in this field was Franz Boas (1858–1942), who published the first volume of the *Handbook of American Indian Languages* in 1911. Ten years later, another anthropologically oriented book appeared: *Language* by Edward Sapir (1884–1939). These works proved to be a formative influence on the early development of linguistics in America. The new direction is forcefully stated by Boas (p. 60): 'we must insist that a command of the language is an indispensable means of obtaining accurate and thorough knowledge, because much information can be gained by listening to conversations of the natives and by taking part in their daily life, which, to the observer who has no command of the language, will remain entirely inaccessible'.

Saussurean principles

Some of Saussure's most central ideas were expressed in the form of pairs of concepts:



Diachrony vs synchrony

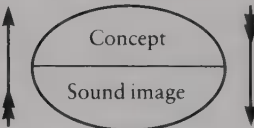
He sharply distinguished historical ('diachronic') and non-historical ('synchronic') approaches to language study. The former sees language as a continually changing medium; the latter sees it as a living whole, existing as a 'state' at a particular moment in time. In his diagram, AB represents a synchronic 'axis of simultaneities' – a language state at some point in time; CD is a diachronic 'axis of successions' – the historical path the language has travelled.

In this view, it is always necessary to carry out some degree of synchronic work before making a diachronic study: before we can say how a language has changed from state X to state Y, we need to know something about X and Y. Correspondingly, a synchronic analysis can be made without referring to history. Saussure illustrates this point using an analogy with a game of chess: if we walk into a room while a chess game

is being played, it is possible to assess the state of the game by studying the position of the pieces on the board.

Language vs langue vs parole

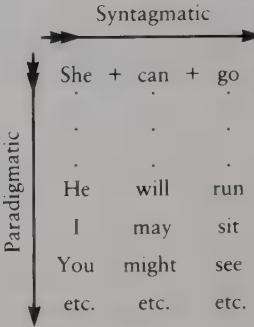
The many senses of the word 'language' prompted Saussure to introduce a three-fold set of terms, the last two of which were central to his thinking. *Langue* is the faculty of speech present in all normal human beings due to heredity – our ability to talk to each other. This faculty is composed of two aspects: *langue* (the language system) and *parole* (the act of speaking). The former is the totality of a language, which we could in theory discover by examining the memories of all the language users: 'the sum of word-images stored in the minds of individuals'. *Parole* is the actual, concrete act of speaking on the part of a person – a dynamic, social activity in a particular time and place.



Signifiant vs signifié

Saussure recognized two sides to the study of meaning, but emphasized that the relationship between the two is arbitrary (p. 404). His labels for the two sides are *signifiant* ('the thing that signifies', or 'sound image') and *signifié* ('the thing

signified', or 'concept'). This relationship of signified to signifier Saussure calls a linguistic *sign*. The sign is the basic unit of communication within a community: *langue* is seen as a 'system of signs'.



Syntagmatic and associative (or paradigmatic)

A sentence is a sequence of signs, each sign contributing something to the meaning of the whole. When the signs are seen as a linear sequence, the relationship between them is called *syntagmatic*, as in *She + can + go*. When a sign that is present is seen as contrasting with other signs in the language, the relationship is called *associative* (in later studies, *paradigmatic*), as in *She vs He, can vs will, go vs run* in the above sentence. These two dimensions of structure can be applied to phonology, vocabulary, or any other aspect of language. The result is a conception of language as a vast network of interrelated structures and mutually defining entities – a linguistic system.



Ferdinand de Saussure (1857–1913)



Edward Sapir (1884–1939)

LATER DEVELOPMENTS

Both European and American approaches developed rapidly. In Europe, Saussure's ideas were taken up by several groups of scholars (especially in Switzerland, Czechoslovakia, France, and Denmark), and schools of thought emerged based on Saussurean principles (notably, the Linguistic Circle of Prague, which was founded in 1926). The field of phonology (§28) was the first to develop, with later progress coming in such areas as grammar and style. Saussure's influence continues to be strong today, with his notion of a language 'system' becoming the foundation of much work in semiotics and structuralism (pp. 79, 399).

In America, the development of detailed procedures for the study of spoken language also led to progress in phonetics and phonology, and especial attention was paid to the distinctive morphology and syntax (§16) of the American Indian languages. The first major statement synthesizing the theory and practice of linguistic analysis was *Language* by Leonard Bloomfield (1887–1949), which appeared in 1933. This book dominated linguistic thinking for over 20 years, and stimulated many descriptive studies of grammar and phonology. In due course, the Bloomfieldian approach came to be called 'structuralist', because of the various kinds of technique it employed to identify and classify features of sentence structure (in particular, the analysis of sentences into their constituent parts, p. 96). It also represented a behaviourist view of linguistics, notably in its approach to the study of meaning (p. 101). However, its appeal diminished in the 1950s, when there was a sharp reaction against the limitations of structural linguistic methods, especially in the area of grammar (p. 96).

This extract from an obituary of Bloomfield, written by Bernard Bloch in the journal *Language* in 1949 (p. 93), summarizes this scholar's achievement:

There can be no doubt that Bloomfield's greatest contribution to the study of language was to make a science of it. Others before him had worked scientifically in linguistics; but no one had so uncompromisingly rejected all prescientific methods, or had been so consistently careful, in writing about language, to use terms that would imply no tacit reliance on factors beyond the range of observation... It was Bloomfield who taught us the necessity of speaking about language in the style that every scientist uses when he speaks about the object of his research: impersonally, precisely, and in terms that assume no more than actual observation discloses to him.

Bloomfield's opposition to unscientific impressionism in language studies is neatly summarized by the wry comment he made on one occasion: 'If you want to compare two languages, it helps to know one of them!'

Schools of thought

Many different approaches to linguistics emerged in the middle decades of this century, some of which have attracted a great deal of support. The distinguishing feature of five of these approaches is outlined below. (For corresponding developments within the field of generative linguistics, which has been dominant since the 1960s, see p. 409.)

Functional sentence perspective

An approach used by the Prague School of linguists to analyse utterances in terms of their information content, and still widely used in Czechoslovakia and other East European countries. The semantic contribution of each major element in a sentence is rated with respect to the 'dynamic' role it plays in communication.

Dependency grammar

A type of formal grammar developed in the 1950s, notably by the French linguist, Lucien Tesnière (1893–1954). It explains grammatical relationships by setting up 'dependencies' (or 'valencies') between the elements of a construction.

Tagmemics

A theory developed since the 1950s by the American linguist, K. L. Pike (1912–), which focusses particularly on the need to relate linguistic 'forms' and 'functions'. A central notion is the contrast between the 'emic' units, which are functionally contrastive in a language (such as phoneme and morpheme), and the 'etic' units that give them physical shape (cf. phonetics, §28).

Stratificational grammar

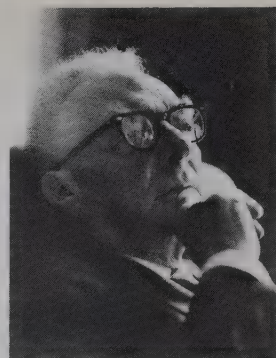
A theory devised by the American linguist S. M. Lamb (1929–) in the 1960s that views language as a system of related layers ('strata') of structure.

Systemic linguistics

A theory developed since the 1960s by the British linguist, M. A. K. Halliday (1925–) in which grammar is seen as a network of 'systems' of interrelated contrasts; particular attention is paid to the semantic and pragmatic aspects of analysis (§§17, 21) and also to the way intonation is used in the expression of meaning (§29).

John Rupert Firth (1890–1960) (below, left) J. R. Firth, Professor of General Linguistics in the University of London from 1944 to 1956, was a key figure in the development of British linguistics. A central notion in his approach is that the patterns of language that appear at a particular level of description (§13) cannot be explained using a single analytic system. Different systems may need to be set up at different places, in order to handle the range of contrasts involved (an approach known as *polysystemicism*).

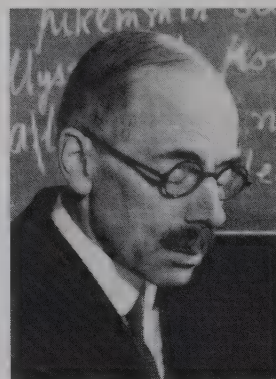
Leonard Bloomfield (below, right)



Roman Jakobson (1896–1982) Jakobson was one of the founders of the Prague School of linguistics and a major contributor to many fields of study in Slavonic languages and general linguistics. In 1941 he moved to America, where he held professorial posts at Columbia and Harvard between 1946 and 1967.



Louis Hjelmslev (1899–1965) The leading theoretician of the Copenhagen School of linguistics, Hjelmslev propounded a formal approach to language study in the 1930s known as *glossematics*.



Daniel Jones (1881–1967) The leading British phonetician in the first half of this century, Jones was Professor of Phonetics at the University of London from 1921 to 1949.

CHOMSKY

In 1957, Avram Noam Chomsky, Professor of Linguistics at the Massachusetts Institute of Technology (1928–), published *Syntactic Structures*, which proved to be a turning point in 20th-century linguistics. In this and subsequent publications, he developed the conception of a *generative grammar* (p. 97), which departed radically from the structuralism and behaviourism of the previous decades. Earlier analyses of sentences were shown to be inadequate in various respects, mainly because they failed to take into account the difference between ‘surface’ and ‘deep’ levels of grammatical structure. At a surface level, such sentences as *John is eager to please* and *John is easy to please* can be analysed in an identical way; but from the point of view of their underlying meaning, the two sentences diverge: in the first, John wants to please someone else; in the second, someone else is involved in pleasing John. A major aim of generative grammar was to provide a means of analysing sentences that took account of this underlying level of structure.

To achieve this aim, Chomsky drew a fundamental distinction (similar to Saussure’s *langue* and *parole*) between a person’s knowledge of the rules of a language and the actual use of that language in real situations. The first he referred to as *competence*; the second as *performance*. Linguistics, he argued, should be concerned with the study of competence, and not restrict itself to performance – something that was characteristic of previous linguistic studies in their reliance on samples (or ‘corpora’) of speech (e.g. in the form of a collection of tape recordings). Such samples were inadequate because they could provide only a tiny fraction of the sentences it is possible to say in a language; they also contained many non-fluencies, changes of plan, and other errors of performance. Speakers use their competence to go far beyond the limitations of any corpus, by being able to create and recognize novel sentences, and to identify performance errors. The description of the rules governing the structure of this competence was thus the more important goal.

Chomsky’s proposals were intended to discover the mental realities underlying the way people use language: competence is seen as an aspect of our general psychological capacity. Linguistics was thus envisaged as a mentalistic discipline – a view that contrasted with the behavioural bias of previous 20th-century work in the subject, and connected with the aims of several earlier linguists (such as the Port-Royal grammarians, p. 84). It was also argued that linguistics should not simply limit itself to the description of competence. In the long term, there was a still more powerful target: to provide a grammar capable of evaluating the adequacy of different accounts of competence, and of going beyond the study of individual languages to the nature of human language as a whole (by discovering ‘linguistic universals’, (§§14, 38). In this way, it was hoped, linguistics would be able

to make a contribution to our understanding of the nature of the human mind.

The essence of the approach is summarized by Chomsky in a 1986 book (*Knowledge of Language*, p. xxvi) as providing an answer to the question ‘How comes it that human beings, whose contacts with the world are brief and personal and limited, are nevertheless able to know as much as they do know?’ By studying the human language faculty, it should be possible to show how a person constructs a knowledge system out of everyday experience, and thus move some way towards solving this problem.

A major feature of Chomsky’s approach was the technical apparatus he devised to make the notion of competence explicit – the system of rules and symbols that provides a formal representation of the underlying syntactic, semantic, and phonological structure of sentences (aspects of this apparatus have been referred to in earlier sections, pp. 97, 107, 162). A primary notion – the transformational rule (p. 97) – led to the approach being commonly referred to as *transformational grammar* (or TG). Since the 1950s, much of linguistics has been taken up with proposals to develop the form of generative grammars, and the original theory has been reformulated several times. During the same period, also, there have been several proposals for alternative models of grammatical analysis to those expounded by Chomsky and his associates, some of which have attracted considerable support. As a consequence, linguistic theory, the core of scientific language study, is now a lively and controversial field.



Noam Chomsky

Some theoretical consequences of generative theory

Since the 1960s, several fresh theoretical approaches to grammatical analysis have emerged, most of which can be seen as a development of Chomsky’s proposals – or as a reaction against them.

Case grammar

The American linguist, Charles Fillmore (1929–), devised a theory which focusses on the semantic roles (or ‘cases’) played by elements of sentence structure.

Relational grammar

This approach views grammatical relations (e.g. ‘subject’, ‘object’) as central, rather than the formal categories (e.g. ‘noun phrase’, ‘verb phrase’) of earlier generative theory (§16).

X-bar (\bar{X}) theory

The theory provides an alternative account of phrase structure within a genera-

tive grammar. Further levels of phrase structure are recognized, and distinguished using different numbers of bar symbols.

Montague grammar

This approach derives from the work of the American logician Richard Montague (1930–70), and is based on the study of logical languages. A close correspondence is set up between the categories of syntax and semantics.

Generalized phrase structure grammar

This theory does not recognize the role of transformations in a generative grammar. Instead, it focusses on developing the phrase structure dimension to grammatical analysis (p. 96).

Functional grammar

Several approaches look

for alternatives to an abstract, formal approach to grammar. This particular theory adopts a pragmatic view of language as social interaction (§21), and sets up ‘functional’ units of a pragmatic and syntactic kind within sentence structure.

Realistic grammar

Grammatical analyses should be ‘psychologically real’, according to this approach. Formal patterns should be related to the psychological factors that underlie linguistic behaviour, such as comprehension and memory.

Network grammar

This kind of grammar has developed out of research into artificial intelligence, aiming to simulate the way in which people understand the sentences of a language.

Obtaining linguistic data

Many procedures are available for obtaining data about a language. They range from a carefully planned intensive field investigation in a foreign country to casual introspection about one's mother tongue carried out in an armchair at home.

Informants

In all cases, someone has to act as a source of language data – an *informant*. Informants are (ideally) native speakers of a language who provide utterances for analysis and other kinds of information about the language (e.g. translations, comments about correctness, or judgments on usage). Often, when studying their mother tongue, linguists act as their own informants, judging the ambiguity, acceptability, or other properties of utterances against their own intuitions. The convenience of this approach makes it widely used, and it is considered a primary datum in the generative approach to linguistics (p. 409). But a linguist's personal judgments are often uncertain, or disagree with the judgments of other linguists, at which point recourse is needed to more objective methods of enquiry, using non-linguists as informants. The latter procedure is unavoidable when working on foreign languages, or in such mother-tongue fields as child speech (§38) or language variation (§§8–12).

Many factors must be considered when selecting informants – whether one is working with single speakers (a common situation when languages have not been described before), two people interacting, small groups, or large-scale samples. Age, sex, social background, and other aspects of identity are important, as these factors are known to influence the kind of language used (Part II). The topic of the conversation and the characteristics of the social setting (e.g. the level of formality) are also highly relevant, as are the personal qualities of the informants (e.g. their fluency and consistency). For larger studies, scrupulous attention has to be paid to the sampling theory employed. And in all cases decisions have to be made about the best investigative techniques to use.

Recording

Today, data from an informant are often tape recorded. This enables the linguist's claims about the language to be checked, and provides a way of making those claims more accurate ('difficult' pieces of speech can be listened to repeatedly). But obtaining naturalistic, good-quality data is never easy. People talk abnormally when they know they are being recorded, and sound quality can be poor. A variety of tape-recording procedures have thus been devised to minimize the effects of the 'observer's paradox' (how to observe the behaviour of people when they are not being observed). Some recordings are made without the speakers being aware of the fact – a procedure that obtains very natural data, though ethical objections must be

anticipated. Alternatively, attempts can be made to make the speaker forget about the recording, such as by keeping the tape recorder out of sight, or using radio microphones. A useful technique is to introduce a topic that quickly involves the speaker, and stimulates a natural language style (e.g. asking older informants to talk about how times have changed in their locality).

An audio tape recording does not solve all the linguist's problems, however. Speech is often unclear or ambiguous. Where possible, therefore, the recording has to be supplemented by the observer's notes about the non-verbal behaviour of the participants, and about the context in general. A facial expression, for example, can dramatically alter the meaning of what is said (p. 402). Video recordings avoid these problems to a large extent, but even they have limitations (the camera can be highly intrusive, and cannot be everywhere), and transcriptions always benefit from any additional commentary provided by an observer (p. 231).

Elicitation

Linguists also make great use of structured sessions, in which they systematically ask their informants for utterances that describe certain actions, objects, or behaviours. With a bilingual informant, or through the use of an interpreter, it is possible to use translation techniques ('How do you say *table* in your language?', 'What does *gua* mean?'). A large number of points can be covered in a short time, using interview worksheets and questionnaires. Often, the researcher wishes to obtain information about just a single variable, in which case a restricted set of questions may be used: a particular feature of pronunciation, for example, can be elicited by asking the informant to say a restricted set of words. There are also several indirect methods of elicitation, such as asking informants to fill the blanks in a substitution frame (e.g. *I — see a car*), or feeding them the wrong stimulus for correction ('Is it possible to say *I no can see*?').

Corpora

A representative sample of language, compiled for the purpose of linguistic analysis, is known as a *corpus*. A corpus enables the linguist to make objective statements about frequency of usage, and it provides accessible data for the use of different researchers. Its range and size are variable. Some corpora attempt to cover the language as a whole, taking extracts from many kinds of text; others are extremely selective, providing a collection of material that deals only with a particular linguistic feature. The size of a corpus depends on practical factors, such as the time available to collect, process, and store the data: it can take up to several hours to provide an accurate transcription of a few minutes of speech (p. 231). Sometimes a small sample of data will be enough to decide a linguistic hypothesis; by contrast, corpora in major research

A cautionary tale

The informant arrived and we started our work. 'How do you say *I run* in your language?' The Indian was quiet for a while. First he looked down; then he looked out. Suddenly his face lit up as if struck by a sudden flash of inspiration. He spoke very rapidly. If I had been able to transcribe what he said, it would have spread across the page several times. I gulped and bravely started to write; but after a few syllables, I was already hopelessly bogged down. 'How did you say that?' With his repetition I added two more syllables, then bogged down again. When I asked for the third repetition, the informant began to waver and finally to change his story, and so I had to give up entirely. To my self-justifying and half self-accusing 'But that surely doesn't all mean just *I run*', he said, 'Why of course not. It means I was sitting here with you; then I looked out of the door and saw a deer, so I quickly grabbed my spear and now I am running after it.' Then, almost philosophically, he added to himself, 'Only a fool would run for nothing.' (J. A. Loewen, 1964, p. 189.)

A reverse lexicon An extract from the Brown University Corpus listing words in reverse alphabetical order.

REDEMPTION
EXEMPTION
GUMPTION
RESUMPTION
PRESUMPTION
CONSUMPTION
ASSUMPTION
OPTION
ADOPTION
SORPTION
ABSORPTION
ERUPTION
INTERRUPTION
CORRUPTION
DISRUPTION
DESERTION
INSERTION
ASSERTION
EXERTION
ABORTION
PORTION
PROPORTION
APPORTION
CONTORTION

Computer corpora

A 'standard' corpus is a large collection of data available for use by many researchers. In English linguistics, there are now three standard computer corpora, all in machine-readable form, and thus, in principle, available anywhere in the world.

The London-Lund Corpus of Spoken English

This corpus of educated spoken British English consists of the spoken material

collected as part of the Survey of English Usage (see below). The data consist of 87 texts of 5,000 words each. It was transferred to computer tape in the 1970s at the Survey of Spoken English, University of Lund, and is also partly available in printed form. In addition to the running text, a lexical concordance has been compiled.

The Brown University Corpus of American Eng-

lish This corpus is drawn from U.S. printed sources published in 1961. It comprises 500 samples of about 2,000 words each representing 15 main varieties of the language. It is available via computer tape, printout, and microfiche. Apart from the running text, there are lexical concordances, word frequency lists, and a reverse alphabetical list.

The Lancaster-Oslo/Bergen Corpus of

British English This is the British equivalent of the Brown corpus. It was compiled by researchers in the Universities of Lancaster and Oslo, and prepared for computer analysis at the Norwegian Computing Centre for the Humanities in Bergen. Facilities are available similar to those provided by the Brown corpus.

ICAME There is now a clearing centre for storing and distributing information

on corpus studies in English: the International Computer Archive of Modern English (ICAME), based at Bergen University. Its aims are to compile an archive of English-language material available for computer processing, and to collect and distribute information on research that uses this material.

projects can total millions of running words. An important principle is that all corpora, whatever their size, are inevitably limited in their coverage, and always need to be supplemented by data derived from the intuitions of native speakers of the language, through either introspection or experimentation.

Experiments

Experimental techniques are widely used in linguistics, especially in those fields that have been influenced by the methods of sciences where experimentation is routine. Phonetics (§24) is the subject most involved in this approach, but experimental testing is also common in several other areas, such as child language acquisition (§38) and language pathology (§46). In grammar and semantics, experimental studies usually take the form of controlled methods for eliciting judgments about sentences or the elements they contain. Informants can be asked to identify errors, to rate the acceptability of sentences, to make judgments of perception or com-

prehension, and to carry out a variety of analytical procedures.

Reconstruction

The limiting case of linguistic study, one might imagine, is when no data are available at all – as in the case of the historical study of language where written records are lacking. But it is possible to break through even this apparent barrier, by using the 'reconstruction' techniques of comparative philology (§50). The forms of Proto-Indo-European and other reconstructed languages may be totally hypothetical in status, but they have nonetheless become a major field of linguistic enquiry.

The Survey of English Usage

This survey, begun in London in 1960 by the British linguist Randolph Quirk (1920–), aims to describe the grammatical repertoire of adult educated native speakers of British English. The corpus comprises 200 texts of spoken or written material, classified as follows (figures refer to the number of texts of each type):

Origin in writing (100)

Printed (46)
Learned arts (6)
Learned sciences (7)
Instructional (6)
Press: general news (4)
Press: specific reporting (4)
Administrative/official (4)
Legal and statutory (3)
Persuasive writing (5)
Prose fiction (7)

Non-printed (36)

Continuous writing: imaginative (5), informative (6)
Social letters: intimate (6), equal (3), distant (4)
Non-social letters: equal (4), distant (4)
Personal journals (4)

As spoken (18)
Drama (4)
Formal scripted oration (3)
Broadcast news (3)
Talks: informative (4), imaginative (2)
Stories (2)

Origin in speech (100)

Monologue (24)
Prepared (but unscripted) oration (6)
Spontaneous oration (10)
Spontaneous commentary: sport (4), non-sport (4)

Dialogue (76)
Surreptitious: intimate (24), distant (10)
Non-surreptitious: intimate (20), distant (6)
Telephone: intimate (10), distant (6)

Tagging a text

Many of the operations that a computer can perform on a corpus are linguistically trivial, though they save an enormous amount of time (e.g. listing of words in frequency of use or alphabetical order). More interesting is the possibility of automatically analysing the structure of the corpus, from a grammatical, semantic, or phonological point of view (§26). This is the aim of several current research programmes.

A first step is to provide an automatic means of 'tagging' each word in the cor-

pus with a label that indicates its word class (§16). This enables the user to distinguish between such superficially identical items as *bear* (animal) and *bear* (action), or the many different syntactic functions of *that*. Larger constructions (such as different kinds of clause, p. 95) can also be tagged, to facilitate the retrieval of grammatical information.

Two tagged sentences from the London-Lund corpus are given (from J. Svartvik *et al.*, 1982, p. 57). Abbreviations are as follows (other symbols refer to

suprasegmental features of pronunciation, §29):

CD *that* used as subordinator
NP proper noun
RA personal pronoun, subject
RB personal pronoun, object
VA + D main verb, past tense
VA + G main verb, -ing form
VA + N main verb, past participle
VB + 5 was form of *to be*
*VH + O contracted form of *have*, present tense

VA + O main verb, base form

(See further, J. Svartvik & R. Quirk, 1980, from which the classification of Survey of English Usage texts (right) has been taken.)

0101000563 B

I<RA> I knew<VA+D> that<CD> he<RA> was<VB+5> c^oming<VA+G>

0101000564 B

I've<RA*VH+O> I heard<VA+N> Stan<NP> !Carter<NP> m^aention<VA+O> t^him<RB>

The domain of linguistics

The development of linguistics, the science of language, has been particularly marked in recent decades. There has been an increased popular interest in the role of language in relation to human beliefs and behaviour (§§1, 63), and an accompanying awareness of the need for a separate academic discipline to deal adequately with the range and complexity of linguistic phenomena. The university teaching of linguistics emerged during the 1960s, and since then, several branches of linguistic enquiry have been established.

The subject has now developed a clear identity – notwithstanding occasional uncertainty over its name and coverage. *Linguistics* is the usual designation, with *linguistic science* often used as a paraphrase. The field of *phonetics* (§27) is sometimes considered to be a separate discipline, because of its emphasis on the ‘pre-linguistic’ aspects of speech analysis; but it is more commonly included within the coverage of linguistics, as many see it as an indispensable foundation for language research. Also, the label for the person who practises general linguistics has caused some concern: ‘linguistician’ is sometimes used, but it is not popular among students of the subject, who normally refer to themselves as ‘linguists’. There is thus occasional ambiguity with the general use of the term ‘linguist’ meaning ‘fluent in many languages’.

Different dimensions of the subject can be distinguished, depending on the focus and interests of the linguist. *Diachronic* (or *historical*) and *synchronic linguistics* have developed as a result of the distinction introduced by Saussure (p. 407): the former is the study of language change (§54); the latter the study of language states, regardless of their history. When linguists try to establish general principles for the study of all languages, they are said to be practising *theoretical* (or *general*) *linguistics*. When they concentrate on establishing the facts of a particular language system, they practise *descriptive linguistics*. And when the focus is on the similarities and differences between languages, the subject is often referred to as *comparative* (or *typological*) *linguistics* (§§14, 50).

Linguistics shares with other sciences a concern to be objective, systematic, consistent, and explicit in its account of language. Like other sciences, it aims to collect data, test hypotheses, devise models, and construct theories. Its subject matter, however, is unique: at one extreme, it overlaps with such ‘hard’ sciences as physics and anatomy; at the other, it involves such traditional ‘arts’ subjects as philosophy and literary criticism. The field of linguistics includes both science and the humanities, and offers a breadth of coverage that, for many aspiring students of the subject, is the primary source of its appeal.

Interdisciplinary fields

Anthropological linguistics

The study of language variation and use in relation to the cultural patterns and beliefs of the human race, as investigated using the theories and methods of anthropology (§§2–5).

Applied linguistics

The application of linguistic theories, methods, and findings to the elucidation of language problems that have arisen in other domains. The term is especially used with reference to the field of foreign language learning and teaching (§62), but it applies equally to several other fields, such as stylistics (§12), lexicography (§18), translation (§57), and language planning (§61), as well as to the clinical and educational fields below.

Biological linguistics

The study of the biological conditions for language development and use in human beings, with reference both to the history of language in the human race and to child development (§§45, 49).

Clinical linguistics

The application of linguistic theories and methods to

the analysis of disorders of spoken, written, or signed language (§46).

Computational linguistics

The study of language using the techniques and concepts of computer science, especially with reference to the problems posed by the fields of machine translation (p. 350), information retrieval, and artificial intelligence (§26).

Educational linguistics

The application of linguistic theories and methods to the study of the teaching and learning of a language (especially a first language) in schools and other educational settings (§§44, 62).

Ethnolinguistics

The study of language in relation to ethnic types and behaviour, especially with reference to the way social interaction proceeds (§9).

Geographical linguistics

The study of the regional distribution of languages and dialects, seen in relation to geographical factors in the environment (§8).

Mathematical linguistics

The study of the mathematical properties of language, using concepts from such fields as algebra,

computer science, and statistics (§15).

Neurolinguistics

The study of the neurological basis of language development and use in human beings, especially of the brain's control over the processes of speech and understanding (§45).

Philosophical linguistics

The study of the role of language in the elucidation of philosophical concepts, and of the philosophical status of linguistic theories, methods, and observations (§§5, 17).

Psycholinguistics

The study of the relationship between linguistic behaviour and the psychological processes (e.g. memory, attention) thought to underlie it (§§7, 38).

Sociolinguistics

The study of the interaction between language and the structure and functioning of society (§§10–12, 60–3).

Statistical linguistics

The study of the statistical or quantitative properties of language (§15).

Theolinguistics

The study of the language used by biblical scholars, theologians, and others involved in the theory and practice of religious belief (§63).

Envoi

Linguistics has provided the conceptual framework within which this encyclopedia has been written. Little reference has therefore been made to the other academic traditions of language study mentioned on this page. It has occasionally been possible to acknowledge them; but there has been no attempt to give a systematic account, as they operate within a quite different intellectual perspective, and use radically different procedures of study.

An integrated account of the history of ideas in language scholarship is beyond the scope of the present volume. In philosophy alone, for example, there is a major academic tradition, focussing on the study of ordinary language, which to treat responsibly

would include the consideration of a large number of authors, including Ludwig Wittgenstein, A. J. Ayer, and Gilbert Ryle – a major enterprise in its own right. Similarly, many eminent psychologists, such as A. R. Luria, L. S. Vygotsky, and Jean Piaget, have written at length on language, and there is a long tradition of experimental psychological enquiry into linguistic behaviour, which would have to be carefully considered. Issues of similar standing would have to be faced in the language historiography of other fields, such as anthropology, sociology, and mathematics.

The absence of systematic reference to these other major traditions is thus the main limitation of the present volume. At the

same time, by restricting the book to a single perspective, it has been possible to give more numerous, detailed, and systematic illustrations of the use and structure of language than would otherwise have been the case. It has enabled the emphasis to be more on the diverse patterns of language structure and the variety of language functions, and less on the many approaches and methods that have been devised to analyse these matters, and the various controversies which accompany them. A comprehensive history of linguistic thought, paying proper attention to the contribution of all these academic issues and traditions is long overdue. But that will have to be left for some other encyclopedia...

Appendices

I Glossary

This glossary contains a brief definition of all the specialized language terms used in the text of this encyclopedia, along with some of the associated linguistic terminology likely to be encountered by the general reader. The glossary excludes four types of term:

(i) words in everyday use that do not raise any particular problem of meaning (such as the names of punctuation marks); (ii) names of different theories and approaches (as in linguistics and language teaching); (iii) the very detailed terminology of grammatical description and particular schools of thought; and (iv) background terms from related disciplines, such as anatomy, acoustics, or medicine. Names of languages, language families, dialects, and scripts are given in Appendix VI. A selection of more specialized dictionaries of linguistic terms is given at the end of Appendix IV.

Glossary conventions

- The alphabetical arrangement of the glossary is letter by letter.
- Each head-word is followed in parentheses by an abbreviated indication of the main sub-field to which it belongs (e.g. *sem* = *semantics*). The abbreviations used are given below.
- Within entries, words or phrases that are themselves defined elsewhere in the glossary are preceded by +. Superscript numerals are used when it is important to distinguish a particular sense within cross-references (e.g. *grammar*¹).

abessive (*gram*) An +inflection¹ that typically expresses the meaning of 'without'. 92

ablative (*gram*) An +inflection¹ that typically expresses such meanings as 'by/with/from'. 92

ablaut (*hist*) A +vowel change that gives a word a new grammatical function (*drink* → *drank*); also, **gradation**. 297

abstract *see concrete*

accent 1 (*phonet*) Features of pronunciation that signal regional or social identity; cf. +dialect. 24 2 (*phonol*) A type of emphasis given to a spoken word or syllable. 164 3 (*graph*) A mark above a letter, showing its pronunciation. 194

acceptable (*ling*) Said of any usage that +native speakers feel is possible in a language. 410

accidence (*gram*) Changes in the +form² of words signalling different grammatical functions (*walking/walked*...); cf. +morphology. 90

accommodation (*socio*) Adjustments that people make to their speech, influenced by the speech of those they are talking to. 51

accusative (*gram*) An +inflection¹ that typically identifies the +object of a +verb; also, **objective**. 92

acoustic phonetics (*phonet*) The branch of +phonetics that studies the physical properties of speech sounds. 132

acquired (*clin*) Said of any linguistic disorder that results from injury or disease; cf. +developmental. 271

acquisition *see language acquisition*

acrolect (*socio*) In +creole studies, the most prestigious +variety of a language, seen in contrast with other varieties. 24

acronym (*gen*) A word made up out of the initial letters of a phrase (*laser*). 90

acrostic (*gen*) A poem or other text in which certain letters in each line make a word. 64

active 1 (*gen*) Said of language that a person actually uses – as opposed to language that is known but not used (**passive knowledge**). 374 2 (*phonet*) Said of an +articulator that moves (towards an immobile, **passive**, articulator). 130

active voice *see voice*

acuity (*phonet*) The ability to detect and discriminate sound. 145

adessive (*gram*) An +inflection¹ that typically expresses the meaning of 'on' a place. 92

- Synonymous terms are given in bold type, preceded by the word 'also'.
- Most entries lack exemplification, as this can be found within the body of the encyclopedia; in a few cases, where the main text does not provide sufficient illustration, examples are given in parentheses, without the use of 'e.g.'.
- At the end of each entry, there is a page reference to a section of the encyclopedia where related subject matter may be found.

Abbreviations used

<i>acou</i>	<i>acoustics</i>	Lat.	Latin
<i>anat</i>	<i>anatomy</i>	<i>ling</i>	<i>general linguistics</i>
<i>app</i>	<i>applied linguistics</i>	<i>neuro</i>	<i>neurolinguistics</i>
<i>clin</i>	<i>clinical</i>	<i>phonet</i>	<i>phonetics</i>
E.	English	<i>phonol</i>	<i>phonology</i>
esp.	especially	<i>phys</i>	<i>physiology</i>
Fr.	French	<i>poet</i>	<i>poetics</i>
<i>gen</i>	<i>general application</i>	<i>prag</i>	<i>pragmatics</i>
Ger.	German	<i>psycho</i>	<i>psycholinguistics</i>
<i>gram</i>	<i>grammar</i>	<i>rhet</i>	<i>rhetoric</i>
<i>graph</i>	<i>graphetics/graphology</i>	<i>sem</i>	<i>semantics</i>
<i>hist</i>	<i>historical linguistics</i>	<i>semiot</i>	<i>semiotics</i>
It.	Italian	<i>socio</i>	<i>sociolinguistics</i>
J.	Japanese	<i>styl</i>	<i>stylistics</i>

adjacency pair (*socio*) A single sequence of stimulus–utterance + response–utterance by two different speakers, e.g. question + answer. 118

adjective (*gram*) A type of word identifying an attribute of a +noun (*a red chair*), in many languages showing +degree contrasts. 91

adjunct (*gram*) A less important or omissible element in a grammatical construction (*She ran quickly*). 95

adnominal (*gram*) Any element in a +noun phrase that is a +modification¹ of the noun. 95

adverb (*gram*) A word whose main function is to specify the kind of action expressed by a +verb (*He spoke angrily*); other functions include acting as +intensifier (*very big*) and as a +sentence connector (*Moreover, they laughed*). 91

adverbial (*gram*) Said of +words, +phrases, or +clauses that function as +adverbs. 95

acrometry (*phonet*) The measurement of air flow during speech. 139

affective (*sem*) Said of the emotional or attitudinal meaning of an utterance. 103

affirmative (*gram*) A +sentence or +verb that has no marker of +negation (*He's running*). 95

affix (*gram*) A meaningful form that is attached to another form, to make a more complex +word (*un- + kind + -ness*); cf. +infix, +prefix, +suffix. 90

affixing language (*ling*) A language that uses +affixes as its main way of expressing grammatical relationships. 293

affricate (*phonet*) Said of a +consonant in which a complete +closure of the +vocal tract is gradually released ([pf] Ger. *pfennig*). 157

agent (*ive*) (*sem*) A linguistic form expressing who or what is responsible for an action (*The man laughed, farmer* 'one who farms'). 93

agglutinative/agglutinating language (*ling*) A type of language in which +words consist of lengthy strings of forms. 293

agnosia (*clin*) Loss of ability to interpret sensory information: **auditory agnosia**, affecting speech sounds. 271

agrammatism (*clin*) A language disorder that produces speech of a typically +telegrammatic quality (*man see ball*). 271

agraphia *see dysgraphia*

agreement *see concord*

air-stream mechanism (*phonet*) An arrangement of parts of the +vocal tract that acts as a source of energy for speech sound production. 124

- alaryngeal** (*clin*) Said of speech without the +larynx. 276
- alexia** *see* **dyslexia**
- alienable** (*gram*) Applied to relationships where a possessed item is seen as having a temporary or non-essential dependence on a possessor (*the man's car*); cf. **inalienable**, where the dependence is permanent or necessary (*the man's brain*). 93
- allative** (*gram*) An +inflection¹ that typically expresses the meaning of 'to' a place. 92
- alliteration** (*poet*) A sequence of words beginning with the same sound, especially as used in poetry. 74
- allo-** (*ling*) A variation in the +form² of a linguistic unit that does not alter its basic identity, e.g. **allophones** (variants of a +phoneme), **allomorphs** (variants of a +morpheme), **allographs** (variants of a +grapheme). 90, 160, 194
- allograph** *see* **allo-**
- allomorph** *see* **allo-**
- allonym** (*gen*) A name an author assumes that belongs to someone else; cf. +pseudonym. 112
- allophone** *see* **allo-**
- alphabet** (*gen*) A writing system in which a set of symbols ('letters') represents the +phonemes of a language; cf. +dual alphabet. 202
- alphabetism** (*gram*) A word made of initial letters, each being pronounced (VIP). 90
- alternation** (*ling*) The relationship between the different +forms² of a linguistic unit, usually symbolized by ~ (*cat ~ cats*). 90
- alveolar** (*phonet*) Said of a +consonant in which the tongue makes contact with the bony prominence behind the upper teeth ([t], [n]). 155
- ambilingual** (*gen*) Someone who can speak two languages with equal facility; also, **balanced bilingual**. 362
- amelioration** (*hist*) A change of meaning in which a word loses an originally unpleasant reference; cf. +deterioration. 330
- amplitude** (*acou*) The intensity of a sound. 134
- anacoluthon** (*gram, rhet*) An unexpected break in a +sentence (*John might – Are you listening?*). 52
- anacusis** (*clin*) Total deafness. 266
- anagram** (*gen*) A word or phrase formed by changing the order of letters in another word or phrase. 65
- analects** (*gen*) A selection of passages taken from an author. 66
- analogy** (*ling*) A change that affects a language when +regular forms begin to influence less regular forms. 234, 330
- analytic** 1 (*gram*) *see* **isolating** 2 (*sem*) Said of sentences expressing a +tautology (*Bachelors are unmarried*); contrasts with **synthetic**. 107
- anonym** (*gen*) A name that has been written backwards. 112
- anap(a)est** (*poet*) A unit of +metre consisting of two light beats followed by a heavy beat. 74
- anaphora** (*gram*) A feature of grammatical structure referring back to something already expressed; the +pronoun in *When Mary saw John, she waved* is 'anaphoric'; cf. +cataphora, +exophoric. 119
- anarthria** *see* **dysarthria**
- animate** (*gram*) Said of words (esp. +nouns) that refer to living things, and not to objects or concepts (**inanimates**). 91
- anomia** (*clin*) A +language⁴ disorder in which the primary symptom is difficulty in remembering the names of things. 271
- antecedent** (*gram*) A part of a +sentence to which some other part grammatically refers (*This is the cat that chased the rat*). 119
- anthropological linguistics** (*ling*) The study of (esp. non-western) languages in relation to social or cultural patterns and beliefs. 412
- anthroponomastics** (*sem*) The study of personal names. 112
- anthrophonics** (*phonet*) The study of the human potential for vocal sound. 18
- anticipatory** *see* **regressive**
- antonym** (*sem*) A word that is opposite in meaning to another word (*good/bad, single/married*). 105
- aorist** (*gram*) A form of the +verb in some +inflecting languages, esp. referring to an action without any particular completion, duration, or repetition. 93
- aperiodic** *see* **periodic**
- apex** (*phonet*) The tip of the tongue. 131
- aphasia** (*clin*) A +language⁴ disorder resulting from brain damage, which affects a person's ability to produce or understand +grammatical and +semantic structure; also, **dysphasia**. 270
- aphasiology** (*clin*) The study of +aphasia. 270
- aphesis** (*hist*) The loss of an +unstressed +vowel from the beginning of a word (*'mongst*). 328
- aphonia** *see* **disphonia**
- aphorism** (*gen*) A succinct statement expressing a general truth (*More haste, less speed*). 53
- apico-** (*phonet*) Said of a sound using the tip (or +apex) of the tongue, e.g. 'apico-dental'. 155
- apocope** (*hist*) The omission of a final +syllable, sound, or letter in a word. 328
- apostrophe** (*rhet*) A +figurative expression in which an idea, inanimate object, or absent person is addressed as if present. 70
- appellative** (*sem*) A personal name used as an everyday word (*a sandwich*). 112
- applied linguistics** (*ling*) The application of the theories, methods, or findings of +linguistics to the solution of practical problems. 412
- apposition** (*gram*) A series of +nouns or +noun phrases with the same meaning and grammatical status (*Mr Jones, the baker*). 95
- appropriate** (*ling*) Said of any use of language considered to be compatible with a given social situation; cf. +correctness. 2
- approximant** (*phonet*) A +consonant in which the organs of +articulation approach each other, but without +closure or audible friction ([l], [j]); also, **frictionless continuant**. 157
- approximative system** *see* **interlanguage**
- apraxia** (*clin*) Loss of ability to carry out voluntary muscular movements for the production of speech; also, **dyspraxia**. 271
- aprosody** *see* **dysprosody**
- aptitude** (*app*) A person's natural ability to learn a language; evaluated using an **aptitude test**; also, **prognostic test**. 371
- aptronym** (*gen*) A name that fits a person's nature or occupation (*Mr Clever, Mr Smith*). 112
- arbitrariness** (*ling*) The absence of any physical correspondence between linguistic signals and the entities to which they refer; cf. +iconic. 397
- archaism** (*gen*) An old word or phrase no longer in general spoken or written use. 330
- area** (*ling*) A geographical region identified on the basis of its linguistic characteristics. 33
- areal linguistics** *see* **geographical linguistics**
- argot** (*gen*) Special vocabulary used by a secretive social group, e.g. gypsies. 58
- article** (*gram*) A word that specifies whether a +noun is +definite or indefinite (*the/a*). 91
- articulation** (*phonet*) The physiological movements involved in modifying a flow of air to produce speech sounds. 130
- articulator** (*phonet*) A +vocal organ involved in the production of a speech sound. 130
- articulatory phonetics** (*phonet*) The branch of +phonetics that studies the way speech sounds are produced by the +vocal organs. 124
- artificial language** (*gen*) 1 An invented language used to facilitate international communication; also, **auxiliary language**. 352 2 An invented language used in computer programming, e.g. BASIC. 351
- artificial larynx** (*clin*) A portable device that provides a source of vibration for speech, for people who have no +larynx. 276
- artificial speech** (*phonet*) The output of a +speech synthesizer. 149
- ascender** (*graph*) A part of a letter that extends above the height of the letter *x*. 190
- aspect** (*gram*) The duration or type of temporal activity denoted by a +verb, e.g. completion or non-completion of an action; cf. +perfective. 93
- aspiration** (*phonet*) Audible breath that may accompany the +articulation of a sound (*E. pen* [p^hen]). 161
- assimilation** (*phonol*) The influence exercised by one sound upon the +articulation of another, so that the sounds become more alike. 164
- associative meaning** (*sem*) The sense associations that are not part of a word's basic meaning (*birthday* → presents, party, etc.). 103
- assonance** (*poet*) The repeated use of +vowels to achieve a special effect. 74
- asterisked form** 1 (*ling*) A usage that is not +acceptable or not +grammatical 2 (*do have gone). 88 2 (*hist*) A form in linguistic history for which there is no written evidence (Indo-European *penk^we 'five'). 292
- asyndeton** (*rhet*) The omission of +conjunctions to achieve an economical form of expression (*They ran with haste, with fear*). 91
- atelic** *see* **telic**
- attested** (*ling*) Said of linguistic forms where there is evidence of present or past usage. 292
- attribute** 1 (*phonet*) An identifiable feature of sound sensation, e.g. +pitch, +loudness. 144 2 (*sem*) A defining property of the meaning of a word (*round* is an attribute of *ball*). 107
- attributive** (*gram*) Said of +adjectives or other forms that are +modifiers of a +noun within the +noun phrase (*the big table*); contrasts with **predicative** uses (*The table is big*). 95
- audiogram** (*clin*) A graph used to record a person's ability to hear +pure tones. 266

audiolingual (*app*) Said of a language-teaching method based on the use of drills and dialogues for speaking and listening; also, **aural-oral**. 374

audiology (*clin*) The study of hearing and hearing disorders, esp. their diagnosis, assessment, and treatment. 266

audiometer (*clin*) An electronic instrument that measures the sensitivity of hearing. 266

auditory agnosia *see* **agnosia**

auditory discrimination (*phonet*) The process of distinguishing between (esp. speech) sounds. 145

auditory phonetics (*phonet*) A branch of +phonetics that studies the way people perceive sound. 142

aural-oral *see* **audiolingual**

automatic translation *see* **machine translation**

autonomous speech *see* **idioglossia**

autosegmental (*phonol*) An approach to +phonology that includes the study of features of sound that extend beyond individual +segments. 161

auxiliary language 1 (*socio*) A language adopted by different speech communities for purposes of communication. 352 2 (*gen*) *see* **artificial language**

auxiliary verb (*gram*) A +verb used along with a +lexical verb to make grammatical distinctions (*She is going/might go*). 91

baby talk (*gen*) 1 A simplified speech style used by adults to children. 235 2 An immature form of speech used by children. 244

back (*phonet*) Said of sounds made in the back part of the mouth ([h]) or with the back part of the tongue ([k], [o]). 131

back-formation (*hist*) A process of +word formation where a new word is formed by removing an imagined +affix from another word (*editor* → *edit*). 330

back slang (*gen*) A secret language in which words are said backwards. 59

balanced bilingual *see* **ambilingual**

basal readers (*app*) The first textbooks used in a graded reading programme. 251

base (*ling*) A component of a +transformational grammar, in which the basic sentence patterns of a language are +generated. 97

basilect (*socio*) In +creole studies, a language +variety furthest away from the one that carries most prestige (the +acrolect). 24

behaviourism (*gen*) The study of observable and measurable behaviour (here, of the linguistic stimuli and responses made by participants in speech situations). 408

bel (*acou*) Unit for the measurement of acoustic intensity; cf. +decibel. 134

bidialectal (*socio*) Applied to someone who is proficient in the use of two +dialects. 24

bidialectism (*socio*) An educational policy that recommends the teaching of a non-standard +dialect along with a +standard one. 26

bilabial (*phonet*) Said of a +consonant made with both lips ([b], [m]). 155

bilingual (*gen*) Said of an individual or a community that regularly uses two languages; cf. +ambilingual. 360

binary (*ling*) Said of any linguistic analysis that sets up an opposition between two alternatives. 79

binary feature (*phonol*) Any +phonetic variable that enables sounds to be classified into two mutually-exclusive possibilities, e.g. +voice¹ ('voiced' vs 'voiceless'). 162

binaural (*phonet*) Using both ears. 142

biolinguistics (*ling*) The study of the biological preconditions for language development and use in human beings, both as individuals and as a race; also, **biological linguistics**. 412

bisyllable (*phonet*) A word with two +syllables. 164

blade (*phonet*) The part of the tongue between the +apex and the +centre; also, **lamina**. 131

blend (*gram*) The result of two elements fusing to form a new word or construction (*breakfast* + *lunch* = *brunch*); cf. +coinage. 90

block (*clin*) In +stuttering, an obstruction experienced by the speaker that prevents the production of speech. 278

body language (*semiot*) Communication using body movement and appearance, as opposed to speaking, writing, or +sign³. 399

body size (*graph*) The size of a piece of type. 190

borrow (*hist*) To introduce a word (or some other linguistic feature) from one language or +dialect into another; vocabulary borrowings are usually known as **loan words**. 330

bound form (*gram*) A +morpheme that cannot occur on its own as a +word (*E. de-, -tion*). 90

boustrophedon (*graph*) Writing in which lines run in alternate directions. 185

brachygraphy (*graph*) Shorthand writing. 206

bracketing (*ling*) A way of showing the internal structure of a string of elements (*(The girl) (ate) (a cake)*). 97

breaking *see* **voice mutation**

breath group (*phonet*) A stretch of utterance produced within a single breath expiration. 124

breathy (*phonet*) A +voice quality that involves the use of audible breath. 128

broad (*phonet*) Said of a +transcription of speech that shows only the major +phonetic contrasts; cf. +narrow, +phonemic transcription. 158

Broca's area (*neuro*) An area of the brain that controls the expression of spoken language; cf. +Wernicke's area. 260

buccal (*phonet*) Applied to sounds made in or near the +cavity of the cheek. 127.

cacography (*gen*) Bad handwriting or spelling. 274

cacology (*gen*) Unacceptable pronunciation or use of language. 2

cacophony (*gen*) Unpleasant, harsh sounds, esp. of speech. 2

caesura (*poet*) A break in the +rhythm of a line of poetry. 74

calligraphy (*gen*) The art of beautiful handwriting. 188

calque (*hist*) A +borrowed item in which the parts are translated separately into the new language (*E. superman* from Ger. *Übermensch*); also, **loan translation**. 330

cant (*gen*) The special speech of a group with low social standing, e.g. gypsies, thieves. 58

cardinal number (*gram*) The basic form of a numeral (*one*, etc.); cf. +ordinal. 99

cardinal vowels (*phonet*) A set of reference points, based on auditory and articulatory criteria, used to identify +vowels. 154

caretaker speech (*psycho*) The speech of adults when they talk to children; also, **motherese**. 236

case (*gram*) In an +inflecting language, the form of a +noun, +adjective, or +pronoun, showing its grammatical relationship to other words. 93

cataphora *see* **malapropism**

catalectic (*gen*) Any part of an author's literary work seen as separate from the rest. 66

cataphora (*gram*) A feature of grammatical structure that refers forward to another unit; (in *John said this*; the +pronoun is 'cataphoric'); cf. +anaphora and +exophoric. 119

catenation (*ling*) The linking together of a series of linguistic forms, e.g. sounds or words. 95

catenative (*gram*) A +lexical verb that governs another lexical verb (*try to run*). 91

causative (*gram*) A linguistic element that expresses the notion of 'cause' (the causative verb *kill* = 'cause to die'). 93

cavity (*phonet*) An anatomically defined chamber in the +vocal tract, e.g. oral, nasal. 124

central *see* **centre**

centre (*phonet*) The top part of the tongue, between +front and +back; involved in **central** sounds. 131

centum language (*hist*) An Indo-European language that kept the sound [k] in such words as *centum* ('hundred'); cf. +satem language. 328

channel (*gen*) A medium selected for communication (e.g. speech, writing). 48

character (*graph*) A graphic sign used in a writing system, esp. one that is not part of an +alphabet. 200

chere (*ling*) The smallest contrastive unit in a +sign language. 221

cherology (*ling*) The study of +sign language. 221

chest pulse (*phonet*) A contraction of the chest muscles that forces air into the +vocal tract. 164

chiasmus (*rhet*) A balanced pattern in which the main elements are reversed. 70

chirography (*graph*) The study of handwriting forms and styles. 186

chrestomathy (*gen*) An anthology of passages usually used for learning a language. 374

chroneme (*phonol*) An abstract unit that accounts for differences in the +duration of speech sounds, e.g. long vs short +consonants. 408

chronogram (*gen*) A phrase or sentence in which letters that are also Roman numerals (e.g. C, X) combine to form a date. 64

chunking (*psycho*) Dividing an utterance into parts, e.g. to make it easier to remember. 171

cipher (*gen*) A secret +code¹ in which letters are transposed or substituted. 58

circumlocution (*gen*) The use of more words than is necessary to express a meaning. 2

class *see* **word class**

classifier (*gram*) A +morpheme which indicates that a word belongs to a particular +semantic class, e.g. animates, large objects. 91

clause (*gram*) A structural unit smaller than the +sentence but larger than +phrases or +words; cf. +dependent, +main clause. 95

clavicular breathing (*clin*) A way of breathing, in which inhalation comes from using the neck muscles to raise the collar bones. 125

cleft palate (*clin*) A congenital fissure in the middle of the +palate, often found along with a split in the upper lip (**cleft lip**, also 'hare lip') and teeth ridge. 277

cleft sentence (*gram*) A sentence in which a single +clause has been split into two sections, each with its own +verb (*It was Mary who arrived*). 95

cliche (*gen*) An expression which has become so overused that it no longer conveys much meaning, and is criticized (*a fate worse than death*). 2

click (*phonet*) A sound produced using the +velaric +air-stream mechanism (E. [ɪ] 'tut'). 126

clinical linguistics (*ling*) The application of linguistics to the analysis of disorders of spoken, written, or +sign language. 412

clipping (*gram*) A process of +word formation in which a new word is produced by shortening (*examination* → *exam*); also, **reduction**. 90

clitic (*gram*) A form that resembles a +word but that cannot stand on its own as a normal utterance because it is structurally dependent on a neighbouring word (Fr. *je*). 91

close (*phonet*) Said of a +vowel made with the tongue in the highest position possible without causing audible friction (e.g. [i], [u]); vowels a degree lower are **half/mid-close**; cf. +open³. 153

closed 1 (*gram*) Said of any +word class whose membership is limited to a small number of items, e.g. +pronouns, +conjunctions; cf. +open¹. 91 2 (*phonol*) Said of a +syllable ending in a +consonant; cf. +open². 164

closure (*phonet*) A contact made between +vocal organs in order to produce a speech sound. 157

cloze procedure (*app*) A technique used in the teaching and testing of reading, in which readers guess words omitted at intervals from a text. 377

cluster (*phonol*) A series of adjacent +consonants occurring at the beginning or end of a +syllable (*stray, books*). 164

cluttering (*clin*) A +speech disorder in which utterances are produced in an excessively rapid and unrhythmical way. 278

coalescence (*hist*) The fusing of originally distinct linguistic units. 328

coarticulation (*phonet*) An +articulation involving the simultaneous or overlapping use of more than one point in the +vocal tract ([pk], [bd]). 156

cochlea (*anat*) The part of the inner ear that contains the organ of hearing. 143

code 1 (*gen*) Any system of signals used for sending messages, often in secret form. 58 2 (*socio*) A language, or +variety of language. 48

code switching (*socio*) Changing from the use of one language or +variety to another; also, **language mixing**. 363

codify (*app*) To provide a systematic account of a language (esp. its +grammar¹ and vocabulary). 364

cognate (*hist*) A language or linguistic form that is historically derived from the same source as another, e.g. Spanish and French are 'cognate languages', both deriving from Latin. 292

cognitive meaning *see* denotation

coherence (*ling*) The underlying logical connectedness of a use of language. 119

cohesion (*ling*) The +formal¹ linkage between the elements of a +discourse or +text (the +pronoun is 'cohesive' in *The man left. He . . .*). 119

coinage (*gen*) The creation of a new word out of existing elements (*postperson*); cf. +blend. 90

collective noun (*gram*) A +noun that denotes a group of entities (*army, government*). 91

collocation (*sem*) The habitual co-occurrence (or mutual **selection**) of +lexical items. 105

coloratura (*gen*) A soprano singer with a high vocal range. 18

comitative (*gram*) An +inflection¹ that typically expresses the meaning 'with'. 92

command (*gen*) A type of +sentence in which someone is told to do (or not do) something. 121

comment (*ling*) Part of a +sentence that says something further about the sentence +topic (*The car was in the garage*); also, **new information**. 94

comment clause (*gram*) A +clause that adds a parenthetical remark to another clause (*The answer, you see, is complicated*). 52

common noun (*gram*) A +noun that refers to a class of objects or concepts (*chair, beauty*); cf. +proper noun. 91

communicative approach (*app*) An approach to language teaching that focusses on language +functions² and +communicative competence, and not on +grammatical¹ structure. 374

communicative competence (*ling*) A person's awareness of the +rules¹ governing the +appropriate use of language in social situations. 48

comparative *see* degree

comparative linguistics (*ling*) A branch of +linguistics that relates the characteristics of different languages or +varieties. 84

comparative method (*hist*) A technique that compares forms taken from +cognate languages to see if they are historically related. 292

comparative philology (*hist*) The study of the historical relationship between languages. 292

compensation (*phonet*) An alternative +articulation that counteracts the effect of some abnormality in the +vocal organs. 18

competence (*ling*) Unconscious knowledge of the system of +grammatical¹ +rules¹ in a language; cf. +communicative competence, +performance. 409

complement (*gram*) A +clause element that completes what is said about some other element, such as the +subject (*That book looks nice*). 95

complementarity (*sem*) A type of oppositeness of meaning; two words are **complementaries** if to assert one denies the other (*single/married*). 105

complementary distribution (*phonol*) A property of sounds that cannot appear in the same +phonetic +environment¹ (E. [t^h] and [t]). 161

complex sentence (*gram*) A +sentence consisting of more than one +clause (esp. including a +dependent clause). 95

complex tone (*acou*) A sound wave consisting of two or more +pure tones. 133

component 1 (*ling*) The major sections of a +generative grammar. 82 2 (*sem*) A basic feature of word meaning (*girl* = human, female, etc.). 107

componential analysis (*sem*) The analysis of vocabulary into a finite set of basic elements (+components²). 107

compound 1 (*ling*) Said of a linguistic unit composed of elements that can function separately elsewhere, e.g. a compound +word/+sentence. 90 2 (*socio*) Said of +bilinguals who are thought to have a single meaning system underlying their use of words in both languages; cf. +coordinate². 362

comprehension (*gen*) The ability to understand and interpret language; cf. +production. 261

compressed speech (*phonet*) Speech that has been acoustically altered so that it uses a smaller range of +frequencies than normal. 138

computational linguistics (*ling*) The application of the concepts and techniques of computer science to the analysis of language. 412

computer language *see* language²

concatenation *see* catenation

concord (*gram*) A +grammatical¹ relationship in which the +form² of one element requires the corresponding form of another (*She eats*). 95

concordance (*gen*) An ordered list of the words used in a particular text or +corpus. 411

concrete 1 (*gram*) Said of +nouns that refer to physical entities (*book, train*); contrasts with **abstract**. 91 2 (*phonol*) Said of analyses that emphasize the +phonetic reality of speech sounds; contrasts with **abstract**. 163

conditional (*gram*) 1 Said of a +clause that expresses a hypothesis or condition (*If it rains, you'll get wet*). 95 2 Said of a +verb form that expresses hypothetical meaning (Fr. 'conditional tense' *je marcherais* 'I would walk'). 93

conditioning (*ling*) The influence of linguistic +context¹ on a +form² (E. *a* → *an* when followed by a +vowel). 164

conductive (*clin*) Said of a hearing loss where sound fails to reach the +cochlea. 266

conjugation (*gram*) The set of +verbs that occur in the same forms in an +inflecting language. 293

conjunction (*gram*) A word that connects words or other constructions (*cat and dog*). 91

connective/connector (*gram*) An item whose function is to link linguistic units, e.g. +conjunctions, certain +adverbs (*however*). 91

connotation (*sem*) The personal associations aroused by words; cf. +denotation. 103

consonance (*poet*) The repetition of sounds in the same position in a sequence of words. 74

consonant (*phonol*) A speech sound that functions at the +margins of +syllables, produced when the +vocal tract is either blocked or so restricted that there is audible friction ([k], [s], etc.); cf. +vowel, +semi-vowel. 155

constative (*ling*) An utterance that is a descriptive statement, analysable into truth values (*The table is red*); cf. +performative. 121

constituent (*gram*) A linguistic unit that is a component of a larger construction. 96

constituent analysis (*gram*) A process of analysing a construction into its major components (**immediate constituents**), each component being further analysed until a set of irreducible elements is left (**ultimate constituents**). 96

constriction (*phonet*) A narrowing in the +vocal tract, in order to produce a speech sound. 157

contact (*socio*) Said of languages or +dialects in close geographical or social proximity, which thus influence each other. 33

content word (*gram*) A type of word that has an independent, 'dictionary' meaning (*chair, run*); cf. +function word. 91

- context** (*ling*) 1 The linguistic environment of an element. 82 2 The non-linguistic situation in which language is used. 100
- continuant** (*phonet*) A speech sound made with an incomplete +closure of the +vocal tract. 157
- continuous** *see progressive*¹
- contoid** (*phonet*) A +consonant defined solely in +phonetic terms. 153
- contour** (*phonol*) 1 A distinctive sequence of +prosodic features (esp. +tones¹). 169 2 Said of a +tone language that uses +gliding tones. 172
- contraction** 1 (*gram*) A shortened linguistic +form² attached to an adjacent form (*I'm*), or a +fusion of forms (Fr. *de le* → *du*). 164 2 (*poet*) The +elision of +syllables to keep a line's +metre regular. 74
- contradictory** *see complementarity*
- contrary** *see antonym*
- contrast** (*ling*) Any +formal¹ difference that serves to distinguish meanings in a language; **contrastive** differences are also known as **distinctive**, **functional**, **significant**. 160
- contrastive** *see contrast*
- contrastive analysis** (*app*) The identification of structural differences between languages, seen as points of potential learning difficulty. 372
- contrastive stress** (*phonol*) Extra emphasis given to a word, in order to draw attention to its meaning (*John bought a red car*). 169
- convention** (*gen*) The tacit agreement of speakers to use the same +rules¹ in order to communicate. 404
- conventionalism** (*sem*) The view that there is a relationship of +arbitrariness between words and things; also, **nominalism**; cf. +naturalism. 404
- convergence** (*socio*) A process of linguistic change in which +dialects or +accents¹ become more like each other; contrasts with **divergence**. 51
- conversational implicature** (*prag*) An implication deduced from an utterance, using the +cooperative principles that govern the efficiency of conversations (*A bus!* = 'We must run'). 117
- conversational maxims** (*prag*) General principles thought to underlie the efficient use of language, e.g. speakers should be relevant and clear. 117
- conversation analysis** (*ling*) A method of studying the structure of conversations using the techniques of +ethnomethodology. 116
- converseness** (*sem*) A type of oppositeness of meaning, such that one word presupposes the other (*buy/sell*). 105
- conversion** (*gram*) A type of +word formation in which an item changes its +word class without the addition of an +affix (*smell* = verb/noun). 90
- cooperative principle** (*prag*) A tacit agreement between speakers to follow the same set of +conventions ('maxims') when communicating. 117
- coordinate** 1 (*gram*) Said of +clauses displaying +coordination. 95 2 (*socio*) Said of +bilinguals who are thought to have different meanings for the corresponding words in their two languages. 362
- coordination** (*gram*) The linking of linguistic units that have the same grammatical status, e.g. two +noun phrases (*the cat and the dog*). 95
- coordinator** (*gram*) A +conjunction used in +coordination (*and, but*). 95
- coprolalia** (*clin*) Uncontrolled use of obscene language. 264
- copula** (*gram*) A +verb whose main role is to link other elements of the +clause (*It is ready*). 95
- coreference** (*sem*) The use of elements that can be interpreted only by referring to another element in a text. 119
- coronal** (*phonet*) Said of sounds where the +blade of the tongue is raised to the hard +palate. 155
- corpus** (*ling*) A collection of language data brought together for linguistic analysis. 411
- correctness** (*gen*) An absolute standard of language use deriving from the rules of institutions (e.g. language academies) or respected publications (e.g. dictionaries); cf. +appropriate. 2
- correlative** (*gram*) Said of constructions using a pair of connecting words (*either/or*). 95
- countability** *see countable*
- countable** (*gram*) Said of +nouns denoting separable entities, as shown by their use with such forms as *a (dog, chair)*; **count(able)** nouns contrast with **uncountable/non-count** (+mass) nouns. 91
- creaky** (*phonet*) A +voice quality produced by very slow vibration of the +vocal folds. 128
- creativity** (*ling*) A characteristic of language that enables speakers to produce and understand an indefinitely large number of sentences. 397
- creole** (*socio*) A +pidgin that has become the mother tongue of a speech community (through a process of **creolization**). 336
- critical period** (*psycho*) A period of time in child development during which language is thought to be most easily learned. 263
- cross-sectional** (*gen*) Said of studies that sample the language of a group of individuals at a single point in time; cf. +longitudinal. 229
- cryptanalysis** (*gen*) The process of +deciphering or +decoding secret messages (cryptograms). 58
- cryptograms** *see cryptanalysis, cryptography*
- cryptography** (*gen*) The preparation of secret messages (cryptograms), using +codes¹ and +ciphers. 58
- cryptology** (*gen*) The study of +cryptography and +cryptanalysis. 58
- cryptophasia** *see idioglossia*
- cued speech** (*clin*) A method of +speech-reading in which manual cues help to distinguish sounds. 225
- cuneiform** (*graph*) An ancient writing system that used wedge-shaped characters. 198
- cursive** (*gen*) A form of handwriting in which separate characters in a sequence have been joined. 186
- cycle** (*acou*) A single complete vibration, forming part of a +sound wave. 133
- dactyl** (*poet*) A unit of rhythm in poetic +metre, consisting of one heavy beat followed by two light beats. 74
- dactylology** (*clin*) Signing in which each letter of the alphabet is given its own sign; also, **finger spelling**. 225
- dative** (*gram*) An +inflection¹ that typically expresses an +indirect object relationship (Lat. *Dedi epistolam puellae* 'I gave the letter to the girl'). 93
- daughter language** *see parent language*
- decibel** (*phonet*) A unit for measuring the relative +intensity of sounds, esp. in the assessment of hearing loss. 134
- decipher** (*gen*) To work out the meaning of a message in +code¹ (esp. in +cipher). 58
- declarative** (*gram*) A grammatical construction used in expressing a +statement (*The dog barked*). 121
- declension** (*gram*) A set of +nouns, +adjectives, or +pronouns that show the same +inflections¹ (**decline**). 93
- decline** *see declension*
- decode** (*gen*) 1 To use the brain to interpret an incoming linguistic signal. 262 2 To convert a secret message into intelligible language. 58
- deconstruction** (*styl*) An approach to literary theory that aims to show the contradiction in +structuralist principles of textual analysis. 79
- decreolization** (*socio*) Change in a +creole that makes it more like the +standard language of an area. 336
- deep grammar/structure** (*ling*) An underlying level of grammatical organization that specifies how sentences should be interpreted; cf. +surface grammar/structure. 98
- defective** 1 (*gram*) Applied to words that do not follow all the rules of the class to which they belong (E. +auxiliary verbs, which lack the usual verb +inflections¹). 91 2 (*graph*) A writing system consisting only of +consonant symbols. 202
- defining** *see restrictive*
- defining vocabulary** (*app*) A core set of words used to define other words. 111
- definite** (*gram, sem*) Said of a specific, identifiable entity or class of entities (*the car*); contrasts with **indefinite** (*a car*). 91
- degree** (*gram*) A contrast of comparison in +adverbs or +adjectives; usually identified as **positive** (*big*), **comparative** (*bigger*), and **superlative** (*biggest*). 92
- deixis** (*ling*) Features of language that refer directly to the personal, temporal, or locational characteristics of the situation (**deictic forms**) (*you, now, here*). 106
- deletion** (*ling*) Omitting an element of sentence structure (*that in I said he was ready*). 97
- demonstrative** (*gram*) Applied to forms whose function is to distinguish one item from other members of the same class (*this/that*). 99
- denasal** 1 (*phonet*) Said of sounds whose +nasality has been reduced or removed. 130 2 (*clin*) Said of a +voice quality with poor nasal +resonance. 276
- denotation** (*sem*) The objective ('dictionary') relationship between a word and the reality to which it refers; also, **cognitive/referential** meaning; cf. +connotation. 100
- dental** (*phonet*) Said of a +consonant made by the +apex and rims of the tongue against the teeth. 155
- dependent** (*gram*) Said of any element whose +form² or +function¹ is determined by another part of the sentence (in *the red car*, the +article and +adjective depend on the +noun); also, **subordinate**. 95
- derivation** 1 (*gram*) A major process of +word formation, esp. using +affixes to produce new words (*act* → *action*); cf. +inflection¹. 90 2 (*gram*) The set of analytical steps required to +generate a sentence. 97 3 (*hist*) The origins or historical development of a language or form. 292

descender (*graph*) A part of a letter that extends below the depth of the letter *x*. 190

description (*ling*) An objective and systematic account of the patterns and use of a language or +variety; cf. +prescription. 2

deterioration (*hist*) A change of meaning in which a word acquires a negative evaluation; also, **pejoration**; cf. +amelioration. 330

determinative (*graph*) A part of a +logogram that indicates its +semantic content; also, **radical**; cf. +phonetic. 199

determiner (*gram*) An item that co-occurs with a +noun to express such meanings as number or quantity (*the, some, each*). 96

determinism *see* linguistic relativity

developmental (*clin*) Said of any linguistic disorder that arises out of an abnormal process of development in the child, e.g. 'developmental +aphasia'; cf. +acquired. 271

developmental (psycho)linguistics (*ling*) The study of the acquisition of language in children. 226

deviance (*ling*) Failure to conform to the +rules¹ of the language. 88

devoiced (*phonet*) Said of a sound in which the normal amount of +vocal fold vibration (+voice¹) has been reduced. 163

diachronic *see* historical, synchronic

diacritic (*graph*) A mark added to a symbol to alter its value, e.g. an +accent³. 154

diadochokinesis (*clin*) The ability to carry out rapid repetitive movements of the +vocal organs. 271

diagnostic test (*app*) A test to show what a language learner knows and does not know. 377

diagramming *see* parsing

dialect (*ling*) A language +variety in which the use of grammar and vocabulary identifies the regional or social background of the user; cf. +accent¹. 24

dialect continuum (*socio*) A chain of dialects whose end-points are not mutually intelligible. 25

dialectology (*ling*) The study of (esp. regional) dialects; also, **dialect geography**. 26

dialinguistics (*ling*) The study of the range of +dialects and languages in a speech community. 26

dichotic listening (*psycho*) A technique for determining which half of the brain is primarily involved in processing auditory effects. 259

diction (*gen*) The effective choice of words, esp. the vocabulary used by a poet or other writer. 73

diglossia (*socio*) The use of two +varieties of a language throughout a +speech community, each with a distinct set of social functions. 43

digraph (*graph*) 1 A +graphic unit in which two symbols have combined to function as one (*encyclopaedia*). 365 2 Any sequence of two letters pronounced as a single sound (*ship, wood*). 365

dimeter/dimetre (*poet*) A line of verse containing two units of rhythm (+foot). 74

diminutive (*gram*) An +affix with the general meaning of 'little' (It. *-ino*). 90

diphthong (*phonet*) A +vowel in which there is a perceptible change in quality during a +syllable (*time, road*); cf. +monophthong, +triphthong. 154

diplomats (*graph*) The study of legal and administrative documents. 187

directive (*prag*) An utterance intended to get other people to do (or not do) something (*Sit down*); also, **command**. 121

direct method (*app*) A method of language teaching that emphasizes speaking in the +target² language and avoids the conscious learning of +grammar¹. 374

direct object (*gram*) A +clause element immediately affected by the action of the +verb (*She hit him*); contrasts with a less directly affected (indirect) object (*I gave John a letter*). 95

direct speech (*gen*) The actual utterance spoken by a person; cf. +indirect (or reported) speech. 77

discontinuous (*gram*) The splitting of a grammatical construction by the insertion of another unit (*switch the light on*). 95

discourse (*ling*) A continuous stretch of (esp. spoken) language larger than a +sentence. 116

discourse analysis (*ling*) The study of patterns of linguistic organization in +discourses. 116

discovery procedure (*ling*) A set of techniques automatically applicable to a sample of language to produce a correct +grammatical² analysis. 408

discrete (*ling*) Said of linguistic elements that have clearly defined boundaries. 397

disjunction (*sem*) An alternative or contrastive relationship between elements in a sentence (*Either we're early or the bus is late*). 107

displacement (*semiot*) The ability of language to refer to contexts removed from the speaker's immediate situation (*I was angry yesterday*). 397

dissimilation (*phonol*) The influence sound segments have on each other, so that they become less alike. 328

dissonance (*gen*) The use of sounds to convey unpleasant effects. 74

distinctive (*phonol*) Said of a feature capable of making a difference of meaning between otherwise identical forms, e.g. +vocal fold vibration; cf. +contrast. 160

distribution (*ling*) The total set of linguistic +environments¹ in which an item can occur. 161

disyllable (*phonol*) A word of two +syllables. 164

ditransitive (*gram*) Said of +verbs that take two +objects (*give, show*). 95

divergence *see* convergence

dominant language (*socio*) 1 The most important language in a +multilingual speech community. 360 2 The language a +bilingual knows best. 362

dorsal (*phonet*) Said of sounds made with the +back ('dorsum') of the tongue ([k], [g]). 131

doublet (*gen*) A type of word game in which a series of single-letter substitutions links pairs of words. 65

downdrift (*phonol*) A gradual lowering of +tones throughout an utterance in a +tone language. 172

drift (*hist*) A gradual series of related changes in the historical development of a language. 328

dual (*gram*) A +grammatical¹ contrast of +number in some languages, referring to 'two of'. 92

dual alphabet (*graph*) The use of capital and small letters in a single system. 186

dualism (*sem*) A theory that postulates a direct, two-way relationship between linguistic forms and the entities to which they refer. 100

duality of structure (*ling*) The structural organization of language into two abstract +levels¹: meaningful units (e.g. words) and meaningless segments (sounds, letters). 397

duration (*phonet*) The length of time involved in the +articulation of a sound or +syllable. 169

dynamic 1 (*gram*) Type of +verb that expresses activities and changes of state, allowing such forms as the +progressive¹ (*He's running*); cf. +stative. 93 2 (*socio*) Said of language analyses that take account of temporal change. 328

dyne (*acou*) A unit of measurement for sound pressure. 134

dysarthria (*clin*) A motor speech disorder that leaves someone unable to articulate speech sounds; in severe form, also, **anarthria**. 271

dysfluency (*clin*) The loss of ability to control the smooth flow of +speech production, resulting in hesitancy, poor +rhythm, +stuttering, etc. 278

dysgraphia (*clin*) A +language⁴ disorder that primarily affects the ability to write; also, **agraphia**. 272

dyslalia (*clin*) A disorder of +articulation that has no clear physical cause. 277

dyslexia (*clin*) A +language⁴ disorder that affects the ability to read; also, **alexia, word blindness**. 272

dysnomia *see* anomia

dysphasia *see* aphasia

dysphemism (*rhet*) A use of language that emphasizes unpleasantness (*a horrible dirty day*); cf. +euphemism. 61

dysphonia (*clin*) The loss of ability to use the +vocal folds to produce normal +voice¹; in severe form, **aphonia**. 276

dyspraxia *see* apraxia

dysprosody (*clin*) The loss of ability to produce speech with a normal +intonation. 276

dysrhythmia (*clin*) The loss of ability to produce normal +rhythm in +speech production. 278

ear training (*phonet*) A technique in +phonetics to train the ability to identify speech sounds. 158

echolalia (*clin*) The automatic repetition of all or part of what someone has said. 271

economy (*ling*) The use of the smallest possible number of +rules¹ and symbols in carrying out a linguistic analysis. 163

educational linguistics (*ling*) The application of +linguistics to language teaching and learning in schools and other educational settings. 248

egocentric speech (*psycho*) Speech that does not take account of the needs of the listener. 235

egressive (*phonet*) Said of sounds produced using an outwards-moving +air-stream mechanism. 125

ejective (*phonet*) A +consonant produced using the +glottalic +air-stream mechanism. 126

elaborated code (*socio*) A relatively formal, educated language use involving a wide range of linguistic structures; cf. +restricted code. 40

elative (*gram*) An +inflection¹ that typically expresses the meaning 'out of a place'. 92

electroaerometer (*phonet*) An instrument that records air flow during speech. 139

electrokymograph (*phonet*) An instrument that records the changes in the air flow from mouth and nose during speech. 139

electrolaryngograph (*phonet*) An instrument that records +vocal fold vibration. 141

electromyograph (*phonet*) An instrument that records muscular contractions during speech. 139

electropalatograph (*phonet*) An instrument that makes a continuous record of the contacts between tongue and +palate during speech. 140

elicit (*ling*) To obtain utterances or linguistic judgments from +informants. 410

elision (*phonol, poet*) The omission of sounds in connected speech (*bacon 'n' eggs*). 164

ellipsis (*gram, rhet*) The omission of part of a sentence (e.g. for economy, emphasis), where the missing element is understood from the +context¹ (*A: Where's the book? B: On the table*). 94

elocution (*gen*) The art of speech training to produce effective public speaking. 70

embedding (*gram*) Inserting one +grammatical¹ unit within another (*The man who left was my uncle*). 95

emic (*phonol*) An approach to speech analysis that sets up a system of abstract +contrastive units, esp. +phonemes; cf. +etic. 408

emotive meaning (*sem*) The emotional content of a use of language. 10

empty word (*gram*) A meaningless word that expresses a grammatical relationship (*It's today he goes*); also, **prop word**; cf. +content word. 91

encipher (*gen*) To write a message using a +cipher. 58

enclitic (*gram*) An +unstressed form attached to a preceding word (*cannot*). 91

encode (*gen*) To give linguistic shape to a meaning, as part of communication. 262 2 To convert a message from one system of signals into another (esp. for secrecy); cf. +decode². 58

endocentric (*gram*) Said of a construction where there is a +grammatical¹ +head (*the tall men*); cf. +exocentric, which lacks a head (*People left early*). 95

endophoric (*gram*) Said of the relationships of +cohesion that help to define the structure of a +text; cf. +exophoric. 119

enjambement (*poet*) The running on of a sentence between two couplets of verse without pause. 74

environment 1 (*ling*) The parts of an +utterance or +text that are adjacent to an item of language. 163 2 (*socio*) The social or cultural situation in which a particular use of language takes place. 48

epenthesis (*phonol*) The insertion of an extra (**epenthetic**) sound in the middle of a word. 328

epicene (*gram*) A +noun that can refer to either sex without changing its form (*teacher*). 47

epiglottis (*anat*) A structure that closes over the +larynx during swallowing. 124

epigram (*gen*) A short, witty statement, in verse or prose. 53

epigraph (*gen*) 1 An inscription on stone, buildings, coins, etc. 187 2 A phrase or quotation above a section in a book or on the title page. 53

epigraphy (*gen*) The study of inscriptions, esp. their interpretation in ancient times. 187

epithet (*gen*) Any item that characterizes a +noun and is regularly associated with it (*Ethelred the Unready*). 105

eponym (*gen*) The name of a person after whom something, e.g. a place, a book title, is named (*Washington, Hamlet*). 112

equative (*gram*) Applied to a +clause which relates two elements that are identical in meaning (*Mr Jones is a butcher*). 95

ergative (*gram*) Applied to a construction in some languages where the +object of a +transitive verb and the +subject of an +intransitive one are in the same +case. 93

error 1 (*neuro*) An inaccuracy in the spontaneous use of language attributable to a malfunctioning of the neuromuscular commands from the brain. 262 2 (*app*) A language learner's systematic use of a linguistic item that does not conform to the +rules¹ of the +target² language, because knowledge of these rules is incomplete; contrasts with unsystematic, +performance faults (*mistakes*). 372

error analysis (*app*) The systematic interpretation of the unacceptable forms used by someone learning a language. 372

esophageal *see oesophageal*

essive (*gram*) An +inflection¹ that typically expresses the meaning 'at' a place. 92

état de langue (*ling*) The 'state of a language' seen at a particular time, regard-

less of its antecedents or subsequent history. 407

ethnography of communication (*socio*) The study of language in relation to the social and cultural variables that influence human interaction. 48

ethnolinguistics (*ling*) The study of language in relation to ethnic groups and behaviour. 412

ethnomethodology (*socio*) The detailed study of the techniques used during linguistic interaction. 116

etic (*phonet*) The analysis of the physical patterns of speech without reference to their function within the language; cf. +emic. 408

etymological fallacy (*hist*) The view that an earlier (or the oldest) meaning of a word is the correct one. 330

etymology (*hist*) The study of the origins and history of the +form¹ and meaning of words. 330

etymon (*hist*) The +form¹ from which a later form derives (Lat. *mater* → Fr. *mère*). 330

euphemism (*gen*) The use of a vague or indirect expression in place of one that is unpleasant or offensive (*pass away* for *die*). 61

euphony (*gen*) A pleasing sequence of sounds. 74

exclamation (*gram*) An emotional expression marked by strong +intonation in speech or by an exclamation point in writing (*Good grief!*); cf. +command, +question, +statement. 121

exclusive (*gram*) Said of a first+person +pronoun (*we*) that does not include the person being addressed; cf. +inclusive. 92

excrecent (*ling*) Said of a sound added to a word to make the pronunciation easier. 328

exegesis (*gen*) An interpretation of a text, esp. of a biblical kind. 385

existential (*gram*) A sentence emphasizing the idea of existence (*There is a book on the table*). 95

exocentric *see endocentric*

exophoric (*gram*) Said of a linguistic unit that refers directly to the +extralinguistic situation (*there, him*); cf. +endophoric. 119

expansion 1 (*gram*) The process of adding new elements to a construction, without its basic structure being affected. 95 2 (*psycho*) An adult response to a child which adds grammatical elements that the child has omitted. 231

experimental phonetics (*phonet*) The use of instrumentation and experimental techniques to investigate the properties of speech sounds; also, **instrumental phonetics**. 138

expletive (*gen*) An exclamatory word or phrase, usually obscene or profane. 61

expression (*ling*) 1 Any string of elements treated as a unit for analysis, e.g. a +sentence, +idiom. 95 2 All aspects of linguistic +form¹ (as opposed to meaning). 82

expressive 1 (*gen*) Said of a use of language that displays or affects a person's emotions. 10 2 (*clin*) Said of disorders of language +production, e.g. 'expressive aphasia'. 265

extension 1 (*sem*) The class of entities to which a word is correctly applied, e.g. the extension of *flower* is *rose, daffodil*, etc.; cf. +intension. 107 2 (*hist*) Widening the meaning of a word. 330

extralinguistic (*ling*) Said of anything (other than language) to which language can relate. 82

extraposition (*gram*) Moving an element to a position at one end of a +sentence (*Working here is nice* → *It's nice working here*). 95

extrinsic (*anat*) Said of sets of muscles that control the gross movements of certain +vocal organs, e.g. tongue, +larynx. 131

eye dialect (*gen*) A way of spelling words that suggests a regional or social way of talking (*Thankee koinly, zur*). 180

eye rhyme (*poet*) A pair of words that seem to rhyme from the spelling, but have different pronunciations (*come/home*). 74

false friends (*app*) Words in different languages that resemble each other in +form¹, but express dissimilar meanings (Fr. *demandeur* = 'request', not 'demand'); also, **faux amis**, **false cognates**. 347

false vocal folds *see ventricular folds*

family (*hist*) A set of languages that derive from a common ancestor (+parent) language, and are represented as a **family tree**. 292

feature (*ling*) Any typical, noticeable, or +contrastive property of a +level¹ of language. 82

feedback 1 (*prag*) The ongoing reaction speakers receive from their listeners, which helps them to evaluate the efficiency of their communication. 118 2 (*phonet*) The information speakers obtain by monitoring their own speech activity. 262

felicity conditions (*prag*) The criteria that must be satisfied if a +speech act is to achieve its purpose. 121

feminine *see gender*

festination (*clin*) Abnormal increase of speed while speaking. 278

field *see semantic field*

fieldwork (*ling*) The principles and procedures of obtaining linguistic data from +informants, esp. in their home environment. 410

figurative (*gen*) Said of an expressive use of language when words are used in a non-literal way to suggest illuminating comparisons and resemblances (**figures of speech**). 70

filled pause (*ling*) A vocal hesitation (*erm*). 172

filter (*acou*) A device used to separate the +frequency components of a +sound wave. 133

filtered speech (*phonet*) Speech passed through +filters to alter its acoustic characteristics. 133

finger spelling *see* **dactylology**

finite (*gram*) A form of a +verb that can occur on its own in a +main clause and permits variations in +tense¹, +number, and +mood (*They ran, He is running*); contrasts with **non-finite**. 93

finite-state grammar (*ling*) A simple kind of +generative device that is able to process only a very limited range of sentences. 97

first language (*gen*) The language first acquired as a child (**mother tongue**, **native language**), or preferred in a +multilingual situation. 368

first person *see* **person**

'fis' phenomenon (*psycho*) A child's refusal to accept an adult imitation of what it has just said. 240

fixation (*graph*) A period of relative stability between rapid eye movements. 208

flap (*phonet*) A +consonant produced by a single rapid contact between two organs of articulation, e.g. the tongue tip movement [ɾ] in *very*. 157

flexion *see* **inflection**

fluency (*gen*) Smooth, rapid, effortless use of language; cf. +dysfluency. 278

flying (*poet*) An exchange of curses or personal abuse in verse form. 60

focal area (*socio*) A region where +dialect forms are relatively homogeneous and tend to influence the forms used in adjoining areas. 28

focus (*gram*) An element in a sentence to which the speaker wishes to draw special attention (*It was John who wrote to me*). 107

folk etymology (*hist*) Altering an unfamiliar word to make it more familiar (*asparagus* → *sparrow-grass*); also, **popular etymology**. 330

foot (*phonol, poet*) A basic unit of +rhythm, esp. used in describing poetic +metre. 74

foregrounding (*poet*) Any departure from a linguistic or socially accepted norm, esp. in literary language. 71

foreign language (*app*) A non-native language, esp. one that has no official status in a country; cf. +second language. 342

forensic linguistics (*ling*) The use of linguistic techniques to investigate crimes in which language data constitute part of the evidence. 69

form 1 (*ling*) The outward appearance or structure of language, as opposed to its function, meaning, or social use (**formal** vs +notional¹). 82 2 (*gram*) The variations in which a linguistic unit can appear (the 'forms' *walk, walks*, etc.). 91

formal 1 *see* **form**¹ 2 *see* **formality**

formalist (*styl*) Said of an approach that studies the structural (+formal¹) basis for literary effects in great detail. 78

formality (*socio*) A scale of language use, relating to situations that are socially careful or correct (**formal**) or otherwise (**informal**). 40

formal universal (*ling*) An obligatory feature of +grammar² construction; cf. +substantive universal. 85

formant (*acou*) A concentration of acoustic energy, esp. distinctive in +vowels¹ and +voiced sounds. 135

formative (*gram*) An irreducible grammatical element that enters into the construction of larger linguistic units. 90

form class (*gram*) A set of items that display similar or identical grammatical features. 91

formulaic (*ling*) Said of a sentence that does not permit the usual range of grammatical variation (*Many happy returns*); also, **fossilized** or **stereotyped** sentences, or **routines**. 52

form word *see* **function word**

fortis (*phonet*) Said of +consonants made with relatively strong muscular effort and breath force ([f], [p]); cf. +lenis. 157

fossilized (*ling*) Said of any construction that lacks +productivity, e.g. +idioms (*spick and span*), +formulaic utterances (*So be it!*). 52

frame (*gram*) A specific +structural² +context within which a class of items can be used. 95

free form (*gram*) A minimal grammatical unit that can be used as a +word without additional elements; also known as a free +morpheme; cf. +bound form. 90

free translation (*gen*) A +translation expressing the meaning rather than the +form¹ of the +source language; contrasts with **literal** (word-for-word) translation. 344

free variation (*phonol*) The substitution of one sound for another without

causing any change of meaning. 161

frequency (*acou*) The number of +sound waves per second produced by a source of vibration. 133

fricative (*phonet*) Said of a +consonant made when two +vocal organs come so close together that the air moving between them produces audible friction ([f], [z]); also, **spirant**. 157

frictionless continuant *see* **approximant**

front (*phonet*) Said of sounds made in the front part of the mouth or by the front part (+blade) of the tongue ([i], [t]); cf. +back, +centre. 131

fronting 1 (*phonol*) +Articulation of a sound further forward in the mouth than is normal. 155 2 (*gram*) Moving a +constituent from the middle or end of a +sentence to the front (*Smith his name was*). 95

full verb *see* **lexical verb**

full word *see* **content word**

function (*ling*) 1 The relationship between a linguistic form and the other elements of the system in which it is used, e.g. a +noun as +subject or +object of a +clause. 95 2 The role language plays in communication (e.g. to express ideas, attitudes) or in particular social situations (e.g. religious, legal). 10

functional 1 (*ling*) Said of linguistic approaches that treat the notion of +function as central, esp. to show +grammar communicating meaning in social interaction. 409 2 (*clin*) Said of a linguistic disorder that has no apparent physical cause. 264 3 (*ling*) *see* **contrastive**

functional change 1 (*hist*) An alteration in the role of a linguistic feature in historical development. 328 2 (*gram*) The use of a +word in different grammatical roles (*round the corner, a round table*). 92

functional load/yield (*phonol*) The use a language makes of a +contrast in +phonology (E./p/~/b/ has a 'high' functional load, often distinguishing pairs of words). 161

function word (*gram*) A word whose role is largely or wholly to express a grammatical relationship (*to, a*); also **form/grammatical/structural word**. 91

functor *see* **function word**

fundamental frequency (*acou*) The lowest-+frequency component in a complex +sound wave, of particular importance in determining a sound's +pitch. 133

fusion (*ling*) The merging of distinct linguistic elements (Lat. -us +noun ending simultaneously signals +number, +gender, and +case). 293

fusional language *see* **inflecting language**

futhork (*graph*) The runic alphabet; also **futhark**. 203

geminate (*phonol*) A sequence of identical adjacent sounds in one +morpheme (It. *notte* 'night'). 160

gender (*gram*) A way of grouping words into different +formal¹ classes, using such labels as **masculine**, **feminine**, **neuter**, **animate**. 93

genealogical *see* **genetic classification**

generalization (*psycho*) A process in +language acquisition in which a first use of a linguistic feature is extended to a class of items (+plural -s on E. regular +nouns); cf. +overgeneralization. 234

generate *see* **generative**

generative (*ling*) Said of a +grammar² that uses a set of +formal¹ +rules¹ to define the membership of (**generate**) the infinite set of +grammatical¹ +sentences in a language. 97

generic (*gram*) A word or sentence that refers to a class of entities (*the Chinese, the rich*). 91

genetic classification (*hist*) The grouping of languages into +families based on their historical relationships; also **genealogical classification**. 293

genitive (*gram*) An +inflection¹ that expresses such meanings as possession and origin (*girl's bag, man's story*); also applied to related structures (*the cover of the book*). 93

genre (*gen*) An identifiable category of artistic (here, literary) composition, e.g. the novel. 52

geographical linguistics (*ling*) The study of languages and +dialects in terms of their regional distribution; also, **areal linguistics**. 33

gerund (*gram*) A +noun derived from a +verb (a 'verbal noun'), esp. as found in Latin grammar, or in grammars based on Latin (*amandum* 'loving'). 91

gerundive (*gram*) An +adjective derived from a +verb (a 'verbal adjective'), esp. as found in Latin grammar, or in grammars based on Latin (*amandus* 'lovable'). 91

ghost form (*hist*) A word originating in an error during the copying, analysing, or learning of a language, which does not exist in the original language. 187

given *see* **topic**

glide (*phonet*) 1 A transitional sound made as the +vocal organs move towards (**on-glide**) or away from (**off-glide**) an +articulation ([j] in *puny* [pʰuːni]).

- 137 2 A +vowel¹ where there is an audible change of quality (+diphthong, +triphthong). 154 3 A +tone¹ involving a change of +pitch level. 172
- gliding** *see* **glide**³
- global aphasia** (*clin*) +Aphasia involving a severe disorder of +production and +comprehension. 271
- glossal** (*anat*) Pertaining to the tongue. 131
- glossary** (*gen*) An alphabetical list of the terms used in a special field. 111
- glossogenetics** (*ling*) The study of the origins and development of language. 290
- glossograph** (*phonet*) An instrument that records the movements of the tongue during speech. 140
- glossolalia** (*gen*) Speaking in tongues, as practised by certain religious groups. 11
- glottal** (*phonet*) Said of sounds made in the +larynx resulting from the +closure or narrowing of the +glottis, e.g. +whisper, +creaky. 155
- glottalic** (*phonet*) Said of the +air-stream mechanism that uses the +glottis as the source of vibration for +ejective and +implosive sounds. 126
- glottalization** (*phonet*) An +articulation involving a simultaneous +glottal +constriction. 126
- glottal stop** (*phonet*) The audible release of a +closure at the +glottis; (*bottle* as [bɒʔ]). 128
- glottis** (*anat*) The aperture between the +vocal folds. 128
- glottochronology** (*hist*) An approach to language history in which a statistical technique (+lexicostatistics) is used to quantify how far languages have diverged from a common source. 331
- glottograph** (*phonet*) An instrument that monitors the extent of +glottal opening, using a light source. 141
- goal** (*sem*) The entity affected by the action of a +verb (*The man kicked the ball*); also, patient, recipient. 95
- govern** *see* **government**
- government** (*gram*) A type of grammatical linkage in which one word requires a specific +form² of another (Lat. *ad* 'governs' the +accusative form: *ad Romam* 'to Rome'). 95
- gradable** (*gram, sem*) Said of a word (esp. an +adjective) that can be compared or intensified (*big* → *very big*, *bigger*). 105
- gradation** *see* **ablaut**
- gradience** (*gram*) A pattern of gradually increasing irregularity at the boundary of a +word class. 92
- grammar** (*ling*) 1 The study of +sentence structure, esp. with reference to +syntax and +morphology, often presented as a textbook or manual. 88 2 A systematic account of the +rules¹ governing language in general, or specific languages, including +semantics, +phonology, and often +pragmatics. 82
- grammatical** (*gram*) 1 Pertaining to +grammar¹. 88 2 Said of constructions that conform to the +rules¹ of a +grammar²; those that do not are **ungrammatical**. 88
- grammatical word** *see* **function word**
- graph** (*graph*) The smallest +discrete segment in a stretch of writing or print (t, T, *t*, etc.). 194
- grapheme** (*graph*) The smallest +contrastive unit in the writing system of a language (*t, e, ;, ?*). 194
- graphemics** (*graph*) The study of +graphemes. 194
- graphetics** (*graph*) The study of the visual properties of written or printed language. 185
- graphic** *see* **graph**
- graphology** (*graph*) 1 The (study of the) writing system of a language. 194 2 The analysis of handwriting to discover the writer's character. 189
- groove** (*phonet*) A type of +fricative +consonant produced when the tongue is slightly hollowed along its central line ([s], [ʃ], etc.). 157
- group** *see* **phrase**
- habitual** (*gram*) Said of a form (esp. a +verb or +adverb) expressing repetition of an action (*often*). 93
- half-close/-open** *see* **close, open**
- hapax legomenon** (*styl*) A word that occurs only once in a text, author, or language. 67
- haplography** (*graph*) An omission made in a sequence of identical letters (*occurrence* → *ocurrence*). 213
- haplogy** (*phonol*) The omission of sounds in a sequence of similar +articulations (*probably* → /prɒbli/). 328
- hard contact** (*clin*) A very +tense² +articulation heard in +stuttering when the speaker attempts a difficult word. 278
- hard palate** *see* **palate**
- hare lip** *see* **cleft palate**
- harmonic** (*acou*) A +frequency of sound vibration that is a multiple of the +fundamental frequency; also, **overtone**. 133
- harmony** (*phonol*) Similarity of +articulation between sounds in the same word or phrase; occurs as **consonant harmony** and **vowel harmony**. 161
- head** (*gram*) The main element in a +phrase on which other elements depend, and which controls the function of the phrase as a whole (*All the new books from the library are on the table*). 95
- headword** (*app*) The item that occurs at the beginning of a +dictionary entry. 108
- hertz** (*acou*) The unit for measuring sound vibration; once known as 'cycles per second'. 133
- heterographs** (*gen*) Words that have the same meaning or pronunciation, but differ in spelling (*bear* vs *bare*). 106
- heteronyms** (*gen*) Words that differ in meaning but are identical in either pronunciation or spelling (*threw* vs *through*). 106
- heterophemy** (*gen*) An unintentional error in spoken or written language. 164
- heterotopy** (*gen*) A misplaced sound during (esp. fast) speech. 278
- hexameter/hexametre** (*poet*) A line of verse containing six units of rhythm (+foot). 74
- hiatus** 1 (*phonet*) The use of adjacent +vowels¹ in different +syllables. 164 2 (*gen*) A break in a +sentence that leaves it incomplete. 52
- hierarchy** (*ling*) A classification of linguistic units into a series of successively subordinate +levels³, esp. an analysis of +sentences into +clauses, +phrases, +words, and +morphemes. 82, 95
- hieroglyphic** (*graph*) A writing system using mainly pictorial symbols; esp. applied to Egyptian. 199
- high** (*phonet, phonol*) 1 Said of +vowels¹ (and sometimes +consonants) made by raising the tongue towards the roof of the mouth ([i], [k]). 153 2 Said of +tones¹ that use a relatively high level of +pitch range. 172 3 (*socio*) Said of the more prestigious +variety in +diglossia. 43
- hiragana** *see* **kana**
- historical linguistics** (*ling*) The study of development of language and languages over time; also, **diachronic linguistics** or (with different emphasis) **comparative philology**. 407
- hold** (*phonet*) To maintain a single position of the +vocal organs for a period of time. 157
- holograph** (*gen*) A document that is entirely written in the handwriting of its author. 187
- holophrase** (*psycho*) A grammatically unstructured utterance, usually consisting of a single word, typical of the earliest stage of language learning in children (*dada, allgone*). 242
- homographs** (*gen*) Words with the same spelling but different meanings (*wind* = 'air' vs *wind* = 'turn'). 106
- homonyms** (*gen*) Words with the same +form¹ but different meanings (*ear* = 'corn' vs *ear* = 'body part'). 106
- homophones** (*gen*) Words with the same pronunciation but different meanings (*rode/rowed*). 106
- homorganic** (*phonet*) Said of sounds made at the same place of +articulation ([p], [b], [m]). 157
- honorific** (*socio*) A use of language (esp. of grammar¹) to express levels of politeness or respect. 99
- hybrid** (*gram*) A +word composed of elements from different languages (*television*, from Greek and Latin). 90
- hydronymy** (*gen*) The study of the names of rivers, lakes, etc. 114
- hyperacusis** (*clin*) An extremely acute sense of hearing. 142
- hyperbole** (*gen, rhet*) Emphatic exaggeration (*There were millions of people in the cinema*). 70
- hypercorrection** (*socio*) A linguistic +form¹ that goes beyond the norm of a +target² +variety, because of the speaker's desire to be correct; also, **hyperurbanism, overcorrection**. 2
- hypercreolization** (*socio*) The development of a kind of +creole that is a reaction away from the +standard language. 336
- hypernasality** (*clin*) Excessive +nasal +resonance in speech. 276
- hyper-urbanism** *see* **hypercorrection**
- hyp(o)acusis** (*clin*) An impairment of auditory acuity. 266
- hypocoristic** (*gen*) A pet name (*Bill, honey*). 112
- hyponasality** (*clin*) Lack of normal +nasal +resonance in speech. 276
- hyponymy** (*sem*) The relationship between specific and general words, where the former is included in the latter (*cat* is a **hyponym** of *animal*). 105
- hypostatize** (*gen*) To speak of an abstract quality as if it were human. 70
- hypotaxis** (*gram*) The linking of a +dependent (**hypotactic**) clause to another part of the sentence using +conjunctions (*The boy left when the bell rang*); cf. +parataxis. 95
- hysterical** (*clin*) Said of disorders of +voice¹ or hearing that are psychological in origin. 276
- iamb** (*poet*) A unit of +metre consisting of an unstressed +syllable followed by a +stressed syllable ('*To be/ or not/ to be/*'). 74

iconic (*sem*) Said of signals whose physical form corresponds to features of the entities to which they refer (as in +onomatopoeia, e.g. *cuckoo*). 220

ictus (*poet*) The +stressed +syllable in a unit of +metre. 74

idealization (*ling*) The ignoring of certain kinds of variability in linguistic data, in order to reach general conclusions. 409

ideation (*psycho*) The cognitive process of forming ideas and relationships of meaning, prior to their formulation in language. 262

ideational function (*ling*) The use of language to refer to the people, events, etc. in the world; cf. +interpersonal, +textual functions. 10

ideogram (*graph*) A symbol used in a writing system to represent a whole word or concept; also, **ideograph**. 198

ideograph *see* **ideogram**

idioglossia (*gen*) An invented form of speech whose meaning is known only to the inventor, e.g. the language sometimes used by twins; also, **autonomous speech**, **cryptophasia**. 247

idiolect (*ling*) The linguistic system of an individual speaker. 24

idiom (*sem*) A sequence of words that is a unit of meaning (*kick the bucket* = 'die'). 105

illative (*gram*) An +inflection¹ that typically expresses the meaning of 'into' a place. 92

ill formed (*gram*) Said of any +ungrammatical¹ sentence; cf. +well formed. 88

illocutionary act (*prag*) A +speech act involving a +performative verb (baptize, promise, request, etc.); cf. +locutionary/+perlocutionary act. 121

imagery 1 (*gen*) The use of +metaphor, +simile, and other +figurative language, esp. in a literary context. 70 2 (*psycho*) Language that produces clear or vivid mental pictures. 103

imitation (*psycho*) The copying of linguistic behaviour, esp. while learning a language; cf. +comprehension, +production. 234

immediate constituent *see* **constituent**

immersion (*app*) Said of a +bilingual programme in which +monolingual children attend a school where another language is the medium of instruction. 367

imperative (*gram*) A grammatical +mood expressing a +command (*Look!*). 93

imperfect (*gram*) A +tense¹ form expressing such meanings as past duration and continuity (Lat. *amabam* 'I was loving/used to love'). 93

imperfective *see* **perfective**

impersonal (*gram*) Said of construction or +verbs with an unspecified +agent (*It's raining*). 95

implicational universal (*ling*) A type of +universal statement that takes the form 'If a language has X, then it also has Y.' 85

implicature *see* **conversational implicature**

implosive (*phonet*) A +consonant made using the +glottalic +air-stream mechanism with inwards-flowing air ([ɓ], [ɗ]). 126

inalienable *see* **alienable**

inanimate *see* **animate**

incapsulating language *see* **polysynthetic language**

inceptive (*gram*) Said of a +verb form that specifies the beginning of an action ('be about to'), e.g. Lat. *-escere*; also, **inchoative**. 92

inchoative *see* **inceptive**

inclusive (*gram*) Said of a first-+person +pronoun that refers to both the speaker and someone else, as when *we* means 'me and you'; cf. +exclusive. 92

incompatibility (*sem*) A feature of mutually-defining items where the choice of one excludes the use of the others (*The ink is red/blue*). 105

incorporating language *see* **polysynthetic language**

indefinite *see* **definite**

indefinite vowel *see* **schwa**

independent clause *see* **main clause**

indexical 1 (*ling*) Said of features of speech or writing (esp. +voice quality) that reveal the personal characteristics of the user, e.g. age, sex. 171 2 (*sem*) *see* **deixis**

indicative (*gram*) A grammatical +mood that expresses objective statements (*My car is new*). 93

indirect object *see* **direct object**

indirect question (*gram*) A +question as expressed in +indirect speech (*He asked if she was in*). 77

indirect speech (*gram*) A construction in which the speaker's words are made +subordinate to a +verb of 'saying' (*She replied that she had*); also, **reported speech**; cf. +direct speech. 77

indirect speech act (*prag*) An utterance whose linguistic +form¹ does not directly reflect its communicative purpose (using *It's cold in here* to mean 'Close the window'). 121

inensive (*gram*) An +inflection¹ that typically expresses location or position within a place. 92

infinitive (*gram*) A +non-finite form of the +verb, which in many languages acts as the basic form (E. *run*, Fr. *donner* 'to give'). 93

infix (*gram*) An +affix added within a +root¹. 90

inflecting/inflected/inflectional language (*ling*) A language in which +words express grammatical relationships by using +inflections¹; also, **synthetic/fusional language**. 293

inflection/inflexion (*gram*) An +affix that signals a grammatical relationship, e.g. +case, +tense¹ (*girl's, walked*). 90 2 (*phonet*) Change in voice +pitch during speech. 169

informal *see* **formality**

informant (*ling*) Someone who acts as a source of data for linguistic analysis. 410

information (*ling*) The way a message content is structured, e.g. into **given** and **new**. 120

ingressive (*phonet*) Said of all sounds produced with an inwards-moving air stream. 125

inhalation *see* **inspiration**

initiator (*phonet*) The +vocal organs that are the source of air movement, e.g. lungs. 124

innateness hypothesis (*psycho*) The view that a child is born with a biological predisposition to learn language, involving a knowledge of its +universal structural principles; also, **nativism**. 234

inner ear (*anat*) The part of the ear containing the +cochlea. 143

inspiration (*phys*) The act of drawing air into the lungs; also, **inhalation**. 124

institutional linguistics (*ling*) The study of the problems involved in +language planning. 364

instructive (*gram*) An +inflection¹ that typically expresses the meaning 'by'. 92

instrumental (*gram*) An +inflection¹ that typically expresses the meaning 'by means of'. 292

instrumental phonetics *see* **experimental phonetics**

intensifier (*gram*) A word or phrase that adds force or emphasis (*very good, awfully pretty*). 91

intension (*sem*) The set of defining properties that determines how a term is to be used (*table* → 'legs', 'flat surface', etc.). 107

intensity (*acou*) The power transmitted along a +sound wave. 134

interchangeability (*semiot*) The ability of a signalling system to be mutually transmitted and received by members of the same species. 396

interdental (*phonet*) A +consonant made by the +apex of the tongue between the teeth ([θ], [ð]). 155

interference *see* **transfer**

interjection (*gram*) A class of +words with +emotive meaning, which do not form grammatical relationships with other classes (*Gosh!, Yuk!*). 91

interlanguage (*app*) The language system used at an intermediate stage of foreign language learning. 372

intermediate vowel (*phonet*) A +vowel¹ that falls between two adjacent +cardinal vowels. 154

internal evidence (*hist*) Linguistic features in a text that indicate when the work was written. 187

internal rhyme (*poet*) The rhyming of words within lines of verse. 74

interpersonal function (*ling*) The use of language to establish and maintain social relations; cf. +ideational function, +textual function. 10

interpret (*gen*) To make an oral +translation¹. 349

interrogative (*gram*) A type of +sentence or +verb form used in the expression of +questions (*Who is he?, Are they there?*); cf. +declarative. 95

interrogative word (*gram*) A word used at the beginning of a +clause to mark it as a +question (*Who is here?*). 95

intervocalic (*phonet*) A +consonant used between two +vowels¹ (/p/in *apart*). 164

intonation (*phonol*) The +contrastive use of +pitch in speech. 169

intonation contour *see* **tone unit**

intransitive (*gram*) Said of a +verb or +sentence that cannot take a +direct object (*she's going*); cf. +transitive. 95

intraoral pressure (*phonet*) The build-up of air inside the mouth needed to produce certain speech sounds, e.g. +plosives. 124

intrinsic (*anat*) Said of sets of muscles that control the fine movements of certain +vocal organs, e.g. tongue, +larynx. 131

intrusion (*phonet*) The use of sounds in connected speech that do not appear when the words or +syllables are heard in isolation, e.g. 'intrusive r' between +vowels¹ (as in *law(r) and order*). 164

intuition (*gen*) A person's instinctive knowledge of language, which decides whether +sentences are acceptable and how they can be interrelated. 410

invariable word (*gram*) A word that does not undergo any change in structure (*under, but*); cf. +variable word. 91

- inversion (gram)** A reversed sequence of elements (*He is going* → *Is he going?*). 243
- irony (gen)** Language that expresses a meaning other than that literally conveyed by the words (*That's marvellous*, said of poor work). 70
- irregular (gen)** Said of a linguistic +form¹ that is an exception to a pattern stated in a rule¹. 404
- isochrony/isochronism (phonet)** A rhythmic pattern in which +stressed +syllables fall at roughly regular intervals throughout an utterance. 169
- isogloss (socio)** A line on a map showing the boundary of an area in which a linguistic feature is used; the lines mark such features as vocabulary (**isolex**), +morphology (**isomorph**), +phonology (**isophone**), +semantics (**isoseme**), or socio-cultural use (**isopleth**). 28
- isolating language (ling)** A language in which +words are +invariable and grammatical relations are shown mainly by +word order, e.g. Chinese; also, **analytic/root language**. 293
- iterative (gram)** A +form¹ that expresses the repetition of an action (*frequently*), esp. as part of the +aspect system. 93
- jargon** 1 (*gen*) The technical language of a special field. 56 2 (*gen*) The obscure use of specialized language. 379 3 (*psycho*) Unintelligible utterance with good +intonation, used by young children when learning to talk. 237 4 (*clin*) Unintelligible speech in some +language disorders. 271
- juncture (phonol)** +Phonetic boundary features that demarcate units of grammar, e.g. certain features of +pitch, +duration, pause. 164
- kana (graph)** Either of the two Japanese +syllabic² writing systems, **hiragana** and **katakana**. 195
- katakana** *see* **kana**
- kernel (gram)** A basic type of +sentence structure, as used in early +generative grammar. 97
- kin(a)esthesia (phys)** Awareness of the movements and positions of the +vocal organs during speech; also, **kin(a)esthetic feedback**. 124
- kineme (semiot)** The smallest +contrastive unit of body expression. 402
- kinesics (semiot)** The systematic use of facial expression and bodily gestures/movements to communicate meaning. 399
- koine (socio)** The spoken language of a locality that has become a +standard language. 43
- kymograph (phonet)** An early device for recording information about +vocal organ movements. 138
- labial (phonet)** The active use of one or both lips in the +articulation of a sound ([f], [u]). 155
- labialization (phonet)** +Rounding the lips while making a speech sound. 156
- labio-dental (phonet)** Said of a +consonant in which one lip actively contacts the teeth ([f], [v]). 155
- labio-velar (phonet)** A speech sound made at the +velum with simultaneous lip +rounding ([w], [u]). 155
- laminal (phonet)** Said of a +consonant made with the +blade (or lamina) of the tongue in contact with the upper lip, teeth, or +alveolar ridge ([s], [ʃ]). 157
- language (ling)** The human faculty of speech. 407
- language (gen)** 1 The systematic, conventional use of sounds, signs, or written symbols in a human society for communication and self-expression. 396 2 A specially devised system of symbols for programming and interacting with computers. 396 3 The means animals use to communicate. 397 4 (*clin*) The symbolic aspects of language¹, excluding +phonetics (and often +phonology). 265
- language acquisition** 1 (*psycho*) The process of learning a +first language in children. 226 2 (*app*) The analogous process of gaining a +foreign or +second language; 368
- language-acquisition device (psycho)** The innate capacity that enables children to learn their mother tongue; often, **LAD**. 234
- language attitudes (socio)** The feelings people have about their own language or the language(s) of others. 1
- language centre/center (neuro)** A brain area controlling +production or +comprehension. 260
- language change (hist)** Change within a language over a period of time; cf. +language shift. 328
- language contact (socio)** A situation of prolonged association between the speakers of different languages. 360
- language disorder (clin)** A serious abnormality in the system underlying the use of language. 264
- language laboratory (app)** A classroom that uses tape-recorder booths to enable students to listen and respond to foreign utterances. 377
- language loss** 1 (*socio*) The gradual loss of ability to use a language, e.g. in immigrant situations. 360 2 (*clin*) The sudden loss of language as a result of brain damage. 270
- language loyalty (socio)** The personal attachment to a language that leads to its continued use in a country where other languages are +dominant. 367
- language maintenance (socio)** The continued use of and support for a language in a +bilingual or +multilingual community. 360
- language pathologist/pathology** *see* **speech pathologist/pathology**
- language planning (socio)** Official intentions and policies affecting language use in a country. 364
- language shift (socio)** A permanent change in a person's choice of language for everyday purposes (esp. as a result of immigrant movement). 360
- language therapist** *see* **speech pathologist**
- langue (ling)** The language system shared by a +speech community; cf. +*parole*. 407
- laryngeal (phonet)** A speech sound made in the +larynx. 128
- laryngectomee (clin)** Someone who has had a +laryngectomy. 276
- laryngectomy (clin)** The surgical removal of some or all of the +larynx. 276
- laryngology (clin)** The study of the anatomy, physiology, and diseases of the +larynx. 128
- laryngopharynx (anat)** The lower part of the +pharynx, between +larynx and +oropharynx. 130
- laryngoscope (clin)** A device inserted into the mouth to enable the +larynx to be seen. 129
- larynx (anat)** The part of the +trachea containing the +vocal folds. 128
- lateral (phonet)** Said of a +consonant in which air escapes around one or both sides of a +closure made in the mouth, as in the various kinds of *l* sound. 157
- lateralization/laterality (neuro)** The primary involvement of one hemisphere of the brain in the exercise of a bodily function, e.g. language. 258
- latinate (gram)** Applied to any +grammar¹ that is based on the terms and categories used in classical Latin grammar. 2
- law (hist)** A statement of the predictable relationships (esp. in the use of sounds) between different languages or states of a language. 328
- lax** *see* **tension**
- leading (graph)** The spacing between lines of type. 190
- lect (socio)** A collection of linguistic phenomena that has a functional identity within a speech community, e.g. a regional or social +variety. 24
- length** *see* **duration**
- lenis (phonet)** Said of +consonants made with a relatively weak degree of muscular effort and breath force ([b], [v]); cf. +**fortis**. 157
- lenition (phonet)** A relaxation of muscular effort during +articulation. 157
- lento (phonet)** Said of speech produced slowly or with careful +articulation. 169
- lesion (clin)** An abnormal change in body tissue due to injury or disease. 259
- level** 1 (*ling*) A major dimension of the structural organization of language, capable of independent study, e.g. +phonology, +syntax. 82 2 (*gram*) A kind of representation recognized within the +derivation² of a sentence, e.g. +deep vs +surface grammar. 409 3 (*gram*) One of a series of structural layers within a +sentence (+clause, +phrase, +word, etc.); also, **rank**. 95 4 (*phonol*) A degree of +pitch height or +loudness during speech. 170 5 (*socio*) A mode of expression felt to suit a type of social situation (formal, intimate, etc.). 40
- lexeme (sem)** The smallest +contrastive unit in a +semantic system (*run, cat, switch on*); also, **lexical item**. 104
- lexical diffusion (socio)** The gradual spread of a linguistic change through a language. 332
- lexical item** *see* **lexeme**
- lexical field** *see* **semantic field**
- lexical verb (gram)** A +verb expressing an action, event, or state; also **full-/main verb**; cf. +**auxiliary verb**. 91
- lexical word** *see* **content word**
- lexicography (gen)** The art and science of dictionary-making (by **lexicographers**). 108
- lexicology (sem)** The study of the history and present state of a language's vocabulary. 108
- lexicon (sem)** The vocabulary of a language, esp. in dictionary form; also, **lexis**. 108
- lexicostatistics (hist)** A method for comparing the rates of change in sets of words in hypothetically related languages; cf. +**glottochronology**. 331
- lexis** *see* **lexicon**
- liaison (phonol)** The pronunciation of a +consonant at the end of a word when the next word begins with a +vowel (Fr. *C'est un ...* 'It is a ...'); cf. +**linking**. 164
- ligature (graph)** A character in which two or more letters have been joined together (*æ, œ*). 194

- linear** (*graph*) Said of +scripts using simply drawn characters instead of pictorial writing. 183
- lingua franca** (*gen*) A medium of communication for people who speak different +first languages. 357
- lingual/linguo-** (*phonet*) Said of any sound made with the tongue. 131
- linguist** 1 (*gen*) Someone who is proficient in several languages. 412 2 (*ling*) A student or practitioner of the subject of +linguistics; also **linguistician**. 412
- linguistic** 1 (*gen*) Pertaining to +language¹. 2 (*ling*) Pertaining to +linguistics. 412
- linguistic atlas** (*ling*) A set of maps showing the geographical distribution of linguistic items; also, **dialect atlas**. 30
- linguistic change** *see* **language change**
- linguistic geography** *see* **geographical linguistics**
- linguistician** *see* **linguist**²
- linguistic relativity/determinism** (*ling*) The hypothesis that a language's structure governs the way in which its speakers view the world. 15
- linguistics** (*ling*) The science of language. 404
- linguistic science(s)** *see* **linguistics**
- linking** (*phonol*) A sound introduced between two +syllables or +words, for ease of pronunciation (E. 'linking /r/' of *car and* . . .); cf. +**liaison**. 164
- linking verb** *see* **copula**
- lipogram** (*gen*) A text from which a specific letter has been omitted throughout. 65
- lip reading** *see* **speech reading**
- liquid** (*phonet*) [l]- or [r]-type +consonants. 166
- lisp** (*clin*) An abnormal +articulation of a +sibilant +consonant, esp. [s]. 277
- literal** (*gen*) The usual meaning of a word or phrase; cf. +**figurative**. 70
- literal translation** *see* **free translation**
- loan translation** *see* **calque**
- loan word** *see* **borrow**
- localization** (*neuro*) The control of a specific kind of behaviour, e.g. speech, by a specific area of the brain. 260
- locative** (*gram*) A form that expresses location (*at the corner*). 93
- locutionary act** (*prag*) The +speech act of making a meaningful utterance; cf. +**illocutionary act**. 121
- logocentrism** (*styl*) A language- or word-centred view of literature or other behaviour. 79
- logogram** (*graph*) A symbol that represents a +word (as in Chinese); also, **logograph**. 200
- logograph** *see* **logogram**
- logograph** (*gen*) A word puzzle using +anagrams. 65
- logop(a)edics** *see* **speech pathology**
- logop(a)edist** *see* **speech pathologist**
- logorrhoea** (*gen, clin*) Excessive, uncontrolled, incoherent speech. 271
- long** (*phonol*) Said of a +phoneme that +contrasts because of its greater +duration (the +vowel¹ of *beat* compared with *bit*). 153
- longitudinal** (*gen*) Said of studies that follow +language acquisition over a period of time; cf. +**cross-sectional**. 229
- look-and-say** (*app*) A method of teaching reading that focusses on the recognition of whole words; also, **whole word**; cf. +**phonics**. 251
- loudness** (*phonet*) The auditory sensation that primarily relates to a sound's intensity; also, **volume**. 44
- low** (*phonet, phonol*) 1 Said of +vowels¹ made with the tongue in the bottom area of the mouth ([a], [a]). 153 2 Said of +tones¹ that use a relatively low level of +pitch range. 172 3 (*socio*) Said of the less prestigious +variety in +diglossia. 43
- machine translation** (*gen*) The use of a computer to carry out the task of +translation; also, **automatic translation**. 350
- macrolinguistics** (*ling*) A broad conception of linguistic enquiry, including psychological, cultural, etc. factors. 404
- main clause** (*gram*) A +clause that does not depend on any other part of a +sentence (*The man arrived after the bus left*); also, **independent clause**; cf. +**subordination**. 95
- maintenance** *see* **language maintenance**
- main verb** *see* **lexical verb**
- majuscule** (*graph*) A form of writing consisting of capital letters; cf. +**minuscule**. 186
- malapropism** (*gen*) An inappropriate word, used because of its similarity in sound to the intended word (*a paradigm of virtue*). 77
- malformation** (*gen*) An unacceptable +word formation due to a wrong +analogy (*gooses for geese*). 330
- manner** 1 (*phonet*) The specific process of +articulation used in a sound's +production (+plosive, etc.). 157 2 (*gram*) An +adverbial answering the question 'how?' (*quickly*). 91
- manual alphabet** *see* **dactylology**
- manualism** (*clin*) The teaching of +sign³ to the deaf, to the exclusion of speech; cf. +**oralism**. 267
- margins** (*phonet*) Sound +segments that form the boundaries of a +syllable ([k], [p] in *cup*). 164
- marking/markedness** (*ling*) The presence/absence of a particular +contrastive feature in a language or languages. 85
- masculine** *see* **gender**
- mass** (*gram*) Said of +nouns that typically express general concepts and lack an indefinite +article or +plural (*information*); cf. +**countable**. 91
- matched guise** (*socio*) Recording two languages or +dialects by the same speaker, in order to elicit listener +language attitudes. 23
- mathematical linguistics** (*ling*) The study of the mathematical properties of language, esp. using statistical or algebraic concepts. 412
- matronymic** (*sem*) A name derived from that of a person's mother (*Marjorison*); also, **metronymic**. 112
- maxims** *see* **conversational maxims**
- measure** *see* **metre**
- mechanical translation** *see* **automatic translation**
- medium** (*gen*) A dimension of message transmission, esp. speech, writing, +sign³. 123
- mel** (*acou*) A unit of measurement for +pitch. 144
- mentalistic** (*ling*) Said of the study of language through introspection rather than through the description of behaviour; cf. +**behaviourism**. 409
- merger** (*hist*) The coming together of linguistic units that were originally distinguishable. 328
- mesolect** (*socio*) In +creole studies, a +variety between +acrolect and +basilect. 336
- metalanguage** (*ling*) A language used for talking about language. 248
- metanalysis** (*hist*) A word deriving from a word-boundary error (E. *a naddre* → *an adder*). 328
- metaphor** (*gen*) A +figurative expression in which one notion is described in terms usually associated with another (*launch an idea*). 70
- metathesis** (*ling*) Alteration in a normal sequence of elements, esp. sounds (*aks* for *ask*). 328
- metonymy** (*hist*) A +semantic change where an attribute is used for the whole (*crown = king*). 70
- metre/meter** (*poet*) A rhythmical verse pattern; also, **measure**. 74
- metrics** (*poet*) The study of metrical structure. 74
- metronymic** *see* **matronymic**
- microlinguistic** (*ling*) Said of highly detailed studies of language data. 404
- mid** (*phonet*) Said of a +vowel¹ +articulated between +high¹ and +low¹ tongue positions ([e], [ʌ]); cf. +**close**, +**open**³. 154
- middle ear** (*anat*) Part of the ear between the ear drum and the +inner ear. 142
- minim** (*graph*) A single downstroke of the pen. 187
- minimal pair** (*phonol*) Words that differ in meaning when only one sound is changed. 160
- minuscule** (*graph*) A form of writing consisting of small letters; cf. +**majuscule**. 186
- miscue** (*app*) An error made by someone learning to read; studied by **miscue analysis**. 250
- mismatch** (*psycho*) A child's +semantically inappropriate use of a word, where there is no apparent basis for the error. 244
- mistake** *see* **error**²
- mixing** *see* **code-switching**
- modal** (*gram*) A +verb that signals contrasts in speaker attitude (+mood), e.g. *may, can*. 93
- modality** 1 (*semiot*) A +medium of communication. 396 2 (*gram*) The system of +modal expression. 93
- mode** (*semiot*) A +medium of communication. 396
- modelling** (*app*) Providing language examples for a learner to follow. 368
- modification** 1 (*gram*) The structural dependence of one element (a **modifier**) upon another. 95 2 (*phonet*) Movement that affects the air flow in the +vocal tract. 130 3 (*hist*) Any of several kinds of +formal¹ change in a word (*man* → *men*). 328
- modifier** *see* **modification**
- monaural** (*phonet*) Using one ear; cf. +**binaural**. 142
- monitoring** (*app*) Critical self-listening. 372
- monogenesis** (*hist*) The view that all languages come from an original language; cf. +**polygenesis**. 291
- monoglot** *see* **monolingual**
- monolingual** (*gen*) Said of a person/community with only one language; also, **unilingual**; cf. +**bilingual**, +**multilingual**. 360
- monologue** (*gen*) Speech by a single person. 48

- monometer/monometre** (*poet*) A line of verse containing a single unit of rhythm (+foot). 74
- monomorphemic** (*gram*) Said of a +word consisting of a single +morpheme. 90
- monophthong** (*phonet*) A +vowel¹ with no detectable change in quality during a +syllable (*car*). 154
- monosyllabic** (*phonol*) Said of a +word consisting of a single +syllable. 86
- mood** (*gram*) Attitudes of fact, wish, possibility, etc. conveyed by a +verb (a +modal) or +clause, e.g. +indicative, +subjunctive. 93
- mora** (*phonol*) A minimal unit of rhythmical time equivalent to a short +syllable. 74
- morph** (*gram*) The physical form of a +morpheme. 90
- morpheme** (*gram*) The smallest +contrastive unit of +grammar (*man*, *de-*, *-tion*, *-s*, etc); cf. +bound form, +free form. 90
- morphemics** (*gram*) The study of +morphemes. 90
- morphology** (*gram*) The study of +word structure, esp. in terms of +morphemes. 90
- morphophonemics** *see* **morphophonology**
- morphophonology** (*gram*) The study of the relations between +morphology and +phonology. 90
- morphosyntactic** (*gram*) Said of a category whose definition involves both +morphology and +syntax, e.g. +number. 90
- morphotactics** (*gram*) The arrangement of +morphemes in a linear sequence. 90
- motherese** *see* **caretaker speech**
- mother tongue** *see* **first language**
- motor phonetics** *see* **articulation**
- move** (*prag*) A unit of speech in a +discourse. 116
- multilingual** (*gen*) Said of a person/community with several languages; cf. +monolingual. 360
- mutation** (*gram, hist*) A sound change in a word due to the influence of adjacent +morphemes or +words (Welsh *pen* 'head' → *fy mhen* 'my head'). 90
- mutism** (*clin*) Involuntary inability to speak. 264
- mytheme** (*styl*) The smallest contrastive unit of structure found in mythical narratives. 79
- narrow** (*phonet*) Said of a +transcription that shows many +phonetic details; cf. +broad. 158
- nasal** *see* **nasality**
- nasality** (*phonet*) Sound made with the soft +palate lowered, thus allowing air to resonate in the nose (*nasals*), e.g. [m], [n], or *nasalized* sounds, e.g. [ã]. 130
- nasopharynx** (*anat*) The part of the +pharynx adjoining the nasal +cavity. 130
- native language** *see* **first language**
- native speaker** (*gen*) A person whose language is a +first language or 'mother tongue'. 368
- nativism** *see* **innateness hypothesis**
- naturalism** (*sem*) The view that there is a close, 'natural' connection between words and things; cf. +conventionalism. 404
- natural language** (*gen*) A language with +native speakers; cf. +auxiliary language², +language². 352
- negation** (*gram*) A process expressing the denial or contradiction of some or all of the meaning of a sentence; **negative** forms (**negators**) include *not*, *un-*, etc.; cf. +affirmative. 243
- negative, negator** *see* **negation**
- neologism** (*gen*) A new or invented word or expression (*linguistified*). 73
- neurolinguistics** (*ling*) The study of brain structure and function in relation to language use, acquisition, and disorder. 261
- neuter** *see* **gender**
- neutralization** (*phonol*) The loss of *ã* +contrast between two +phonemes in a particular +environment¹ (/t/ vs /d/ is 'neutralized' in *stop*). 161
- neutral vowel** *see* **schwa**
- new** *see* **comment**
- node** *see* **nodule**
- nodule** (*clin*) A small localized swelling ('node'), esp. on the +vocal folds. 276
- noise** (*acou*) A complex +sound wave with irregular vibrations. 137
- nomenclature** (*gen*) A system of terms used in a specialized field. 380
- nominal** (*gram*) A +noun or noun-like item. 91
- nominalism** *see* **conventionalism**
- nominalization** (*gram*) Forming a +noun from some other +word class (*redness*, *my answering*...). 91
- nominative** (*gram*) An +inflection¹ that typically identifies the +subject of a +verb (Ger. *Der Mann sieht den Mann* 'The man sees the man'). 93
- nonce formation** (*ling*) An invented or accidental linguistic form, used once only (*brillig*). 90
- non-count** *see* **countable**
- non-defining** *see* **restrictive**
- non-finite** *see* **finite**
- non-restrictive** *see* **restrictive**
- non-standard** *see* **standard**
- non-verbal** (*semiot*) Said of communication that does not use words, e.g. gestural. 399
- normative** *see* **prescription**
- notation** *see* **transcription**
- notional** 1 (*gram*) Said of a grammar whose terms rely on +extralinguistic notions, e.g. action, duration, time; cf. +formal¹. 91 2 (*app*) Said of a syllabus based on an analysis of sentence meanings and functions; cf. +communicative approach. 374
- noun** (*gram*) A +word class with a naming function, typically showing contrasts of +countability and +number, and capable of acting as +subject or +object of a +clause. 91
- noun phrase** (*gram*) A +phrase with a +noun as +head (*the tall man in a hat*). 95
- nuclear** *see* **nucleus**
- nucleus** (*phonol*) The +syllable in a +tone group that carries maximum +pitch prominence (**nuclear tone**, **tonic**) (*She went to London*). 170
- number** (*gram*) The grammatical category that expresses such contrasts as '+singular/+plural/+dual' (*cat/cats, he is/they are*). 93
- object** (*gram*) A +clause element that expresses the result of an action (cf. +direct/+indirect object). 95
- objective** *see* **accusative**
- object language** (*ling*) A language that is the object of analysis (using a +meta-language). 82
- oblique** (*gram*) Said of any +case form of a +word except the +nominative. 93
- obsolescent** (*gen*) Said of a word or sense no longer used. 330
- obstruent** (*phonet*) Sounds made with a constriction (+plosives, +fricatives, +affricates). 157
- obviative** (*gram*) A fourth-+person form used in some languages, typically contrasting with the third person to mean 'someone/something else'. 92
- occlusion** (*phonet*) The length of the +closure during the +articulation of a +stop +consonant. 157
- oesophageal/esophageal** (*phonet*) Said of sounds or +voice¹ produced in the upper part of the oesophagus, esp. after +laryngectomy. 276
- off-glide, on-glide** *see* **glide**
- onomasiology** (*sem*) The study of sets of associated concepts in relation to their linguistic forms. 100
- onomastics** (*sem*) The study of the +etymology and use of +proper names. 112
- onomatology** *see* **onomastics**
- onomatopoeia** (*sem, poet*) Words that imitate the sounds of the world (*splash, murmur*). 174
- ontogeny** (*ling*) Growth and decay (here, of language) in the individual; cf. +phylogeny. 228
- open** 1 (*gram*) Said of a +word class with unlimited membership (+noun, +adjective, +adverb, +verb); cf. +closed¹. 91 2 (*phonol*) Said of a +syllable that ends in a +vowel¹; cf. +closed². 164 3 (*phonet*) Said of +vowels¹ made with the tongue in the lowest possible position ([a], [a]); +vowels a degree higher are *half-/mid-open*. 153
- opposition** (*phonol*) A linguistically important contrast between sounds. 160
- optative** (*gram*) A +mood of the +verb in some languages expressing desire or wish. 93
- oracy** (*app*) Ability in speaking and listening. 248
- oral** (*phonet*) Said of sounds made in the mouth (as opposed to the nose, +nasal). 152
- oralism** (*clin*) The teaching of speech to the deaf, to the exclusion of +sign³; cf. +manualism. 267
- ordinal** (*gram*) A class of numerals (*first*, etc.); cf. +cardinal number. 99
- oropharynx** (*anat*) The part of the +pharynx adjacent to the oral cavity. 130
- orthoepey** (*gen*) The study of correct pronunciation, esp. as practised in the 17th/18th centuries. 329
- orthography** (*gen*) The study of the use of letters and the rules of spelling in a language. 194
- orthophonist** *see* **speech pathologist**
- oscillograph** (*acou*) An instrument that provides a graphic representation of +sound waves (an *oscillogram*). 138
- oscilloscope** (*acou*) An instrument for the visual display of +sound waves. 138

ossicles (*anat*) The bones of the +middle ear. 143
otology (*clin*) The study of diseases of the ear. 266
oto(rhino)laryngology (*clin*) The study of diseases of the ear, nose, and throat. 266
overcorrection *see* **hypercorrection**
overextension *see* **overgeneralization**
overgeneralization (*psycho*) A learner's extension of a word meaning or grammatical +rule¹ beyond its normal use (*men* → *mens*); also, **overextension**. 244
overtone *see* **harmonic**
oxymoron (*rhet*) A +figurative combination of incongruous or contradictory words. 70
oxytone (*gen*) A word with heavy +stress on the final +syllable (*represent*). 169
paedography (*graph*) A writing system devised to help children to read. 194
palaeography (*graph*) The study of ancient writings and inscriptions. 187
palatal (*phonet*) Said of sounds made in the area of the hard +palate ([ç, ʃ]). 155
palatalization (*phonet*) An +articulation in which the tongue moves towards the hard +palate while another sound is being made. 156
palate (*anat*) The arched bony structure that forms the roof of the mouth; divided into the **hard palate** and **soft palate** (*velum*). 124
palato-alveolar (*phonet*) Said of a +consonant made between the +alveolar ridge and the hard +palate ([ʃ]). 155
palatography (*phonet*) The instrumental study of tongue contact with the +palate, displayed as a **palatogram**. 140
palilalia (*clin*) Involuntary repetition of words or phrases. 270
palilology (*rhet*) Word repetition for emphasis. 70
palindrome (*gen*) Words or expressions that read the same backwards or forwards. 65
pangram (*gen*) A sentence that contains every letter of the alphabet. 65
paracusis (*clin*) Any hearing abnormality. 266
paradigm (*gram*) The set of +inflectional¹ +forms¹ of a word (Lat. *amo/amas/amat*...). 90
paradigmatic (*ling*) The relationship of +substitution between a linguistic unit and other units at a particular place in a +structure². 407
paradox (*gen*) An apparent contradiction that contains a truth. 70
paragram (*gen*) A play on words by altering a letter, esp. in humour. 63
paralanguage (*ling*) Features of speech or +body language considered to be marginal to language; studied by **paralinguistics**. 169
paralinguistics *see* **paralanguage**
parallelism (*styl*) The use of paired sounds, words, or constructions. 60
paraphasia (*clin*) An involuntary error in the production of words or phrases. 270
paraphrase (*gen*) An alternative version of a sentence that does not change its meaning. 107
pararhyme (*poet*) The repetition of the same initial and final consonants in different words (*tail/tall*). 74
parataxis (*gram*) Constructions joined without the use of +conjunctions (*I had tea, eggs*...); cf. +hypotaxis. 95
parent language (*hist*) A language from which other languages descend, e.g. Latin is the parent of **daughter** languages French, Spanish, etc., which are thus sister languages to each other. 292
parole (*ling*) The concrete utterances of a speaker; cf. +*langue*. 407
paronomasia (*gen*) A play on words, or pun. 63
paronym (*hist*) A word that comes from the same +root² as another (*wise/wisdom*). 90
paroxytone (*phonol*) A word with heavy +stress on the penultimate syllable (*telegraphic*). 169
parsing (*gram*) Analysing and labelling the grammatical elements of a +sentence; also, **diagramming**. 249
participle (*gram*) A word derived from a +verb and used as an +adjective (*a smiling face*). 91
particle (*gram*) An +invariable word with a +grammatical¹ function (*to go, not*). 91
partitive (*gram*) A form that refers to a part or quantity (*some, piece, ounce*). 92
part of speech *see* **word class**
pasigraphy (*gen*) The use of a system of symbols understood between languages (1, 2, +, £). 200
passive *see* **active, voice**²
patient *see* **goal**
patois (*gen*) A provincial +dialect. 24
patronymic (*gen*) A name derived from that of a person's father (*Peterson*). 112

pejoration *see* **deterioration**
pejorative (*gen*) Said of a linguistic form that expresses a disparaging meaning (*goodish*). 330
pentameter/pentametre (*poet*) A line of verse containing five units of rhythm (+foot). 74
perfect (*gram*) A +tense¹ form typically referring to a past action that has present relevance (*I have asked*); cf. +pluperfect. 93
perfective (*gram*) A +verb +aspect typically stressing the completion of an action; contrasts with **imperfective**. 93
performance (*ling*) The language actually used by people in speaking or writing; cf. +competence. 409
performative (*prag*) An +utterance or +verb that performs an action (*promise, baptise*). 121
periodic (*acou*) Said of a +waveform that involves a repeated pattern of vibration; contrasts with **aperiodic** (random) vibration. 133
periphrasis 1 (*gram*) The use of separate +words instead of +inflections¹ to express a +grammatical¹ relationship (**periphrastic**) (*more happy* for *happier*). 92 2 *see* **circumlocution**
perlocutionary act (*prag*) A +speech act that achieves a particular effect on a listener (frightens, persuades); cf. +locutionary act. 121
perseveration (*clin*) Involuntary continued use of a linguistic form. 271
person (*gram*) A grammatical form (esp. a +pronoun or +verb) referring directly to the speaker ('first person'), addressee ('second person'), or others involved in an interaction (esp. 'third person'). 93
personal pronoun *see* **person**
personification (*poet, rhet*) The +figurative attribution of human qualities to non-human notions. 70
petroglyph (*gen*) An ancient stone inscription; also, **petrogram**. 196
petrogram *see* **petroglyph**
pharyngeal (*phonet*) Said of sounds made in the +pharynx ([ħ, ʕ]). 155
pharyngealization (*phonet*) Narrowing of the +pharynx while another speech sound is being made. 156
pharynx (*anat*) The part of the throat above the +larynx. 130
phatic (*ling*) Said of language used to establish atmosphere or maintain social contact. 10
philology *see* **comparative philology**
philosophical linguistics (*ling*) The study of language in relation to philosophical concepts. 412
phon (*acou*) Unit of measurement for the +loudness level of a sound. 144
phon(a)esthesia (*clin*) An abnormally weak +voice quality¹. 276
phon(a)esthetics (*phonet*) The study of the aesthetic or symbolic properties of sound. 174
phonation (*phonet*) The production of +voice¹ through the use of the +vocal folds. 128
phone (*phonet*) The smallest perceptible +discrete +segment of speech sound. 152
phoneme (*phonol*) The smallest +contrastive unit in the sound system of a language. 160
phonemics (*phonol*) The analysis of +phonemes. 160
phonemic transcription (*phonol*) A +transcription of the +phonemes in an utterance. 160
phonetic 1 (*phonet*) Pertaining to phonetics. 152. 2 (*graph*) Part of a +logogram that indicates its pronunciation; cf. +determinative. 200
phonetic alphabet *see* **phonetic transcription**
phonetician (*phonet*) A +phonetics specialist. 152
phonetics (*phonet*) The science of speech sounds, esp. of their production, transmission, and reception ('+acoustic/+articulatory/+auditory phonetics'). 152
phonetic spelling (*gen*) A spelling system that represents speech sounds in a one-to-one way. 213
phonetic transcription (*phonet*) A +transcription of all distinguishable phones in an utterance, using special symbols (a **phonetic alphabet**). 158
phoniatrics (*clin*) Study of pathologies affecting +voice quality¹ and pronunciation. 264
phonics (*app*) A method of teaching reading that trains recognition of the sound values of individual letters; cf. +look-and-say. 251
phonogram (*graph*) A symbol representing a speech sound; cf. +logogram. 199
phonography (*graph*) A writing system that represents individual speech sounds. 197
phonologist (*phonol*) A +phonology specialist. 160
phonology (*phonol*) The study of the sound systems of languages. 160
phonostylistics (*poet*) The study of the expressive use of sound, esp. in poetry. 74
phonotactics (*phonol*) The specific sequences of sounds that occur in a language. 160

- phrasal verb** (*gram*) A +verb consisting of a lexical element and +particle(s) (*get up*). 91
- phrase** (*gram*) A group of words smaller than a +clause, forming a +grammatical¹ unit (*in a box*). 95
- phrase marker** (*gram*) A structural representation of a sentence in +generative grammar, usually in the form of a +tree diagram. 96
- phrase-structure grammar** (*gram*) A +generative grammar that provides an analysis of sentences into +constituent elements. 96
- phylogeny** (*hist*) Historical development (here, of language) in communities or in the human race as a whole; cf. +ontogeny. 328
- physiological phonetics** *see* **articulatory phonetics**
- pictogram/pictograph** (*graph*) A symbol used in picture writing. 197
- pidgin** (*socio*) A language with a reduced range of structure and use, with no +native speakers. 334
- pidginize** (*socio*) To develop into a +pidgin. 334
- pitch** (*phonet*) The auditory sensation of the height of a sound. 133
- place of articulation** (*phonet*) The anatomical point in the +vocal tract where a speech sound is produced (+labial, +dental, etc.). 155
- pleonasm** (*gen*) The unnecessary use of words (*in this present day and age*). 2
- plethysmograph** (*phonet*) An instrument that records changes in air volume during speech. 125
- plosive** (*phonet*) Said of a +consonant made by the sudden release of a complete +closure in the +vocal tract ([p], [k]). 157
- pluperfect** (*gram*) A +verb form that typically expresses completion of an action before a specific past time (*I had jumped*); also, **past perfect**. 93
- plural** (*gram*) A +word form typically expressing 'more than one' in +number (*boys, them*). 93
- plurilingualism** *see* **multilingualism**
- plurisegmental** *see* **suprasegmental**
- pneumograph** (*phonet*) An instrument that measures chest movements during breathing. 139
- pneumotachograph** (*phonet*) An instrument that measures air flow from nose and mouth. 139
- poetics** (*poet*) The linguistic analysis of poetry (and sometimes of other creative language use). 73
- point size** (*graph*) A system for measuring the size of pieces of type. 190
- polarity** (*gram*) The system of contrast between +affirmative and +negative in a language. 93
- polyalphabetic** (*gen*) Said of a +cipher that makes use of many letter transformations. 58
- polygenesis** (*hist*) The view that languages come from several original sources; cf. +monogenesis. 291
- polyglot/polylingual** *see* **multilingual**
- polysemia/polysemy** (*sem*) Several meanings of a word (*plain* = 'dull/obvious/...'). 106
- polysemic/polysemous** (*sem*) Showing +polysemy. 106
- polysyllabic** (*phonet*) Having more than one +syllable. 87
- polysynthetic** (*ling*) Said of a language that uses long +word forms with a complex +morphology; also, **incorporating**, **incapsulating**. 293
- polysystemic** (*ling*) Said of an analysis that sets up different linguistic systems at different places in +structure². 408
- popular etymology** *see* **folk etymology**
- portmanteau** (*gram*) A +morph that can be analysed into more than one +morpheme (Fr. *au* = *à le*). 90
- positive** *see* **affirmative**, **degree**, **polarity**
- possessive** (*gram*) A linguistic form that indicates possession (*my, mine, John's*). 93
- postalveolar** (*phonet*) Said of a +consonant made at the rear of the +alveolar ridge. 155
- postcreole continuum** (*socio*) A related series of +varieties that develops when +creole speakers are taught in the +standard language. 336
- postmodification** (*gram*) Items that occur within a +phrase after the +head (*the man in a suit*). 95
- postposition** (*gram*) A +particle that follows the +noun it +governs (Jap. *X kara Y made* 'from X to Y'); cf. +preposition. 92
- post-structuralism** (*styl*) A reaction to the +structuralist analysis of literary texts. 79
- postvocalic** (*phonet*) Following a +vowel¹. 164
- pragmatics** (*prag*) The study of the factors influencing a person's choice of language¹. 120
- predicate** (*gram*) The +clause element that gives information about the +subject (*He saw a dog*). 94
- predicative** *see* **attributive**
- prefix** (*gram*) An +affix added initially to a +root¹ (*unhappy*). 90
- prelinguistic** (*psycho*) Said of child utterance before the emergence of language. 228
- preliterate** (*hist*) Said of a language before a writing system has developed. 196
- premodification** (*gram*) Items that occur within a +phrase before the +head (*the funny clown*). 95
- preposition** (*gram*) Items that +govern and typically precede +nouns, +pronouns, and certain other forms (*in the box, to me, by running*). 91
- presby(a)cusis** (*clin*) Gradual loss of hearing acuity as a result of old age. 266
- prescription** (*gen*) An authoritarian (prescriptive or normative) statement about the correctness of a particular use of language; cf. +description. 2
- prescriptive** *see* **prescription**
- presupposition** (*sem*) The information that a speaker assumes to be already known; cf. +focus. 120
- preterite** (*gram*) The +simple¹ past +tense form of a +verb (*I saw*). 93
- prevocalic** (*phonet*) Preceding a +vowel¹. 164
- principal parts** (*gram*) The +forms² of a +verb required to determine its +conjugation (Lat. *amo/amare/amavi/amatum*). 91
- proclitic** (*gram*) An unstressed word that depends on and is pronounced with a following word (*an*). cf. +enclitic. 91
- production** (*ling*) The active use of language; cf. +comprehension. 261
- productivity** (*ling*) The creative capacity of language users to produce and understand an indefinitely large number of sentences. 397
- proficiency test** (*app*) A test that measures how much of a language someone knows. 377
- pro-form** (*gram*) An item that substitutes for another item or construction (*so does John*). 119
- prognostic test** *see* **aptitude test**
- progressive** 1 (*gram*) A +verb form that typically expresses duration or incompleteness (*He is running*); also, **continuous**; cf. +simple. 93 2 (*phonol*) Said of an +assimilation when one sound causes a change in the following sound ([f] → [tʃ] in *did she*). 164
- prolongation** (*clin*) The abnormal or controlled lengthening of a sound in +stuttering. 278
- prominence** (*phonet*) The degree to which an element stands out from others in its +environment¹. 169
- pronominal** (*gram*) An item that functions as a +pronoun. 91
- pronoun** (*gram*) An item that can substitute for a +noun or +noun phrase (*he, who, himself*). 91
- proper name/noun** (*gram*) A +noun that labels a unique place, person, animal, etc. and lacks the grammatical forms of a +common noun. 112
- proposition** (*sem*) A unit of meaning in +statement form that is asserted to be true or false (*The cat is asleep*). 107
- prop word** *see* **empty word**
- proscriptive** (*ling*) Said of +prescriptive +rules² that forbid a usage, e.g. criticism of *very unique*. 2
- prosodic features** *see* **prosody**¹
- prosody** 1 (*phonol*) The linguistic use of +pitch, +loudness, +tempo, and +rhythm. 169 2 (*poet*) The study of versification. 74
- pro(s)thesis** (*phonol*) The insertion of an extra sound at the beginning of a word. 328
- proto-language** 1 (*hist*) A hypothetical ancestor language or form ('Proto-Indo-European'). 292 2 (*psycho*) A stage before the emergence of a recognized linguistic form (**proto-word**). 237
- proto-word** *see* **proto-language**
- proverb** (*gen*) A short, pithy, rhythmical saying expressing a general belief. 53
- proxemics** (*semiot*) The study of the communicative function of body distance, posture, etc. 399
- pseudepigraphy** (*gen*) The false ascription of an author's name to a written work. 187
- pseudolinguistic** (*gen*) Said of vocal behaviour with a superficial resemblance to language. 11
- pseudonym** (*gen*) A fictitious name, esp. of an author. 112
- psittacism** (*gen*) Meaningless repetitive ('parrot-like') speech. 270
- psycholinguistics** (*psycho*) The study of language in relation to psychological processes. 412
- pulmonic** (*phonet*) Pertaining to the lungs. 125
- pure tone** (*acou*) A +sound wave of a single +frequency; cf. +complex tone. 132
- pure vowel** (*phonet*) A +vowel¹ that does not change in quality during a +syllable; cf. +diphthong. 154
- purism** (*gen*) The view that a language needs to preserve traditional standards of correctness and be protected from foreign influence. 2
- qualifier** (*gram*) A word or phrase that limits the meaning of another element (*red car*). 95

quality (*phonet*) The characteristic +resonance, or +timbre, of a sound. 133
quantifier (*sem*) An item expressing amount (*all, some, each*). 91
quantitative linguistics *see mathematical linguistics*
quantity (*phonol*) The relative +duration of +contrastive sounds and +syllables. 169
question (*gram*) A sentence that asks for information or a response. 121
radical *see determinative*
rank *see level*³
readability formula (*app*) A measure of the ease with which a written text can be read. 252
realization (*phonol*) The physical expression of an abstract linguistic unit. 82
rebus (*gen*) A combination of letters, pictures, and pictograms to make words and sentences. 65
received pronunciation (*phonol*) The regionally neutral, prestige accent of British English. 39
receptive aphasia (*clin*) A disorder of language⁴ +comprehension caused by brain damage; cf. +expressive². 270
recipient *see goal*
reciprocal 1 (*gram*) An item that expresses the meaning of mutual relationship (*each other*). 91 2 (*phonol*) A type of +assimilation in which sounds influence each other. 164
reconstruction (*hist*) The +comparative linguistic analysis of extant texts to work out an earlier, non-extant state of a language. 292
recursive (*gram*) Said of a +grammatical¹ +rule¹ that is capable of repeated application. 97
reduction 1 (*gram*) The lack of one or more of the normal +constituents in a construction (*gone to town*); cf. +ellipsis. 95 2 (*phonol*) A +vowel¹ that becomes +central when a word is +unstressed ([a] → [ə] as in *he can* → *he c'n go*). 164 3 (*hist*) A narrowing of meaning. 330 4 *see clipping*.
redundant (*ling*) Said of a feature that is unnecessary for the identification or maintenance of a linguistic +contrast. 146
reduplication (*gram*) 1 A +form² involving a repeated element (Lat. *curro* 'run' → *cucurri* 'ran'). 175 2 A type of +compound¹ word using repeated elements (*helter-skelter*). 90
reference (*sem*) The relationship between linguistic forms and entities in the world (*referents*). 102
referent *see reference*
referential *see denotation, reference*
reflexive (*gram*) A construction or +verb in which +subject and +object relate to the same entity (*She washed herself*). 93
reflexiveness (*semiot*) The capability of language to 'talk about' itself; cf. +metalanguage. 397
regional dialect *see dialect*
register 1 (*phonet*) A physiologically determined range of the human +voice¹, e.g. falsetto. 18 2 (*socio*) A socially defined +variety of language, e.g. scientific, legal, etc. 52 3 (*phonol*) Said of a +tone language that does not use +gliding tones. 172
regression (*psycho*) A backward eye movement while reading a line of print. 208
regressive (*phonol*) Said of an +assimilation when one sound causes a change in the preceding sound ([t] → [p] in *hot pig*); also, *anticipatory*. 164
regular (*ling*) Said of a linguistic form that conforms to the +rules¹ of the language. 404
related (*hist*) Said of languages or forms that share a common origin. 292
relative clause *see relative pronoun*
relative pronoun (*gram*) The item that introduces a +dependent +clause (*relative clause*) in a +noun phrase, referring back to the +noun (*the car which was sold...*). 95
relativity *see linguistic relativity*
release (*phonet*) +Vocal organ movement away from a point of +articulation, esp. in +plosives. 157
relexification (*socio*) A process in the development of +pidgins in which original Portuguese vocabulary is replaced by native language words. 337
relic area (*socio*) A +dialect area that preserves linguistic features from an earlier period. 28
repair (*prag*) The correction of a misunderstanding or error made during a conversation. 116
repertoire (*socio*) The range of languages or +varieties that a speaker has available. 48
reported speech *see indirect speech*
resonance (*phonet*) Air vibrations in the +vocal tract that are set in motion by +phonation. 130
respiration (*phys*) The act of breathing. 124
restricted code (*socio*) An informal +variety of language thought to display

a reduced range of structures; cf. +elaborated code. 40
restricted language (*socio*) A highly reduced linguistic system found in narrowly defined settings, e.g. heraldry, weather reporting. 56
restrictive (*gram*) Said of a +modifier that is an essential part of the identity of another element (*my brother who's abroad*); also, *defining*; contrasts with *non-restrictive* or *non-defining*, where the modification is not essential (*my brother, who's abroad*). 95
retracted (*phonet*) Said of the backwards movement of an +articulator, e.g. the +apex of the tongue. 155
retroflex (*phonet*) Said of sounds made when the +apex of the tongue is curled back in the direction of the hard +palate ([ʈ], [ɖ]). 155
rewrite rule (*gram*) A +rule¹ in +generative grammar of the form 'X → Y' (= 'replace X by Y'). 97
rheme (*ling*) The new information conveyed in a sentence; cf. +theme. 120
rhetoric (*rhet*) The study of effective speaking and writing. 70
rhetorical question (*gram*) A +question to which no answer is expected. 121
rhinolalia/rhinophonía (*clin*) +Nasal resonance. 276
rhotacism (*clin*) A defective use of [r]. 277
rhotic area (*socio*) A +dialect area in which /r/ is pronounced following a +vowel (*car*). 28
rhoticization (*phonet*) The +articulation of +vowels¹ with *r*-colouring. 153
rhyme (*poet*) A correspondence of +syllables, esp. at the ends of poetic lines 74
rhythm (*phonol*) The perceived regularity of prominent units in speech. 169
roll *see trill*
romanization (*graph*) The use of the Latin alphabet to transcribe non-Latin writing systems. 313
root 1 (*gram*) The base form of a word, from which other words derive (*meaningfulness*); cf. +stem. 90 2 (*hist*) The earliest form of a word. 330 3 (*phonet*) The furthest-back part of the tongue. 131 4 *see isolating language*
rounded *see rounding*
rounding (*phonet*) The visual appearance of the lips, permitting +contrasts of rounded ([u]) and unrounded ([i]). 152
routine *see formulaic*
rule (*gram*) 1 A generalization about linguistic structure. 97 2 A +prescriptive recommendation about correct usage. 3
saccades (*psycho*) Rapid eye movements used when searching for an object. 208
salience (*phonet, psycho*) The perceptual prominence of a sound. 145
sandhi (*gram*) A sound change affecting a word used in a specific grammatical +context¹ (*do* → *don't*). 405
satem language (*hist*) An Indo-European language that replaced [k] by [s] in such words as *centum* ('hundred'); cf. +centum language. 328
scansion (*poet*) The analysis of +metre. 74
scheme (*rhet*) A +figurative effect, e.g. +rhyme, that changes the structure of language without affecting its meaning; cf. +trope. 70
schwa/shwa (*phonet*) An +unstressed +vowel¹ [ə] made in the centre of the mouth, heard at the end of such words as *after* and *the*. 153
script (*graph*) Any system of written signs. 194
secondary articulation (*phonet*) The lesser point of +stricture in a sound involving two points of +articulation, e.g. lip +rounding. 156
second language (*app*) A non-native language that has an official role in a country. 368
second person *see person*
segment (*phonet*) A +discrete unit that can be identified in the stream of speech. 161
segmental phonology (*phonol*) The analysis of speech into +phones or +phonemes; cf. +suprasegmental phonology. 160
segmentation (*phonet, gram*) The process of analysing speech into +segments. 96, 160
selection(al) features *see collocation*
semantic *see semantics*
semantic component (*sem*) An element of a word's meaning (*girl* → young, female, human). 107
semantic differential (*psycho*) A technique for measuring the emotional associations of words. 103
semantic feature *see semantic component*
semantic field (*sem*) An area of meaning identified by a set of mutually defining words (colour, furniture, etc.). 104
semantic relations (*sem*) The +sense relations that exist between words, e.g. +hyponymy. 105
semantics (*sem*) The study of linguistic meaning; also, *semasiology*, *sematology*, *semology*. 100

- semasiology/sematology** *see* semantics
- semi-consonant** *see* semi-vowel
- semiology** *see* semiotics
- semiotics (semiot)** The study of the properties of signs and signalling systems, esp. as found in all forms of human communication; also, **semiology**, **significs**. 399
- semi-vowel (phonet)** A sound that displays certain properties of both +consonants and +vowels¹ ([l], [j]); also, **semi-consonant**. 153
- semology** *see* semantics
- sense relations (sem)** The meaning relations between words, as identified by the use of +synonyms, +antonyms, etc.; cf. +reference. 102
- sensorineural (clin)** Said of hearing loss due to damage to the +inner ear. 266
- sentence (gram)** The largest structural unit that displays stateable +grammatical¹ relationships, not +dependent on any other +structure². 94
- sequencing** 1 (*psycho*) Psychological processing of a series of linguistic elements. 275 2 (*app*) The order in which a graded series of items is given to a learner. 374 3 (*prag*) The rule-governed succession of utterances in a +discourse. 120
- shwa** *see* schwa
- sibilant (phonet)** A +fricative made with a groove-like +stricture in the front part of the tongue, to produce a hissing sound ([s], [ʃ]). 157
- sight vocabulary (app)** Words that can be recognized as wholes by someone learning to read. 250
- sigmatism** 1 (*clin*) Abnormal pronunciation of [s], esp. as a +lisp. 277 2 (*poet*) The repetitive use of [s] for effect. 74
- sign** 1 (*semiot*) A feature of language or behaviour that conveys meaning, esp. as used conventionally in a system; also, **symbol**. 407 2 (*graph*) A mark used as an element in a writing system; also, **symbol**. 194 3 (*ling*) Deaf +sign language. 220
- signifiant (sem)** That which signifies; contrasts with **signifié**, that which is signified. 407
- significant** *see* contrastive
- signification (sem)** The relationship between signs and the things or concepts to which they refer. 100
- significs** *see* semiotics
- signifié** *see* signifiant
- sign language (ling)** A system of manual communication, esp. one used by the deaf. 220
- simile (rhet)** A +figurative expression that makes an explicit comparison (*as tall as a tower*). 70
- simple (gram)** 1 Said of a +tense¹ form that has no +auxiliary verb ('simple present' *He runs*, etc.); cf. +progressive¹. 93 2 Said of a +sentence containing one +clause; cf. +complex sentence, +compound¹. 95
- sine wave (acou)** A simple +waveform that produces a +pure tone. 132
- singular (gram)** A form that typically expresses 'one of' in +number (*dog, It is*). 93
- sister language** *see* parent language
- situation (ling)** The +extralinguistic setting in which a use of language takes place. 48
- slang (gen)** 1 Informal, +non-standard vocabulary. 53 2 The +jargon¹ of a special group. 56
- slot (gram)** A place in a construction where a class of items can be inserted (*the - car*). 95
- social dialect** *see* dialect
- sociolect (socio)** A social +dialect. 38
- sociolinguistics (socio)** The study of the relationship between language and society. 412
- soft palate** *see* palate
- solecism (gen)** A minor deviation from what is considered to be linguistically correct. 2
- sonagram/sonagraph (phonet)** *see* spectrograph
- sonant (phonet)** A +voiced sound. 128
- sone (acou)** Unit of measurement of +loudness. 144
- sonorant (phonet)** A +voiced sound made with a relatively free passage of air ([a], [l], [n]). 157
- sonority (phonet)** The relative prominence or 'carrying power' of a sound. 164
- sound change (hist)** A change in the sound system of a language, over a period of time. 328
- sound law (hist)** A regular, predictable series of +sound changes. 328
- sound pressure level (acou)** The level of a sound as measured in +decibels. 134
- sound shift (hist)** A series of related +sound changes. 328
- sound symbolism (phonet)** A direct association between the sounds of language and the properties of the external world. 174
- sound system (phonol)** The network of +phonetic +contrasts comprising a language's +phonology. 165
- sound wave (acou)** A wave-like air disturbance from a vibrating body, which transmits sound. 132
- source language (ling)** A language from which a word or text is taken. 344
- spectrograph (phonet)** An instrument that gives a visual representation of the acoustic features of speech sounds, in the form of a **spectrogram**; also, **sonagraph/sonagram**. 136
- spectrum (acou)** The range of +frequencies that comprise a +sound wave. 135
- speculative grammar (ling)** A type of grammatical treatise written in the middle ages. 406
- speech** 1 (*gen*) The oral medium of transmission for language (**spoken language**). 123 2 (*clin*) The +phonetic +level¹ of communication (where disorder can occur); cf. +language¹. 265
- speech act (ling)** An +utterance defined in terms of the intentions of the speaker and the effect it has on the listener, e.g. a +directive. 121
- speech community (socio)** A group of people, identified regionally or socially, who share at least one language or +variety. 48
- speech defect (clin)** A regular, involuntary deviation from the norms of speech. 264
- speech disorder (clin)** A serious abnormality in the system underlying the use of spoken language. 264
- speech event (prag)** A specific act or exchange of speech (greeting, sermon, conversation, etc.). 48
- speech impairment** *see* speech defect
- speech pathologist (clin)** A person trained to diagnose, assess, and treat +speech disorders; also, **language pathologist/therapist**, **logop(a)edist**, **orthophonist**, **speech therapist**. 264
- speech pathology (clin)** The study of all forms of involuntary, abnormal linguistic behaviour; also, **language pathology**, **logop(a)edics**, **speech therapy**. 264
- speech perception (psycho)** The reception and recognition of speech by the brain. 145
- speech processing (psycho)** The stages involved in the perception and production of speech. 262
- speech production (psycho)** The planning and execution of acts of speaking. 262
- speech reading (gen)** A method of interpreting a speaker who cannot be heard by following the movements of the mouth; also, **lip reading**. 225
- speech reception** *see* speech recognition
- speech recognition (psycho)** The initial stage of the +decoding¹ process in +speech perception. 149
- speech science(s) (ling)** The study of all factors involved in +speech production and reception. 123
- speech stretcher (phonet)** A device that presents a slowed but undistorted recording of speech. 138
- speech surrogate (ling)** A communication system that replaces the use of speech (as in drum- or whistle-languages). 400
- speech synthesizer (phonet)** A device that simulates the +speech-production process. 146
- speech therapist/therapy** *see* speech pathologist/pathology
- spelling pronunciation (gen)** The pronunciation of a word based on its spelling (*says as /seɪz/*). 180
- spelling reform (gen)** A movement to make spelling more regular in its relation to speech. 215
- spirant** *see* fricative
- spirometer (phys)** An instrument for measuring the air capacity of the lungs. 125
- split infinitive (gram)** The insertion of a word between *to* and the +infinitive form of the +verb in English (*to boldly go*). 2
- splitting (hist)** One +phoneme becoming two as a result of +sound change. 328
- spondee (poet)** A unit of +rhythm in poetic +metre, consisting of two +stressed +syllables. 74
- spooneerism (gen)** The transposition of sounds between words, which gives a new meaning (*queer old dean* for *dear old queen*). 262
- spread (phonet)** Said of sounds made with lips stretched sideways ([ɪ]). 152
- stammering** *see* stuttering
- standard (socio)** A prestige +variety, used as an institutionalized norm in a community; forms or varieties not conforming to this norm are **non-standard** or (pejoratively) **sub-standard**. 24
- standardization (socio)** Making a +form² or +usage conform to the +standard language. 364
- starred form** *see* asterisked form
- state** *see* stative

- statement** (*gram*) A sentence that asserts or reports information (*The dog saw the cat*). 121
- static** *see* **stative**
- statistical linguistics** (*ling*) The study of the statistical properties of language(s). 86
- stative** (*gram*) Said of +verbs that express states of affairs rather than actions (*know, seem*); also, **static/state** verbs; cf. +dynamic¹. 93
- steganography** (*gen*) The use of techniques to conceal the existence of a message. 58
- stem** (*gram*) The element in a word to which +affixes are attached; cf. +root¹. 90
- stenography** (*graph*) Shorthand writing. 206
- stereotyped** *see* **formulaic**
- stop** (*phonet*) A +consonant made by a complete +closure in the +vocal tract ([p], [b]). 157
- stratification** (*ling*) A model of language as a system of related layers, or strata. 83
- stress** (*phonet*) The degree of force with which a +syllable is uttered; syllables may be stressed or **unstressed** in various degrees (heavy, weak, etc.). 169
- stressed** *see* **stress**
- stress-timing** *see* **isochrony**
- stricture** (*phonet*) An +articulation in which the air stream is restricted to some degree. 157
- string** (*ling*) A linear sequence of linguistic elements. 95
- strong form** (*phonol*) A +stressed +word form. 169
- strong verb** (*gram*) A +verb that changes its +root¹ +vowel when changing its +tense¹ (*sing/sang*). 91
- structural** *see* **structure**
- structuralism** (*ling*) An approach that analyses language (or any human institution or behaviour) into a set of +structures¹. 79
- structural(ist) linguistics** (*ling*) The study of a language's system of +formal¹ patterning (esp. in +grammar and +phonology), rather than of the meaning the patterns convey. 408
- structural semantics** (*sem*) The study of the +sense relations between words. 105
- structural word** *see* **function word**
- structure** (*ling*) 1 A system of interrelated elements, which derive their (**structural**) meaning from the relations that hold between them. 96 2 A sequential pattern of linguistic elements, at some analytical +level^{2,3}; cf. +deep/surface structure. 98
- stuttering** (*clin*) A disorder of speech +fluency marked by hesitancy, +blocks, sound repetitions, etc.; also **stammering**. 278
- stylistics** (*ling*) The study of systematic variation in language use (**style**) characteristic of individuals or groups; also, **stylolinguistics**. 66
- stylolinguistics** *see* **stylistics**
- stylometrics** *see* **stylostatistics**
- stylostatistics** (*ling*) The quantification of +stylistic patterns; also, **stylometrics**. 67
- subject** (*gram*) The +clause +constituent about which something is stated (in the +predicate) (*The books are on the table*). 94
- subjective** *see* **nominative**
- subjunctive** (*gram*) A grammatical +mood used in some +dependent +clauses to express doubt, tentativeness, etc. (*Were he here ...*); cf. +imperative, +indicative. 93
- subordinate** *see* **dependent**
- subordination** (*gram*) The dependence of one grammatical unit upon another, as in **subordinate clauses** (*They left after the show ended*). 95
- subordinator** (*gram*) A +conjunction used in +subordination (*since, because*). 95
- sub-standard** *see* **standard**
- substantive** (*gram*) A +noun or noun-like item. 91
- substantive universal** (*ling*) Basic elements that a +grammar² requires to analyse language data. 85
- substitution** (*ling*) The replacement of one element by another at a specific place in a +structure². 119
- substitution frame** (*gram*) A specific +structure² in which a +substitution takes place (*a — cat*). 95
- substrate/substratum** (*hist, socio*) A +variety that has influenced the structure or use of a more dominant variety or language (the **superstratum**) in a community. 333
- suffix** (*gram*) An +affix that follows a +stem. 90
- superfix** (*phonol*) A vocal effect that extends over more than one +segment, e.g. +stress. 169
- superlative** *see* **degree**
- superstratum** *see* **substratum**
- suppletion** (*gram*) The use of an unrelated form to complete a +paradigm (*go/goes/going/gone/went*). 90
- suprasegmental** (*phonol*) A vocal effect extending over more than one +segment, e.g. +pitch; also, **plurisegmental**. 169
- surface grammar/structure** (*ling*) A +syntactic representation of a +sentence that comes closest to how the sentence is actually pronounced. 98
- switching** *see* **code switching**
- syllabary** (*graph*) A writing system in which the symbols represent +syllables. 201
- syllabic** 1 (*phonol*) Said of a +consonant that can be used alone as a +syllable (/l/ in *bottle*). 164 2 (*graph*) Said of a writing system in which the symbols represent +syllables. 201
- syllabification** (*phonol*) The division of a +word into +syllables. 164
- syllable** (*phonol*) An element of speech that acts as a unit of +rhythm, consisting of a +vowel, +syllabic¹, or vowel/ +consonant combination. 164
- syllable-timed** (*phonol*) Said of languages in which the +syllables occur at regular time intervals; cf. +isochrony. 169
- symbol** *see* **sign**^{1,2}
- syn(a)esthesia** (*sem*) A direct association between +form¹ and meaning (*slimy, slug*, etc.). 174
- synchronic** (*ling*) Said of an approach that studies language at a theoretical 'point' in time; contrasts with **diachronic**. 407
- syncope** (*hist*) The loss of sounds or letters from the middle of a word (*bo'sun*). 328
- syncretism** (*hist*) The merging of +forms² originally distinguished by +inflection¹. 328
- syndeton** (*gram*) The use of +conjunctions to link constructions. 95
- synonym** (*sem*) A word that has the same meaning (in a particular +context¹) as another word (*a nice range/selection of flowers*). 105
- syntactic** (*gram*) Pertaining to +syntax. 94
- syntactics** *see* **syntax**
- syntagm(a)** (*gram*) A string of elements forming a unit in +syntax. 94
- syntagmatic** (*ling*) Said of the linear relationship between elements in a word or construction. 407
- syntax** (*gram*) 1 The study of +word combinations; also, **syntactics**; cf. +morphology. 2 The study of +sentence structure (including word structure). 94
- synthesis** *see* **speech synthesis**
- synthetic** 1 *see* **inflecting language** 2 *see* **analytic**²
- systematic phonology** (*phonol*) An approach that represents the speaker's knowledge of the +phonological relations between words (*telegraph/telegraphy*, etc.). 160
- systemic** (*ling*) Said of an approach that analyses language into systems of +contrasts, and studies their functional use in social communication. 407
- T** (*socio*) Said of a linguistic form (esp. a +pronoun) used to express social closeness or familiarity; cf. +V. 45
- taboo** (*gen*) Said of a linguistic form whose use is avoided in a society. 61
- tachistoscope** (*psycho*) A device used in reading research that gives a very brief exposure to a visual image, e.g. a letter. 208
- tachygraphy** (*graph*) Shorthand writing. 206
- tactics** (*ling*) The systematic arrangements of linguistic units in linear sequence. 82
- tag** (*gram*) An element attached to the end of an utterance, esp. a **tag question** (*... isn't it?*). 171
- tagmeme** (*gram*) A grammatical unit that relates an item's +form¹ and +syntactic +function¹; the central notion in **tagmemic analysis**. 408
- tambre, tamber** *see* **timbre**
- tap** (*phonet*) A +consonant made by a single rapid tongue contact against the roof of the mouth (as sometimes heard in the /t/ of *writer*). 166
- target** 1 (*phonet*) The theoretical position adopted by the +vocal organs during the +articulation of a sound. 137 2 (*app*) The language or +variety that is the goal of an activity, e.g. into which a +translation is being made. 344
- tautology** (*gen*) An unnecessary repetition of a word or idea. 386
- taxonomic** (*ling*) Said of a linguistic approach that is mainly concerned with classification. 408
- technography** (*graph*) A writing system devised for a specialized field. 194
- teknonymic** (*sem*) A parent's name that derives from that of a child. 112
- telegraphic/telegraphical** (*psycho*) Said of speech that omits +function words and +dependent +content words (*Man kick ball*). 243
- telescoped word** *see* **blend**
- teletext** (*gen*) An +acrostic based on the last letters of words or lines. 64
- teletex** (t) (*gen*) The transmission of +graphic data from a central source to a television screen. 193
- telic** (*gram*) Said of a +verb when the activity has a clear terminal point (*kick*); contrasts with **atelic** verbs (*play*). 93

- tempo** (*phonol*) Relative rate of speech. 169
- tense** 1 (*gram*) A change in the +form² of a +verb to mark the time at which an action takes place (past, present, etc.). 93 2 *see* **tension**
- tension** (*phonet*) The muscular force used in making a sound, analysed as strong (*tense*), weak (*lax*), etc. 157
- tetrameter/tetrametre** (*poet*) A line of verse containing four units of rhythm (+foot). 74
- text** (*ling*) A stretch of spoken or written language with a definable communicative function (news report, poem, road sign, etc.). 116
- textlinguistics** (*ling*) The study of the linguistic +structure¹ of +texts. 116
- textual function** (*ling*) The use of language to identify +texts. 119
- thematization** (*ling*) Moving an element to the front of a sentence, to act as the +theme (*Smith his name is*); also, **topicalization**. 120
- theme** (*ling*) The element at the beginning of a sentence that expresses what is being talked about (*The cat was in the garden*); cf. +rheme. 120
- theography** (*styl*) The study of the language people use to talk about God. 51
- thesaurus** (*gen*) A book of words grouped on the basis of their meaning. 104
- third person** *see* **person**
- timbre** (*phonet*) A sound's tonal quality, or 'colour', which differentiates sounds of the same +pitch, +loudness, and +duration. 133
- tip** *see* **apex**
- tmesis** (*rhet*) The insertion of a word or phrase within another (*absobloom-ingly*). 70
- tone** 1 (*phonol*) The distinctive +pitch level of a +syllable. 169 2 *see* **pure tone**
- tone group/unit** (*phonol*) A distinctive sequence (or +contour¹) of +tones¹ in an utterance. 169
- tone language** (*ling*) A language in which word meanings or +grammatical¹ +contrasts are conveyed by variations in +tone. 172
- toneme** (*phonol*) A +contrastive +tone¹. 172
- tonetics** (*phonet*) The study of the +phonetic properties of +tones¹. 170
- tone unit** *see* **tone group**
- tonic** *see* **nucleus**
- tonicity** (*phonol*) The placement of +nuclear syllables in an utterance. 171
- topic** (*ling*) The subject about which something is said (*The pen is red*); also, given information; cf. +comment. 94
- topicalization** *see* **thematization**
- toponomasiology, toponomastics, toponomatology** *see* **toponymy**
- toponymy** (*gen*) The study of place names. 112
- trachea** (*anat*) The passage between lungs and +larynx. 124
- trade language** (*socio*) A +pidgin used to facilitate communication while trading. 334
- traditional** (*gram*) Said of the attitudes and analyses found in language studies that antedate +linguistic science. 3
- transcription** (*phonet*) A method of writing speech sounds in a systematic and consistent way, from a particular point of view (+phonetic/+phonemic transcription, +narrow/+broad); also, **notation**, **script**. 158
- transfer** (*app*) The influence of a foreign learner's +mother tongue upon the +target² language; **positive transfer** facilitates learning, whereas **negative transfer** (**interference**) hinders it. 372
- transform(ation)** (*ling*) A formal¹ linguistic operation (a **transformational rule**) that shows a correspondence between two structures, e.g. active and passive +voice² sentences. 97
- transformational grammar** (*ling*) A +grammar² that uses +transformations. 409
- transition** 1 (*phonol*) The way adjacent sounds are linked (+glide, +liaison, etc.). 164 2 (*acou*) An acoustic change reflecting the movement of the +vocal organs towards or away from a +consonant (esp. +plosive) +articulation. 137 3 (*socio*) Said of a geographical region (a **transition area**) where there is no clear boundary between adjacent +dialects. 28
- transitive** (*gram*) Said of a +verb taking a +direct object (*She saw a dog*); cf. +intransitive. 93
- translation** (*gen*) 1 Conversion from one language into another. 2 Conversion of written texts from one language into another; cf. +interpret. 344
- translative** (*gram*) An +inflection¹ that typically expresses the meaning of change from one place to another. 93
- transliteration** (*gen*) Conversion of one writing system into another. 346
- tree diagram** (*gram*) A diagram used in +generative grammar to show the hierarchical +structure¹ of a +sentence. 96
- tremor** (*clin*) Involuntary shaking of the voice. 19
- trial** (*gram*) A grammatical contrast of +number in some languages, referring to 'three of'. 92
- trigraph** (*graph*) Three written symbols representing one speech sound (*manoeuvre*). 213
- trill** (*phonet*) A +consonant made by the rapid tapping of one +vocal organ against another (**trilled** /r/); also, **roll**. 157
- trimeter/trimetre** (*poet*) A line of verse containing three units of rhythm (+foot). 74
- triphthong** (*phonet*) A +vowel¹ containing three distinct qualities (*tower/tauə*). 154
- trisyllable** (*phonol*) A word containing three +syllables. 164
- trivium** (*gen*) The medieval study of grammar, rhetoric, and logic. 406
- trochee** (*poet*) A unit of +rhythm in poetic +metre, consisting of a +stressed followed by an unstressed +syllable. 74
- trope** (*rhet*) A +figurative effect, e.g. +metaphor, that changes the meaning of language; cf. +scheme. 70
- turn** (*prag*) A single contribution of a speaker to a conversation (a **conversational turn**). 118
- typography** (*graph*) The study of the graphic features of the printed page. 190
- typological linguistics** (*ling*) The study of the structural similarities among languages, regardless of their history. 84
- ultimate constituent** *see* **constituent**
- umlaut** (*hist*) A sound change in which a +vowel¹ is influenced by the vowel in the following +syllable (**gosi* → *geese*). 328
- uncial** (*graph*) A form of writing consisting of large, rounded letters. 186
- uncountable** *see* **countable**
- underextension** (*psycho*) The use of a word to refer to only part of its normal meaning, e.g. a child's use of *shoe* to mean only 'own shoe'. 244
- underlying structure** *see* **deep grammar/structure**
- ungrammatical** *see* **grammatical**
- unilingual** *see* **monolingual**
- universal** (*ling*) A property found in the analysis of all languages; cf. +formal-/+substantive universal. 84
- universal grammar** (*ling*) A +grammar² specifying the possible form a language's grammar can take. 84
- univocalic** (*gen*) A written composition that uses only one +vowel². 65
- unmarked** *see* **marked**
- unproductive** (*ling*) Said of a linguistic feature that is no longer used in the creation of new forms (the *-th* of *length, width*, etc.). 90
- unrounded** *see* **rounding**
- unstressed** *see* **stress**
- unvoiced** *see* **voiceless**
- urban dialectology** (*socio*) The study of the speech patterns used within a modern city community. 32
- usage** (*gen*) The speech and writing habits of a community, esp. when there is a choice between alternative forms (**divided usage**). 2
- utterance** (*ling*) A physically identifiable stretch of speech lacking any grammatical definition; cf. +sentence. 94
- uvula** (*anat*) The small lobe hanging from the bottom of the soft +palate. 130
- uvular** (*phonet*) Said of a +consonant made by the +back of the tongue against the +uvula ([R]). 155
- V** (*socio*) Said of a linguistic +form² (esp. a +pronoun) used to express politeness or distance; cf. +T. 45
- valency** (*gram*) The number and type of bonds that +syntactic elements may form with each other. 408
- variable rule** (*socio*) A +rule¹ that specifies the +extralinguistic conditions governing the use of a linguistic feature (or variable). 32, 332
- variable word** (*gram*) A +word that expresses +grammatical¹ relationships by changing its +form² (*walk/walks/walking*); cf. +invariable word. 91
- variant** (*ling*) A linguistic +form² that is one of a set of alternatives in a given +context¹ (E. plural /s/, /z/, /tʒ/). 90
- variety** (*socio*) A situationally distinctive system of linguistic expression (legal, formal, etc.). 48
- velar** (*phonet*) Said of +consonants made by the +back of the tongue against the soft +palate, or **velum** ([k]). 155
- velaric** (*phonet*) Said of sounds, e.g. +clicks, when the air has been set in motion by a +closure at the soft +palate. 126
- velarization** (*phonet*) An +articulation in which the tongue moves towards the soft +palate while another sound is being made. 156
- velopharyngeal** (*anat*) Said of the area between the soft +palate and the back wall of the +pharynx, which separates oral and nasal +cavities. 130
- velum** *see* **palate**
- ventricular folds** (*anat*) Bands of tissue that lie above the +vocal folds. 128
- verb** (*gram*) A +word class displaying such contrasts as +tense¹, +aspect, +voice², +mood, and typically used to express an action, event, or state (*run, know, want*). 91

verbal group *see verb phrase*

verb phrase (*gram*) 1 A group of words that have the same grammatical function as a single +verb (*has been running*); also, **verbal group**. 95 2 In +generative grammar, the whole of a sentence apart from the first +noun phrase. 96

verbless (*gram*) A construction that omits a +verb (*Although angry, he ...*). 95

vernacular (*socio*) The indigenous language or +dialect of a community. 35

viewdata (*gen*) The interactive transmission of data between a central source and a local television set. 193

vocal abuse (*clin*) Overuse of the voice, resulting in a +voice disorder. 276

vocal folds (*phonet*) Two muscular folds in the +larynx that vibrate as a source of sound; also known as **vocal cords/lips/bands**. 128

vocalic (*phonet*) Pertaining to a +vowel¹. 153

vocalization (*phonet*) Any sound or utterance produced by the +vocal organs. 124

vocal nodules *see nodules*

vocal organs (*phonet*) The parts of the body involved in the production of speech sounds. 124

vocal tract (*phonet*) The whole of the air passage above the +larynx. 124

vocative (*gram*) A form (esp. a +noun) used to address a person, animal, etc. (*Excuse me, sir*); in some languages identified by an +inflection¹. 93

vocoid (*phonet*) A speech sound lacking +closure or audible friction; includes +vowels¹ and vowel-like sounds ([l], [j]). 153

voice 1 (*phonet*) The auditory result of +vocal fold vibration (voiced sounds, [b], [z], [e]); cf. +voiceless, +devoiced. 128 2 (*gram*) A grammatical system varying the relationship between +subject and +object of the +verb, esp. contrasting **active** and **passive** voices (*The cat saw the dog* vs *The dog was seen by the cat*). 93

voiced *see voice*¹

voice disorder (*clin*) An involuntary, abnormal +voice quality¹ that interferes with communication; cf. +dysphonia. 276

voiceless (*phonet*) Said of sounds made without +vocal fold vibration ([f], [p]); also, **unvoiced**. 152

voice mutation (*phonet*) The development of an adult +voice quality¹ after puberty; also, **breaking**. 19

voice onset time (*phonet*) The point when +vocal fold vibration starts relative to the release of a +closure. 137

voiceprint (*phonet*) A +spectrographic display of the acoustic structure of a person's voice. 20

voice quality (*phonet*) 1 The permanent, background, person-identifying feature of speech. 129 2 A specific tone of voice. 169

volume *see loudness*

vowel (*phonet, phonol*) 1 A sound made without +closure or audible friction,

which can function as the centre of a +syllable ([e], [i]). 153 2 (*graph*) The analogous sign in a writing system. 202

wave *see sound wave*

waveform (*acou*) A graph of the movement of air particles in a +sound wave. 132

wavelength (*acou*) The distance travelled by a +sound wave during a single +cycle of vibration. 133

weak form (*phonol*) The +unstressed form of a +word in connected speech (*of* → [ə] in *cup of tea*). 164

weak verb (*gram*) A +verb that forms its past +tense¹ by adding an +inflection¹ (*walk* → *walked*); cf. +strong verb. 90

well formed (*ling*) Said of a sentence that can be +generated by the +rules¹ of a +grammar²; cf. +ill formed. 88

Wernicke's area (*anat*) An area of the brain that controls language +comprehension; cf. +Broca's area. 260

whisper (*phonet*) Speech produced without +vocal fold vibration. 128

whistled speech (*ling*) A form of communication in which whistling substitutes for the +tones¹ of normal speech. 400

whole word *see look-and-say*

widening (*phonet*) Enlarging the +pharynx to produce a different +vowel¹ quality. 153

word (*gram*) The smallest unit of +grammar that can stand alone as a complete utterance, separated by spaces in written language and potentially by pauses in speech. 91

word blindness *see dyslexia*

word class (*gram*) A set of words that display the same +formal¹ properties, esp. their +inflections¹ and +distribution (+verb, +noun, etc.); also known as **part of speech**. 91

word ending (*gram*) An +inflection¹ used at the end of a word (*boys, walking*). 90

word-finding problem (*clin*) Inability to retrieve a desired word, symptomatic of +aphasia. 271

word formation (*gram*) The process of creating words out of sequences of +morphemes. 90

word order (*gram*) The sequential arrangement of +words in a language. 98

x height (*graph*) The height of the small letter *x*. 190

zero (*ling*) An abstract unit used in an analysis that has no physical realization in speech. 90

zoösemiotics (*semiot*) The study of the properties of animal communication. 398

II Special symbols and abbreviations

Non-phonetic symbols and abbreviations

All non-phonetic symbols and abbreviations used in this encyclopedia are listed in alphabetical order below. Page references are given when different sources cited use the same symbol with different meanings.

a	adjective (p. 108)	F ₁	first formant	POV	point of view
a	article (p. 86)	F ₂	second formant	PSG	phrase structure grammar
A	adverbial	FL	foreign language	pu	purpose of
adj	adjective	FLL	foreign-language learning	qu	quantity of
adv	adverb	FLT	foreign-language teaching	r	spoken response
ae	affected entity	FN	first name	R	non-linguistic response (p. 101)
AL	artificial language	fr	from	R	response utterance (p. 118)
ALPAC	Automatic Language Processing Advisory Committee	Fr	French	RA	personal pronoun, subject
ALPS	Automated Language Processing Systems	F _x	fundamental frequency	RB	personal pronoun, object
Ameslan	American Sign Language	G	-ing form of verb	RLP	Roman Lipi Parishad
Anat	anatomy usage	I	initiating utterance (p. 118)	RP	received pronunciation
AS	Anglo-Saxon	I	intrinsic muscles (p. 131)	s	speech stimulus (p. 101)
ASL	American Sign Language	ICAME	International Computer Archive of Modern English	s	substantive (p. 356)
at	attribute of	incl	inclusive pronoun	S	subject (p. 95)
Aux	auxiliary	INT	interior	S	non-linguistic stimulus (p. 101)
BASIC	British American Scientific International Commercial	IPA	International Phonetic Alphabet	sg	singular
BBC	British Broadcasting Corporation	H	high variety	sig	signation
BEV	Black English Vernacular	H _z	hertz	SL	second language
C	complement (p. 95)	IC	immediate constituent	sp	specification of
C	sound velocity (p. 133)	ita	initial teaching alphabet	SPL	sound pressure level
C	consonant (p. 152)	L	low variety (p. 43)	st	state of
CALL	computer-assisted language learning	L	Latin (p. 108)	su	substance of
CB	citizen band	L _x	laryngeal waveform	T	<i>tu</i> (familiar) pronoun (p. 45)
CD	subordinate <i>that</i>	L1	first language	T	teacher (p. 248)
CHILDES	Child Language Data Exchange System	L2	second language	tab	tabula
co	containment of	L3	third language	TG	transformational grammar
cps	cycles per second	LAD	language-acquisition device	TLN	title with last name
CSL	Chinese Sign Language	LARSP	Language Assessment, Remediation, and Screening Procedure	UPSID	University of California, Los Angeles, Phonological Segment Inventory Database
CULT	Chinese University Language Translator	LL	Late Latin	v	verb
D	past tense	l/m	litres per minute	V	<i>vos</i> (polite) pronoun (p. 45)
DAF	delayed auditory feedback	LN	last name	V	verb (p. 95)
dB	decibel	lo	location of	V	vowel (p. 152)
DET	determiner	m	masculine	VA	main verb
dez	designator	MLU	mean length of utterance	VB	verb <i>be</i>
E	extrinsic muscles	msec	milliseconds	VH	verb <i>have</i>
-ed	past tense form	MT	machine translation	VHF	very high frequency
EEG	electroencephalography	n	noun	VOT	voice onset time
EMG	electromyography	N	noun (p. 96)	VP	verb phrase
-en	past participle form	N	nasal feature (p. 163)	wph	words per hour
EURALEX	European Association for Lexicography	N	past participle (p. 411)	X	invented category
EURODICAUTOM	European Automatic Dictionary	Non-SLIP	Non-speech Language Initiation Program	λ	wavelength
excl	exclusive pronoun	NP	noun phrase (p. 96)	?	usage of doubtful
EXT	exterior	NP	proper noun (p. 411)	*	acceptability/grammaticality unacceptable or ungrammatical usage
f	feminine	O	object	()	enclose optional grammatical elements (p. 97)
F	feedback (p. 118)	OED	Oxford English Dictionary	()	enclose linguistic variables (p. 32)
F	frequency (p. 133)	p	pronoun	+	semantic component applicable
F ₀	fundamental frequency	P	pupil (p. 248)	-	semantic component inapplicable
		P	phrase (p. 96)	0	base form of verb
		Pathol	pathology usage	5	<i>was</i> form of <i>be</i>
		PGSS	Paget-Gorman Sign System		
		pl	plural		

Phonetic symbols

This list comprises all the phonetic symbols illustrated in this book, with the addition of several variant forms.

Diacritic and other conventions

a	open front unrounded vowel
æ	front unrounded vowel between mid-open and open
ɐ	central unrounded vowel between mid-open and open
ɑ	open back unrounded vowel
ɒ	open back rounded vowel
b	voiced bilabial plosive
ɸ	voiced bilabial fricative (esp. US)
ɓ	bilabial implosive
bbb	voiced bilingual trill
ɓ	voiced lingualabial plosive
c	voiceless palatal plosive
č	voiceless palato-alveolar affricate (esp. US)
ç	voiceless palatal fricative
ç	voiceless alveolo-palatal fricative
d	voiced alveolar plosive
ɖ	voiced alveolar fricative (esp. US)
ɖ	voiced retroflex plosive
ɗ	alveolar implosive
ɗ	voiced palato-alveolar affricate
ɗ	voiced alveolar tap
e	mid-close front unrounded vowel
ə or ɜ	central unrounded vowel
ɛ or ɜ	r-coloured central vowel
ɐ	central rounded vowel
f	voiceless labio-dental fricative
g	voiced velar plosive
ɡ	voiced velar fricative (esp. US)
ɠ	velar implosive
ɠ	voiced uvular plosive
h	voiceless glottal fricative
ħ	voiceless pharyngeal fricative
ɦ	voiced glottal fricative
ɦ	simultaneous fi and x
i	close front unrounded vowel
ɪ	close central unrounded vowel
ɪ or ɪ	central front unrounded vowel between mid-close and close
j	voiced palatal fricative/approximant
j or ɟ	voiced palatal plosive
ɟ	voiced palato-alveolar affricate (esp. US)
k	voiceless velar plosive
l	voiced lateral approximant
ɭ	voiceless lateral fricative (esp. US)
ɭ	voiceless lateral fricative
ɮ	voiced lateral fricative
ɮ	voiced retroflex lateral
ɮ	voiced alveolar lateral flap
ɮ	voiced lingualabial lateral
m	voiced bilabial nasal
ɱ	voiced labio-dental nasal
ɱ	voiced lingualabial nasal
n	voiced alveolar nasal
ɳ	voiced palatal nasal (esp. US)
ɳ	voiced retroflex nasal
ɳ	voiced palatal nasal
ɳ	voiced velar nasal
ɳ	voiced uvular nasal
o	mid-close back rounded vowel
ø	mid-close front rounded vowel
œ	mid-open front rounded vowel
œ	open front rounded vowel

ɔ	mid-open back rounded vowel
p	voiceless bilabial plosive
ppp	voiceless bilabial trill
p	voiceless lingualabial plosive
q	voiceless uvular plosive
r	voiced alveolar trill
ɾ	voiced alveolar tap/flap
ɹ	voiced postalveolar fricative
ɻ	voiced retroflex tap/flap
ɻ	voiced retroflex approximant
ɹ	voiced alveolar fricative trill
ɹ	voiced uvular trill/tap/flap
ɻ	voiced uvular fricative
s	voiceless alveolar fricative
š	voiceless palato-alveolar fricative (esp. US)
ʂ	voiceless retroflex fricative
t	voiceless alveolar plosive
ɖ	voiceless retroflex plosive
ɖ	voiceless palato-alveolar affricate
ɖ	dental click
u	close back rounded vowel
ʊ	close central rounded vowel
u or ʊ or ʊ	close back unrounded vowel
u or ʊ or ʊ	centralized back rounded vowel between mid-close and close
v	voiced labio-dental fricative
ʋ	voiced labio-dental approximant
ʌ	mid-open back unrounded vowel
w	voiced labio-velar approximant
x	voiceless labio-velar fricative
x	voiceless velar fricative
y	close front rounded vowel
y	voiced palatal fricative/approximant (esp. US)
ɣ	centralized front rounded vowel between mid-close and close
z	voiced alveolar fricative
ʒ	voiced palato-alveolar fricative (esp. US)
ʒ	voiced retroflex fricative
ʒ	voiced alveolo-palatal fricative
β	voiced bilabial fricative
ɣ	voiced velar fricative
ɛ	mid-open front unrounded vowel
θ	voiceless dental fricative
ð	voiced dental fricative
ɬ	voiced palatal lateral
ɸ	voiceless bilabial fricative
χ	voiceless uvular fricative
ʃ	voiceless palato-alveolar fricative
ʃ	palatalized voiceless palato-alveolar fricative
ʒ	voiced palato-alveolar fricative
ʒ	palatalized voiced palato-alveolar fricative
ɥ	voiced labio-palatal approximant
ʋ	voiced velar approximant
ɣ	voiced pharyngeal fricative
ʔ or ʔ	glottal plosive
ʔ	bilabial click
ɖ	postalveolar click
ɖ	lateral click
ɣ	mid-close back unrounded vowel

○	uncertain segment	Example of use
↑	pulmonic ingressive	①
↓	voiceless	ʃ
◌̥	voiced	ʃ̥
◌̥	ejective	p̥
◌̥	aspirated	p̥
◌̥	unaspirated	p̥
◌̥	breathy-voiced/murmured	b̥
◌̥	dental	t̥
◌̥	bidental	h̥
◌̥	retroflex	ɖ̥
◌̥	reverse labiodental	ɸ̥
◌̥	labialized	t̥
◌̥	palatalized	t̥
◌̥	velarized/pharyngealized	l̥
◌̥	laryngealized	b̥
◌̥	nasal fricative	m̥
◌̥	tense articulation	f̥
◌̥	lax articulation	m̥
◌̥	very short articulation	m̥
◌̥	reiterated articulation	p̥p̥
◌̥	non-audible release	b̥
()	enclose a mouthed articulation	(f)
◌̥	syllabic	n̥
◌̥	simultaneous	k̥p̥
◌̥	raised	e̥
◌̥	lowered	e̥ or e̥
◌̥	advanced	u̥
◌̥	retracted	i̥
◌̥	centralized	ē
◌̥	nasalized	ā
◌̥	r-coloured	o̥
◌̥	long	i̥
◌̥	half-long	i̥
◌̥	non-syllabic	ʃ̥
◌̥	rounding	f̥
◌̥	more rounded	ʒ̥
◌̥	less rounded	y̥
◌̥	primary stress	ˈma
◌̥	secondary stress	ˌma
◌̥	high level tone	ˈma
◌̥	low level tone	ˌma
◌̥	high rising tone	ˈma
◌̥	low rising tone	ˌma
◌̥	high falling tone	ˈma
◌̥	low falling tone	ˌma
◌̥	rising-falling tone	ˈma
◌̥	falling-rising tone	ˌma
◌̥	brief pause	ˌma
◌̥	short pause	ˌma
◌̥	long pause	ˌma
◌̥	extra-long pause	ˌma
/ or	tone-unit boundary	
◌̥	step-up in pitch	
◌̥	onset of pitch movement	
/	boundary of foot	
1	high pitch level	
2	mid-high pitch level	
3	mid-low pitch level	
4	low pitch level	
[]	enclose phonetic units (phones or distinctive features)	
//	enclose phonological units (phonemes)	

III Table of the world's languages

Nearly 1,000 living languages are listed in alphabetical order in the following pages, along with information about the language family they belong to, where they are mainly spoken, and approximately how many speakers there are.

Languages with fewer than about 10,000 speakers have been omitted, except where they have particular linguistic significance (e.g. the sole survivor of a family). Only the main pidgins and creoles have been included (see further, p. 338). All numbers are approximations, bearing in mind the problems of speaker-counting discussed in §48. Estimates vary enormously in certain parts of the world; and in cases where there is disagreement both the lowest and the highest estimates are given. Where a language has widespread use as a second language, the estimated number of speakers is given in parenthesis.

Figures are given in thousands: 10 = 10,000 etc. Where millions of speakers are involved, the abbreviation m is used: 3m = 3 million, etc.

The level of classification used in specifying language families reflects the discussion in the body of the text (§§51–3). It should be noted that in some cases (mainly in Africa and the Americas) a very general classification is used – far more abstract than in other cases (such as Indo-European). The question of levels is reviewed on p. 292.

The countries or areas listed are those where a language is mainly

spoken. It is impracticable to list minority usage, which is often scattered over a wide area. Similarly, it is not possible to list all the alternative names given to some languages (see §47). For further details, and in all cases of omission from the following table, reference should be made to C. F. & F. M. Voegelin, *Classification and Index of the World's Languages* (1977).

Abbreviations

AR	Autonomous Region
ASSR	Autonomous Soviet Socialist Republic
C	Central
E	East
I./Is.	Islands
L	Lake
N	North
PR	People's Republic
R	River
Rep.	Republic
S	South
SSR	Soviet Socialist Republic
W	West

Name	Where spoken	Language family	How many (000)
Abe	Ivory Coast	Niger-Congo	20–25
Abelam	New Guinea	Indo-Pacific	30
Abkhaz	USSR (Abkhaz ASSR)	Caucasian	80–100
Achinese (Atjehnese)	N Sumatra	Austronesian	1m–2m
Acholi (Akoli)	Uganda, Sudan	Nilo-Saharan	500–70
Adhola	Uganda, Kenya	Nilo-Saharan	153
Adyghe (Adygei)	USSR (Adygei AR)	Caucasian	100
Adyukru	Ivory Coast	Niger-Congo	20–30
Afar (Danakil)	Ethiopia, Djibouti	Afro-Asiatic	500–700
Afrikaans	South Africa, Namibia	Indo-European (Germanic)	4m–5m
Afusare	Nigeria	Niger-Congo	30
Agar	Sudan, Ethiopia	Nilo-Saharan	16
Aguaatec	Guatemala	Penutian	8–10
Ainu	Japan (Hokkaido), Sakhalin & Kuril Is., USSR	Isolate	16
Akan (Twi) (Fante) (Ashanti)	Ghana, Ivory Coast	Niger-Congo	5m–8m
Akoli see Acholi			
Akye	Ivory Coast	Niger-Congo	50–60
Alaba see Kambata			
Albanian	Albania, and surrounding countries	Indo-European (Albanian)	3m–4½m
Altai	USSR (Altai region)	Altaic (Turkic)	50–60
Alur	Uganda, Zaire, Sudan	Nilo-Saharan	200–600
Amba	NEC Africa	Niger-Congo	48
Ambo (Ovambo) (Avamba)	Angola, Namibia	Niger-Congo	225–700
Amharic (Amharinya)	Ethiopia	Afro-Asiatic	8m–13m
Amuesha	Peru	Andean-Equatorial	4–9
Amuzgo	Mexico	Oto-Manguean	8–12
Andoni	Nigeria	Niger-Congo	50
Angami	Burma	Sino-Tibetan	35–40
Angas	Nigeria	Afro-Asiatic	55–280
Ankwe	Nigeria	Afro-Asiatic	14
Anuak	Sudan	Nilo-Saharan	56
Anyi	Ghana, Ivory Coast	Niger-Congo	450
Ao	Burma	Sino-Tibetan	15–30
Arabic	North Africa, Middle East, Arabian Peninsula	Afro-Asiatic	120m–150m (1.75m)
Aramaic (Modern)	Iran, Iraq, USSR, Middle East	Afro-Asiatic	50–100

Name	Where spoken	Language family	How many (000)
Arapesh	New Guinea	Indo-Pacific	18
Araucanian (Araukan) (Mapuche)	Chile, Argentina	Penutian	200–350
Ari	Ethiopia	Afro-Asiatic	32
Armenian	USSR (esp. Armenian SSR), Turkey, Iran, Syria, Lebanon	Indo-European (Armenian)	4m–5m
Arumanian see Romanian			
Ashanti see Akan			
Asmat	New Guinea	Indo-Pacific	34
Aso	Burma	Sino-Tibetan	95
Assamese	India (Assam), Bhutan	Indo-European (Indo-Aryan)	7m–11m
Asu	EC Africa	Niger-Congo	100
Atjehnese see Achinese			
Aushi	EC Africa	Niger-Congo	29
Atayal	Taiwan	Austronesian	36
Avamba see Ambo			
Avar	USSR (Daghestan, Azerbaijan SSR)	Caucasian	300–400
Aymará	Bolivia, Peru	Andean-Equatorial	600–1m
Azande see Zande			
Azerbaijani (Azeri)	USSR (Azerbaijan SSR), Iran, Afghanistan	Altaic (Turkic)	7m–12m
Aztec see Nahuatl			
Baakpe	NWC Africa	Niger-Congo	16
Bachama	Nigeria	Afro-Asiatic	12
Badaga	S India (Tamil Nadu)	Dravidian	67–85
Bade	Nigeria	Afro-Asiatic	32
Bafang	Cameroon	Niger-Congo	68
Bafou	Cameroon	Niger-Congo	41
Bagirmi	Chad	Nilo-Saharan	30–40
Bagobo	Philippine Is.	Austronesian	21
Bahasa Indonesian see Indonesian			
Bahnar	S Vietnam	Austro-Asiatic (Mon-Khmer)	85
Bai see Pai			
Bakue	Liberia, Ivory Coast	Niger-Congo	16
Balanta	Guinea-Bissau, Senegal	Niger-Congo	167
Balantak	S Sulawesi (Celebes)	Austronesian	125
Bali	NEC Africa	Niger-Congo	38
Balinese	Bali	Austronesian	2m–3m
Balkar see Karachay			
Baluchi (Balochi)	Pakistan, Afghanistan,	Indo-European	1½m–3m

Name	Where spoken	Language family	How many (000)
Bambara	Iran, Arabian Peninsula (Iranian) Mali, Senegal, Burkina Faso, Ivory Coast	Niger-Congo	1m–2m
Bamileke	Cameroon	Niger-Congo	1m–2m
Bamoun	Cameroon	Niger-Congo	75
Banda	WC Africa	Niger-Congo	350
Banen	NWC Africa	Niger-Congo	27
Banganté	Cameroon	Niger-Congo	67
Bangba	WC Africa	Niger-Congo	700
Banggai	S Sulawesi (Celebes)	Austronesian	200
Banna	Ethiopia	Afro-Asiatic	23
Banoni	Solomon Is.	Austronesian	12½
Banyun	Guinea-Bissau, Senegal	Niger-Congo	18
Barambu	Sudan, Congo	Niger-Congo	46
Bare'e	C Sulawesi (Celebes)	Austronesian	325–350
Bargu	Benin, Togo, Nigeria	Niger-Congo	240
Bari	Sudan, Uganda, Zaïre	Nilo-Saharan	250–500
Basa	NWC Africa	Niger-Congo	150–170
Basari	Guinea, Senegal, Gambia	Niger-Congo	12
Basherawa	Nigeria	Niger-Congo	20
Bashkir	Bashkir ASSR	Altaic (Turkic)	821–1¼m
Basque	SW France, NW Spain, USA	Isolate	500–700
Batak see Toba			
Bats	Georgian SSR (Zemo-Alvani village)	Caucasian	2½–3
Batta	Cameroon	Afro-Asiatic	23
Beach-la-Mar see Bislama			
Bëbële	NWC Africa	Niger-Congo	24
Beja	Sudan, Ethiopia	Afro-Asiatic	500–1m
Belorussian (Byelorussian)	Belorussian SSR, Poland	Indo-European (Balto-Slavic)	9m–10m
Bemba	EC Africa	Niger-Congo	170–2½m
Bena	EC Africa	Niger-Congo	158
Bengali	Bangladesh, India (W Bengal, Tripura)	Indo-European (Indo-Iranian)	80m–150m
Berba	Benin	Niger-Congo	44
Berber see Kabyle, Riff, Shluh, Tamashek			
Berta	Ethiopia, Sudan	Nilo-Saharan	28
Bete	Ivory Coast	Niger-Congo	250–1½m
Bhili	India (Rajasthan, Madhya Pradesh, Gujarat, Maharashtra)	Indo-European (Indo-Iranian)	2m–3m
Bhojpuri	India (Uttar Pradesh, Bihar)	Indo-European (Indo-Iranian)	8m–23m
Bhōtiā see Dzongkha			
Bhutani see Dzongkha			
Bhutia (Murmi)	India (Sikkim), Nepal	Sino-Tibetan	30–40
Biafada	Guinea-Bissau	Niger-Congo	12
'Bidyo	Chad	Afro-Asiatic	14
Bihari	India, Nepal	Indo-European	40m–65m
Biisa	EC Africa	Niger-Congo	42
Bikol	Philippine Is.	Austronesian	2m–3½m
Bilaan	Philippine Is.	Austronesian	51
Bilin	Ethiopia	Afro-Asiatic	32
Bini (Edo)	Nigeria	Niger-Congo	300–2½m
Binji	WC Africa	Niger-Congo	64
Bira	NEC Africa	Niger-Congo	32
Birifo(r)	Ghana, Burkina Faso	Niger-Congo	90
Bisa	Ghana, Burkina Faso	Niger-Congo	127
Bisaya see Sebuano			
Bislama (Beach-la-Mar)	Vanuatu, Solomon Is.	English-based pidgin/creole	100
Bitare	Nigeria	Niger-Congo	50
Blackfoot	Canada (Alberta, Saskatchewan), USA (Montana)	Macro-Algonquian	5–6
Bobo	Mali, Burkina Faso	Niger-Congo	390
Bodo	NE India (Brahmaputra Valley)	Sino-Tibetan	200–250
Boiken	New Guinea	Indo-Pacific	17
Bolewa	Nigeria	Afro-Asiatic	50–200
Bomougoun-Bamenjou	Cameroon	Niger-Congo	25
Bondei	EC Africa	Niger-Congo	28
Bontok	Philippine Is.	Austronesian	21–32
Brahui	Pakistan (Baluchistan, Sind)	Dravidian	300–400
Breton	France (Brittany)	Indo-European (Celtic)	600–1m
Brū	N and S Vietnam, Laos	Austro-Asiatic (Mon-Khmer)	40

Name	Where spoken	Language family	How many (000)
Budu	NEC Africa	Niger-Congo	83
Buduma	Chad	Afro-Asiatic	45
Buginese	S Sulawesi (Celebes)	Austronesian	2½–4m
Bugombe	NEC Africa	Niger-Congo	12
Buja	NWC Africa	Niger-Congo	100
Bukidnon	Philippine Is.	Austronesian	41
Bulgarian	Bulgaria and surrounding areas	Indo-European (Balto-Slavic)	8m–8½m
Buli	Ghana, Burkina Faso	Niger-Congo	63
Bulu	NWC Africa	Niger-Congo	170
Bunak	Timor Is.	Indo-Pacific	50
Bungku	C Sulawesi (Celebes)	Austronesian	180
Bunun	Taiwan	Austronesian	21
Buol	N Sulawesi, Indonesia	Austronesian	150
Burji	Ethiopia	Afro-Asiatic	15
Burmese	Burma	Sino-Tibetan	20m–27m
Burra	Nigeria, Cameroon	Afro-Asiatic	100–500
Burun	Sudan	Nilo-Saharan	18
Burungi	Tanzania	Afro-Asiatic	11
Burushaski	India (NW Kashmir), Pakistan	Isolate	20–27
Buryat	USSR (Buryat ASSR)	Altaic (Mongolian)	290–300
Busa	Benin, Nigeria	Niger-Congo	30
Bushman see San			
Busoong	NWC Africa	Niger-Congo	30
Bute	Cameroon	Niger-Congo	16
Butung	SE Sulawesi (Celebes)	Austronesian	200
Buyi see Puyi			
Bviri	WC Africa	Niger-Congo	16
Bwaka	WC Africa	Niger-Congo	17
Byelorussian see Belorussian			
Caga	NEC Africa	Niger-Congo	237
Cakchiquel	Guatemala	Penutian	225–500
Cambodian see Khmer			
Campa	Peru	Andean-Equatorial	25–33
Carib	Brazil, Suriname, Guyana, French Guinea	Ge-Pano-Carib	5
Catalan	NE Spain, France (Rousillon), Andorra	Indo-European (Romance)	5m–7m
Cayapo	NW Brazil	Ge-Pano-Carib	10
Cebuano see Sebuano			
Cham	Vietnam, Kampuchea	Austronesian	150
Chamba	Nigeria, Cameroon, Chad	Niger-Congo	500–1m
Chamorro	Guam	Austronesian	51
Chatino	Mexico	Oto-Manguean	18–20
Chattis-garhi	India (Madhya Pradesh, Bihar)	Indo-European (Indo-Iranian)	3m–6m
Chechen	Georgian and Kazakh SSR	Caucasian	500–800
Cheremis see Mari			
Cherokee	USA (N Carolina, Oklahoma)	Macro-Siouan	20–50
Chewa see Nyanja			
Cheyenne	USA (Montana, Oklahoma)	Macro-Algonquian	3–4
Chimbu	New Guinea	Indo-Pacific	119
Chinantec	Mexico	Oto-Manguean	25–30
Chinese	China, Taiwan, SE Asia, USA	Sino-Tibetan	1,000m
Chingpaw	Burma, S China	Sino-Tibetan	170–200
Chipewyan	USA (Alaska), NW Canada	Na-Dené	4–7
Choctaw	USA (Oklahoma)	Macro-Algonquian	10–13
Chokwe see Ciokwe			
Chol	Mexico	Penutian	30–33
Chontal	Mexico	Penutian	15–20
Chortí	Guatemala, Honduras	Penutian	33
Charau	S Vietnam	Austro-Asiatic (Mon-Khmer)	15
Chuave	New Guinea	Indo-Pacific	21
Chuj	Guatemala	Penutian	13–14
Chukchi	USSR (Chukchi Peninsula)	Palaeosiberian (but see p. 306)	11–15
Chung-chia see Puyi			
Chuvash	USSR (Chuvash region)	Altaic (?Turkic)	1½m–2m
Ciga	NEC Africa	Niger-Congo	272
Cinga	NWC Africa	Niger-Congo	13
Ciokwe (Chokwe)	SWC Africa	Niger-Congo	600–1½m
Circassian see Kabardian			
Cocama see Kokama			
Coorg see Kodagu			

Name	Where spoken	Language family	How many (000)	Name	Where spoken	Language family	How many (000)
Cree	Canada, USA (Montana)	Macro-Algonquian	35-62		Luxemburg, Monaco, and many parts of Africa, Oceania, and the Americas; widespread 2nd language use		
Croatian <i>see</i> Serbo-Croat(ian)				Frisian	Netherlands, W Germany	Indo-European (Germanic)	250-350
Cua	S Vietnam	Austro-Asiatic (Mon-Khmer)	10-15	Friulian	N Italy	Indo-European (Romance)	350-400
Cuicatec	Mexico	Oto-Manguean	10-12	Fulani (Ful)	W Africa	Niger-Congo	10m-15m
Cuna	Panama, Columbia	Macro-Chibchan	20-21	Fuliro	NEC Africa	Niger-Congo	56
Czech	W Czechoslovakia	Indo-European (Balto-Slavic)	9m-10m	Fur	Sudan, Chad	Nilo-Saharan	200-400
Daba	Cameroon	Afro-Asiatic	13	Gā	Ghana, Togo, Benin	Niger-Congo	250-400
Dagara	Ghana, Burkina Faso	Niger-Congo	75	Gadba	EC India	Dravidian	8-9
Dagari	Ghana, Burkina Faso	Niger-Congo	200	Gaddang	Philippine Is.	Austronesian	17-28
Dagbani	Ghana, Togo	Niger-Congo	409	Gaelic <i>see</i> Irish Gaelic, Scottish Gaelic			
Daghur (Dagur)	NW Manchuria	Altaic (Mongolian)	50-100	Gagauz	USSR (Moldavian SSR), Bulgaria, Romania	Altaic (Turkic)	150
Daju	Chad	Nilo-Saharan	60				
Daka	Nigeria, Cameroon	Niger-Congo	53	Gahuku	New Guinea	Indo-Pacific	23
Dakota (Sioux)	USA (N and S Dakota, Montana), Canada (Manitoba)	Macro-Siouan	10-20	Galla <i>see</i> Oromo			
Dan	Liberia, Ivory Coast	Niger-Congo	100	Gambai	Chad, Central African Rep.	Nilo-Saharan	235
Danakil <i>see</i> Afar				Gan	Burkina Faso	Niger-Congo	51
Dangaleat	Chad	Afro-Asiatic	16	Ganda (Luganda)	NEC Africa	Niger-Congo	1½m-3½m
Danish	Denmark, W Germany	Indo-European (Germanic)	5m-5½m	Garhwali	India (Uttar Pradesh)	Indo-European (Indo-Iranian)	800-1½m
Dargwa (Khjurkili)	C Daghestan SSR	Caucasian	160-230	Garó	NE India (Assam)	Sino-Tibetan	300-350
Dasenech	Ethiopia	Afro-Asiatic	18	Gayo	N Sumatra	Austronesian	120
Derasa	Ethiopia	Afro-Asiatic	250	Gbari	Nigeria	Niger-Congo	155
Digo	NEC Africa	Niger-Congo	32	Gbaya	WC Africa	Niger-Congo	300
Dinka	Sudan, Ethiopia	Nilo-Saharan	500-2m	Georgian	Georgian SSR, and a few surrounding areas	Caucasian	3m-4m
Diola	Guinea-Bissau, Gambia	Niger-Congo	200	(Gruzinian)			
Dogon	Mali, Burkina Faso	Niger-Congo	150	German	E & W Germany, Austria, Switzerland, other parts of E Europe, USA, S Africa, Latin America	Indo-European (Germanic)	95m-100m (100m)
Duala	NWC Africa	Niger-Congo	500-1m	Gidder	Cameroon, Chad	Nilo-Saharan	38
Dukawa	Nigeria	Niger-Congo	19	Gilbertese	Kiribati and surrounding areas	Austronesian	44-60
Duna	New Guinea	Indo-Pacific	14	Gilyak	E USSR (R. Amur, Sakhalin I.)	Palaeosiberian (but see p. 306)	3-4
Duru	Cameroon	Niger-Congo	32	Gimi	New Guinea	Indo-Pacific	17
Dutch <i>see</i> Netherlandic				Gipsy <i>see</i> Romany			
Dye	Togo	Niger-Congo	17	Gisiga	Cameroon	Afro-Asiatic	18
Dyimini <i>see</i> Tagbana-Dyimini				Goajiro	Colombia, Venezuela	Andean-Equatorial	40-45
Dyula	Ivory Coast, Burkina Faso, Ghana	Niger-Congo	1½m	Gogo	EC Africa	Niger-Congo	270
Dzindza	NEC Africa	Niger-Congo	67	Gola	Liberia, Sierra Leone	Niger-Congo	150
Dzongkha	Bhutan	Tibeto-Burman	800	Gondi	India (Madhya Pradesh)	Dravidian	1½m-2m
(Bhutani, Bhōṭiā)				GORONTALO	N Sulawesi, Indonesia	Austronesian	900
Edo <i>see</i> Bini				GREBO	Liberia, Ivory Coast	Niger-Congo	50
Ekik	Nigeria	Niger-Congo	2m-4m	Greek	Greece, Cyprus, Turkey, and surrounding areas	Indo-European (Greek)	10m-10½m
Ekoi	Cameroon, Nigeria	Niger-Congo	90	Greenlandic <i>see</i> Inuit			
Embo	NEC Africa	Niger-Congo	200	Grishun <i>see</i> Romansch			
Enga	New Guinea	Indo-Pacific	119-130	Gruzinian <i>see</i> Georgian			
Engenni	Nigeria	Niger-Congo	12	Guahibo	Colombia, Venezuela	Andean-Equatorial	15-45
English	USA, Canada, UK, Australia, New Zealand, parts of Asia and Africa, and widespread 2nd language use	Indo-European (Germanic)	300m-350m (700m-1,400m)	Guan(g)	Ghana	Niger-Congo	53
Epera	Columbia, Panama	Macro-Chibchan	20	Guarani <i>see</i> Tupí			
Epie	Nigeria	Niger-Congo	26	Guaymi	Panama	Macro-Chibchan	10
Eskimo <i>see</i> Inuit				Gujarati	India (Gujarat, Maharashtra, and surrounding areas), Pakistan	Indo-European (Indo-Iranian)	20m-35m
Estonian	Estonian SSR	Uralic (Finno-Ugric)	1m	Gumuz	Ethiopia, Sudan	Nilo-Saharan	53
Eton	NWC Africa	Niger-Congo	112	Gurage	Ethiopia	Afro-Asiatic	500-1m
Even <i>see</i> Lamut				Gurkhalī <i>see</i> Nepali			
Evenki	Siberia, NE China	Altaic (Manchu-Tungus)	15-30	Gurma	Togo, Burkina Faso	Niger-Congo	200-1m
Ewe	Ghana, Togo, Benin	Niger-Congo	2m-3m	Gusii (Kisii)	NEC Africa	Niger-Congo	255-1m
Ewondo	NWC Africa	Niger-Congo	93	Gutob	India (Andhra Pradesh, Orissa)	Austro-Asiatic (Munda)	30-60
Faeroese (Faroese)	Faeroe Is.	Indo-European (Germanic)	35-44	Gwandara	Nigeria, Niger	Afro-Asiatic	15
Fali	Cameroon	Niger-Congo	50	Gwere	NEC Africa	Niger-Congo	162
Fang	NWC Africa	Niger-Congo	200-2m	Gypsy <i>see</i> Romany			
Fante <i>see</i> Akan				Ha	NEC Africa	Niger-Congo	286
Faroese <i>see</i> Faeroese				Had(iy)ya	Ethiopia	Afro-Asiatic	100-700
Farsi <i>see</i> Persian				Haitian (Creole)	Haiti	Romance (French)	4½m-5m
Fiba	EC Africa	Niger-Congo	78	Haka	Burma	Sino-Tibetan	85
Fijian	Fiji Is.	Austronesian	200-300	Halang	S Vietnam	Austro-Asiatic (Mon-Khmer)	10
Finnish	Finland, Sweden, USSR	Uralic (Finno-Ugric)	4½m-5m				
Flemish <i>see</i> Netherlandic							
Fon	Benin	Niger-Congo	1m-2m				
Frafra	Ghana	Niger-Congo	138				
French	France, Canada, Belgium, Switzerland, Luxembourg, Monaco, and many parts of Africa, Oceania, and the Americas; widespread 2nd language use	Indo-European (Romance)	60m-70m (220m)				

Name	Where spoken	Language family	How many (000)
Hangaza	NEC Africa	Niger-Congo	54
Hanunóo	Philippine Is.	Austronesian	6
Hausa	Nigeria, Niger, and adjacent areas	Afro-Asiatic	15m–25m (30m–40m)
Havu	NEC Africa	Niger-Congo	50
Havunese	Sawu Is., Raidjua Is.	Austronesian	40
Hebrew	Israel, USA, Europe	Afro-Asiatic	3m–4m
Hehe	EC Africa	Niger-Congo	192
Herero	SWC Africa	Niger-Congo	25
Higi	Cameroon	Afro-Asiatic	15
Hindi	N and C India, Africa, Fiji, Surinam, Guyanas	Indo-European (Indo-Iranian)	130m–200m (300m–700m)
Hlota	India (Assam)	Sino-Tibetan	18–22
Hmong <i>see</i> Miao			
Hopi	NE Arizona	Aztec-Tanoan	5
HRé	S Vietnam	Austro-Asiatic (Mon-Khmer)	80
Huastec	Mexico	Penutian	40–60
Huave	Mexico	Penutian	7
Huela	Ivory Coast	Niger-Congo	50
Huku	NEC Africa	Niger-Congo	13
Huli	New Guinea	Indo-Pacific	54
Hunde	NEC Africa	Niger-Congo	34
Hungarian (Magyar)	Hungary, Romania and nearby areas	Uralic (Finno-Ugric)	13½m–14m
Hungu	WC Africa	Niger-Congo	66
Ibanag	Philippine Is.	Austronesian	150–300
Ibo <i>see</i> Igbo			
Icelandic	Iceland, USA	Indo-European (Germanic)	230–250
Idoma	Nigeria	Niger-Congo	118
Ifugao	Philippine Is.	Austronesian	70–80
Igala	Nigeria, Benin	Niger-Congo	100
Igbirra	Nigeria	Niger-Congo	150
Igbo (Ibo)	Nigeria	Niger-Congo	6m–13m
Ijò (Ijaw)	Nigeria	Niger-Congo	1m–1½m
Ila	EC Africa	Niger-Congo	130
Ilocano (Iloko)	Philippine Is.	Austronesian	3m–6m
Ilonggo	Philippine Is.	Austronesian	2m–3m
Indonesian	Indonesia	Austronesian	30m
Ingush	Kazakh SSR	Caucasian	100–150
Inuit (Inupiac, Inuktitut, Greenlandic, Eskimo)	Greenland, Canada, USA (Alaska)	Eskimo-Aleut	65–90
Iraqw	Tanzania	Afro-Asiatic	111
Iràya	Philippine Is.	Austronesian	6–8
Irish Gaelic	Ireland (esp. west)	Indo-European (Celtic)	30–100
Ishan	Nigeria	Niger-Congo	90
Island Carib	Honduras, Belize, Guatemala	Andean-Equatorial	30
Isoko <i>see</i> Urhobo			
Italian	Italy, Switzerland, San Marino, Vatican City, Sardinia, Yugoslavia, parts of N and S America, N Africa	Indo-European (Romance)	56m–60m (60m)
Ixil	Guatemala	Penutian	20–25
Iyala	Nigeria	Niger-Congo	23
Jacalte	Guatemala	Penutian	12
Japanese	Japan, Brazil, USA	Isolate (?Altaic)	120m
Jarai	Vietnam, Kampuchea	Austronesian	150
Javanese	Java, Malaysia	Austronesian	45m–65m
Jeh	S Vietnam	Austro-Asiatic (Mon-Khmer)	10
Jita	NEC Africa	Niger-Congo	97
Jivaro	Ecuador, Peru	Andean-Equatorial	20
Jongor	Chad	Afro-Asiatic	14–16
Juang	India (Orissa)	Austro-Asiatic (Munda)	13–16
Judaéo-German <i>see</i> Yiddish			
Jui <i>see</i> Puyi			
Jukun	Nigeria, Cameroon	Niger-Congo	32–37
Kaba	Chad, C African Rep.	Nilo-Saharan	29
Kabardian (Circassian)	USSR (Kabardino-Balkar and Karachay-Cherkess regions)	Caucasian	280–350
Kabre	Togo, Benin	Niger-Congo	157
Kabyle	Algeria	Afro-Asiatic	1m–2m
Kadara	Nigeria	Niger-Congo	18
Kafa	Ethiopia, Kenya	Afro-Asiatic	170
Kagulu	EC Africa	Niger-Congo	60

Name	Where spoken	Language family	How many (000)
Kaje	Nigeria	Niger-Congo	25
Kako	NWC Africa	Niger-Congo	37
Kàliko	Sudan, Zaire	Nilo-Saharan	18
Kalinga	Philippine Is.	Austronesian	41
Kalmyk (Kalmuk)	USSR (Kalmyk region)	Altaic (Mongolian)	135–150
Kam	SE China	Kam-Sui (?Tai)	700–800
Kamano	New Guinea	Indo-Pacific	34
Kamba (Kikamba)	NEC Africa	Niger-Congo	600–2m
Kambari	Nigeria	Niger-Congo	67
Kambata (Alaba)	Ethiopia	Afro-Asiatic	300
Kanakuru	Nigeria	Afro-Asiatic	11
Kanarese <i>see</i> Kannada			
Kanjolal	Guatemala	Penutian	27–40
Kankanay	Philippine Is.	Austronesian	91
Kannada (Kanarese)	India (Mysore)	Dravidian	18m–25m
Kanuri	Nigeria, Niger	Nilo-Saharan	2m–4m
Kaonde	WC Africa	Niger-Congo	38
Karaboro	Burkina Faso, Ivory Coast	Niger-Congo	25
Karachay (Balkar)	USSR (NW Caucasus)	Altaic (Turkic)	120–150
Karakalpak	Karakalpak ASSR, Afghanistan	Altaic (Turkic)	228–300
Karamojong	Uganda, Kenya	Nilo-Saharan	100
Karelian	Karelskaya ASSR	Uralic (Finno-Ugric)	100–120
Kari	Chad, Cameroon, C African Rep.	Niger-Congo	40
Kasem	Ghana, Burkina Faso	Niger-Congo	74
Kashmiri	India and Pakistan (Kashmir)	Indo-European (Indo-Iranian)	2m–3m
Kasimbar	N Sulawesi (Celebes)	Austronesian	100
Katab	Nigeria	Niger-Congo	23
Katu	S Vietnam, Laos	Austro-Asiatic (Mon-Khmer)	20–30
Kazakh (Kazak)	Kazakh SSR, China, Mongolian PR, Afghanistan	Altaic (Turkic)	5m–7m
Kebu	Togo	Niger-Congo	17
Keigana	New Guinea	Indo-Pacific	27
Kekchi (Quekchi)	Guatemala	Penutian	250–400
Kela	NWC Africa	Niger-Congo	80–100
Kele	NWC Africa	Niger-Congo	26
Kenga	Chad	Nilo-Saharan	20–25
Kera	Cameroon	Niger-Congo	15
Kerebe	NEC Africa	Niger-Congo	31
Kerintji	W Sumatra	Austronesian	170
Ket	USSR (Yenisey R.)	Paleosiberian (but see p. 306)	1
Kewa	New Guinea	Indo-Pacific	47
Khakas	Khakas ASSR	Altaic (Turkic)	56
Khalka (Mongol)	Mongolian PR, China (Inner Mongolian Region)	Altaic (Mongolian)	700 (2½m–4m)
Khandeshi	India (Maharashtra and surrounding areas)	Indo-European (Indo-Iranian)	500–1m
Khanty (Ostyak)	Khanti-Mansi region, USSR	Uralic (Finno-Ugric)	14½–15
Kharia	India (Bihar and surrounding areas)	Austro-Asiatic (Munda)	110–180
Khasi	India (Assam)	Austro-Asiatic	200–500
Khasonke	Mali	Niger-Congo	53–71
Khjurkili <i>see</i> Dargwa			
Khmer (Cambodian)	Kampuchea, Vietnam, Thailand	Austro-Asiatic (Mon-Khmer)	5m–8m
Khmu'	Laos, Thailand	Austro-Asiatic (Mon-Khmer)	100
Khorčín	China	Altaic	900
Kibet	Sudan, Chad	Nilo-Saharan	16–22
Kikamba <i>see</i> Kamba			
Kikuyu	NEC Africa	Niger-Congo	1m–4m
Kilba	Nigeria	Afro-Asiatic	23
Kinga	EC Africa	Niger-Congo	57
Kirghiz (Kirgiz)	Kirghiz SSR, and surrounding areas)	Altaic (Turkic)	1½m–2m
Kiribati <i>see</i> Gilbertese			
Kisi	Liberia, Sierra Leone, Guinea	Niger-Congo	250
Kisii <i>see</i> Gusii			
Kodagu (Coorg)	SW India (Mysore)	Dravidian	80
Ko'ho	S Vietnam	Austro-Asiatic (Mon-Khmer)	100

Name	Where spoken	Language family	How many (000)
Kokama (Cocama)	Peru, Colombia, Brazil	Andean-Equatorial	10
Kolami	India (Bombay, Andhra Pradesh)	Dravidian	50
Komi (Zyryan)	Komi ASSR and surrounding area	Uralic (Finno-Ugric)	375-400
Konda	India (Orissa)	Dravidian	13
Konde <i>see</i> Makonde			
Kongo	WC Africa	Niger-Congo	5m-7m
Konkani	India (Goa, and surrounding areas)	Indo-European (Indo-Iranian)	1½m-2m
Konkomba	Ghana, Togo	Niger-Congo	130
Kono	Liberia, Mali, Sierra Leone	Niger-Congo	112
Konso	Ethiopia	Afro-Asiatic	60
Konyagi	Guinea	Niger-Congo	85
Konzo	NEC Africa	Niger-Congo	162
Korean	N and S Korea, Japan, China, USSR	Isolate (?Altaic)	50m-60m (60m)
Koria	NEC Africa	Niger-Congo	94
Koryak	NE USSR	Palaeosiberian (but <i>see</i> p. 306)	6-8
Kosali	India (Madhya and Uttar Pradesh)	Indo-European (Indo-Iranian)	20m
Kota	S India (Kotagiri)	Dravidian	1m
Kota	NWC Africa	Niger-Congo	28
Kotoko	Chad	Afro-Asiatic	30-50
Koya	India (Andhra Pradesh)	Dravidian	160-170
Kpa	NWC Africa	Niger-Congo	15
Kpelle	Liberia, Guinea	Niger-Congo	250-500
Kposo	Togo	Niger-Congo	17
Krahn	Liberia, Ivory Coast	Niger-Congo	100
Krio	Sierra Leone	English-based creole	250
Kru-Krawi (Kru)	Liberia, Ivory Coast	Niger-Congo	100-125
Kua <i>see</i> Makua			
Kui	India (Orissa)	Dravidian	500
Kukele	Nigeria	Niger-Congo	20
Kulango	Ivory Coast	Niger-Congo	47
Kulele	Ivory Coast	Niger-Congo	15
Kumam	Uganda	Nilo-Saharan	96
Kumauni	India (Uttar Pradesh)	Indo-European (Indo-Iranian)	1m
Kumyk	Daghestan ASSR	Altaic (Turkic)	186
Kunama	Ethiopia	Nilo-Saharan	41
Kunda	EC Africa	Niger-Congo	73
Kurdish	Turkey, Iraq, Iran, Syria, USSR	Indo-European (Indo-Iranian)	5m-10m
Kuri <i>see</i> Lezghian			
Kurku	India (Madhya Pradesh)	Austro-Asiatic (Munda)	175-190
Kurukh(i)	NE India	Dravidian	1m-1½m
(Oraon(ii))			
Kurumba	Burkina Faso	Niger-Congo	86
Kusal(e)	Ghana, Burkina Faso	Niger-Congo	122
Kusu	NWC Africa	Niger-Congo	26
Kutu	EC Africa	Niger-Congo	15
Kuyu <i>see</i> Kikuyu			
Kwaa	Liberia	Niger-Congo	25
Kwadi	Angola	Khoisan	15
Kwangwa	SWC Africa	Niger-Congo	27
Kweni	Ivory Coast	Niger-Congo	210
Kyama	Ivory Coast	Niger-Congo	12
Ladin	Italy (S Tyrol)	Indo-European (Romance)	12-20
Lahnda	India, Pakistan (Punjab)	Indo-European (Indo-Iranian)	15m-20m
Lak(k) (Lakh)	C Daghestan SSR	Caucasian	64-80
Laki	SE Sulawesi (Celebes)	Austronesian	125
Lala	EC Africa	Niger-Congo	64
Lalia	NWC Africa	Niger-Congo	30
Lamba	Benin	Niger-Congo (Gur)	29
Lamba	EC Africa	Niger-Congo (Bantu)	70-80
Lamnso	Cameroon	Niger-Congo	22
Lampung	S Sumatra	Austronesian	200
Lamut (Even)	E Siberia	Altaic (Manchu-Tungus)	7-12
Langi	NEC Africa	Niger-Congo	95
Lango	Uganda	Nilo-Saharan	534-900
Languedoc <i>see</i> Occitan			
Lao (Laotian)	Thailand, Laos	Tai	9m-10m
Lapp(ish) (Lappic)	Norway, Sweden, Finland, USSR	Uralic (Finno-Ugric)	30-35

Name	Where spoken	Language family	How many (000)
Latvian	Latvian SSR	Indo-European (Balto-Slavic)	1½m-2m
Lefana	Togo	Niger-Congo	15
Lega	NEC Africa	Niger-Congo	33
Lele	NWC Africa	Niger-Congo	26
Lendu	Uganda, Zaire	Nilo-Saharan	110-250
Lenje	EC Africa	Niger-Congo	33
Letzebuergesch <i>see</i> Luxembourgish			
Lezghian	Daghestan, Georgian and Azerbaijan SSR	Caucasian	165-350
(Lezgi, Kuri)			
Li	China (Hainan I.)	Kadai (?Tai)	1m-1½m
Ligbi	Ivory Coast	Niger-Congo	50
Liko	NEC Africa	Niger-Congo	26
Limba	Guinea, Sierra Leone	Niger-Congo	174
Lingala <i>see</i> Losengo			
Lisu	China (Yunnan, Sichuan)	Sino-Tibetan	250
Lithuanian	Lithuanian SSR	Indo-European (Balto-Slavic)	2½m-3m
Lobi(ri)	Burkina Faso, Ivory Coast	Niger-Congo	211
Logo	Sudan, Zaire	Nilo-Saharan	54-60
Loinang	C Sulawesi (Celebes)	Austronesian	100
Loko	Sierra Leone, Guinea	Niger-Congo	76
Loma	Liberia, Guinea	Niger-Congo	260
Lombo	NWC Africa	Niger-Congo	11
Lore	C Sulawesi (Celebes)	Austronesian	100-140
Losengo (Lingala)	NWC Africa	Niger-Congo	1m-1½m
Lotuh	Sudan	Nilo-Saharan	66
Lozi	SWC Africa	Niger-Congo	70
Luba (-Lulua)	WC Africa	Niger-Congo	3½m-5m
Lubu	E Sumatra	Austronesian	1m
Lucazi	SWC Africa	Niger-Congo	60
Luganda <i>see</i> Ganda			
Lugbara	Uganda, Zaire	Nilo-Saharan	350
Luhya	NEC Africa	Niger-Congo	650-3m
Lumbu	NWC Africa	Niger-Congo	12
Lunda	WC Africa	Niger-Congo	82
Lundu	NWC Africa	Niger-Congo	24
Luo	Kenya, Tanzania	Nilo-Saharan	800-2½m
Lusatian <i>see</i> Sorbian			
Lushai	Burma	Sino-Tibetan	70
Luwu'	S Sulawesi (Celebes)	Austronesian	500
Luwunda	WC Africa	Niger-Congo	20
Luxembourgish	Luxemburg	Indo-European (Germanic)	300-400
(Letzebuergesch)			
Lwalu	WC Africa	Niger-Congo	21
Lwena	SWC Africa	Niger-Congo	90
Lwo	Uganda	Nilo-Saharan	20
Lyele	Burkina Faso	Niger-Congo	61
Ma(a)sai	Tanzania, Kenya	Nilo-Saharan	190-400
Mabiha	SE Africa	Niger-Congo	70
Mabuyag	Torres Strait Is.	Australian	2-4
Macedonian	Yugoslavia, Bulgaria, Greece, Albania	Indo-European (Balto-Slavic)	1m-1½m
Machiguenga	Peru	Andean-Equatorial	6-10
Mada	Nigeria	Niger-Congo	24
Madi	Uganda, Sudan	Nilo-Saharan	114
Madurese	Madura, NE Java	Austronesian	5m-10m
Magahi	India (Bihar and surrounding areas)	Indo-European (Indo-Iranian)	3m-10m
Magyar <i>see</i> Hungarian			
Maithili	India (Bihar), Nepal	Indo-European (Indo-Iranian)	6m
Maji	Ethiopia	Afro-Asiatic	18
Maka	NWC Africa	Niger-Congo	52
Makonde (Konde)	SE Africa	Niger-Congo	281-1m
Makua (Kua)	SE Africa	Niger-Congo	3m-6m
Malagasy	Madagascar	Austronesian	9m
Malay	Malaysia, Singapore, Brunei, Thailand, Sumatra, Borneo, Java, and surrounding areas	Austronesian	10m (100m-160m)
Malayalam	India (Kerala, Laccadive Is.)	Dravidian	17m-25m
Maldivian	Maldivian Islands	Indo-European (Indo-Iranian)	100-155
Male	Ethiopia	Afro-Asiatic	12
Malila	EC Africa	Niger-Congo	18
Malinka (Malinke)	W Africa	Niger-Congo	1½m-3m
Maltese	Malta	Afro-Asiatic	300-350
Malto	India (NE Bihar)	Dravidian	90
Malvi	India (Rajasthan and	Indo-European	1m

Name	Where spoken	Language family	How many (000)
Mambila	surrounding areas	(Indo-Iranian)	
Mambwe	Cameroon, Nigeria	Niger-Congo	16
Mam(e)	EC Africa	Niger-Congo	15
Mamuu-Efe	Guatemala, Mexico	Penutian	285–350
Man <i>see</i> Yao	Uganda, Zaire	Nilo-Saharan	60
Manchu	China (Xinjiang, Heilongjiang)	Altaic (Manchu-Tungus)	15–20
Mandara	Cameroon, Nigeria	Afro-Asiatic	30–40
Mangbetu	Uganda, Zaire	Nilo-Saharan	100–500
Mangisa	NWC Africa	Niger-Congo	14
Manipuri <i>see</i> Meithei			
Manjaku	Senegal, Portuguese Guinea	Niger-Congo	84
Mano	Liberia, Guinea	Niger-Congo	45–150
Mansi (Vogul)	USSR (Khanti-Mansi region)	Uralic (Finno-Ugric)	4–4½
Maori	New Zealand	Austronesian	100
Mapuche <i>see</i> Araucanian			
Mararit	Sudan, Chad	Nilo-Saharan	42
Marathi	India (Maharashtra, and surrounding areas)	Indo-European (Indo-Iranian)	30m–50m
Margi	Nigeria	Afro-Asiatic	151
Mari (Cheremis)	Mari ASSR, and surrounding area	Uralic (Finno-Ugric)	500–600
Marshallese	Marshall Is.	Austronesian	19
Marwari <i>see</i> Rajasthani			
Masa	Chad, Cameroon	Afro-Asiatic	52
Masaba	NEC Africa	Niger-Congo	487
Masai <i>see</i> Maasai			
Masalit	Chad, Sudan	Nilo-Saharan	100
Mashasha	WC Africa	Niger-Congo	13
Masongo	Ethiopia, Sudan	Nilo-Saharan	28
Mataco	Bolivia, Argentina, Paraguay	Macro-Panoan	10–11
Matakam	Cameroon	Afro-Asiatic	60
Matengo	EC Africa	Niger-Congo	58
Matumbi	SE Africa	Niger-Congo	41
Maya (Yucatec)	Guatemala, Mexico, British Honduras	Penutian	300–500
Mayogo	Congo	Niger-Congo	75
Mazahua	Mexico	Oto-Manguean	80–100
Mazatec(o)	Mexico	Oto-Manguean	85
Mba	Congo	Niger-Congo	16
Mbaama	NWC Africa	Niger-Congo	12
Mbai	Chad, C African Rep.	Nilo-Saharan	73
Mbati	NWC Africa	Niger-Congo	15
Mbete	NWC Africa	Niger-Congo	20–35
Mbimu	NWC Africa	Niger-Congo	17
Mbo	NWC Africa	Niger-Congo	23
Mbole	NEC Africa	Niger-Congo	90–100
Mbunda	SWC Africa	Niger-Congo	25
Mbundu	WC Africa	Niger-Congo	1m
Mbundu	SWC Africa	Niger-Congo (WC Bantu)	1½m
Mbwera	WC Africa	Niger-Congo	36
Mdundulu	SWC Africa	Niger-Congo	22
Medlpa	New Guinea	Indo-Pacific	91
Meithei (Manipuri)	India (Assam)	Sino-Tibetan	240–800
Mekan	Ethiopia, Sudan	Nilo-Saharan	38
Mende	Liberia, Sierra Leone	Niger-Congo	586–1m
Mendi	New Guinea	Indo-Pacific	25
Meo <i>see</i> Miao			
Mero	NEC Africa	Niger-Congo	350
Mewari <i>see</i> Rajasthani			
Miao (Hmong, Meo)	S China, N Vietnam, Laos, Thailand	Miao-Lao (?Sino-Tibetan)	2½m–5m
Micmac	NE Canada	Macro-Algonquian	3–5
Mimi	Sudan	Nilo-Saharan	15
Minangkabau	W Sumatra	Austronesian	2m–6m
Min-chia <i>see</i> Pai			
Mixe	Mexico	?Penutian	35–48
Mixtec(o)	Mexico	Oto-Manguean	250–400
Mnong	S Vietnam	Austro-Asiatic (Mon-Khmer)	50
Moba	Ghana, Togo	Niger-Congo	80
Mober	Nigeria, Niger	Afro-Asiatic	45
Mogol	Afghanistan	Altaic (Mongolian)	50–60
Moldavian <i>see</i> Romanian			
Mon (Talaing)	Burma, Thailand	Austro-Asiatic (Mon-Khmer)	415–700

Name	Where spoken	Language family	How many (000)
Mongol <i>see</i> Khalka			
Mongo-Nkun-du	NWC Africa	Niger-Congo	200–250
Monguor	China (Gansu, Qinghai)	Altaic (Mongolian)	50–60
Moni	New Guinea	Indo-Pacific	15–20
Monjambo	WC Africa	Niger-Congo	13
Mordvin(ian)	Mordvin ASSR, and surrounding area	Uralic (Finno-Ugric)	1m
More <i>see</i> Mossi			
Moru	Sudan	Nilo-Saharan	23
Mossi (More)	Ghana, Burkina Faso	Niger-Congo	2m–6m
Move	Panama	Macro-Chibchan	15
Mpoto	EC Africa	Niger-Congo	58
Mubi	Chad	Afro-Asiatic	23
Mumuye	Cameroon, Nigeria	Niger-Congo	103
Mundang	Chad, Cameroon, C African Rep.	Niger-Congo	45
Mundari	India (Madyha Pradesh, Orissa, Bihar)	Austro-Asiatic (Munda)	1½m–1¾m
Mu'ò'ng	N Vietnam	Austro-Asiatic (Mon-Khmer)	390
Murle	Ethiopia	Nilo-Saharan	40
Murmi <i>see</i> Bhutia			
Musci	Chad, Cameroon	Afro-Asiatic	48
Musgu	Chad, Cameroon	Afro-Asiatic	25
Muskogee	USA (Oklahoma, Alabama)	Macro-Algonquian	10
Mwanga	EC Africa	Niger-Congo	32
Mwera	SE Africa	Niger-Congo	126
Nabandi	NW Congo	Niger-Congo	137
Naga-Mikir	Burma	Sino-Tibetan	90–110
Nahua(tl) (Aztec)	Mexico	Aztec-Tanoan	1m
Nama	Namibia	Khoisan	20–25
Namnam	Ghana	Niger-Congo	17–18
Namshi	Cameroon, Nigeria	Niger-Congo	11
Nanai	Amur R (USSR, China)	Altaic (Manchu-Tungus)	7–11
Nancere	C African Rep.	Afro-Asiatic	20
Nandi	Kenya, Uganda, Tanzania	Nilo-Saharan	450–500
Nankanse	Ghana, Burkina Faso	Niger-Congo	55
Nara	Ethiopia	Nilo-Saharan	25
Natamba	Togo	Niger-Congo	17
Navaho	USA (Arizona, Utah, Colorado, New Mexico)	Na-Dené	120–140
Nawdam	Ghana, Burkina Faso	Niger-Congo	27
Ndali	EC Africa	Niger-Congo	51
Ndamba	EC Africa	Niger-Congo	19
Ndandi	NEC Africa	Niger-Congo	225
Ndebele	SE Africa	Niger-Congo	150–1½m
Ndengereko	SE Africa	Niger-Congo	53
Ndo	Uganda, Zaire	Nilo-Saharan	13
Ndonde	SE Africa	Niger-Congo	12
Nenets (Yurak)	USSR (Nenets region)	Uralic (Samoyedic)	22–25
Neo-Melanesian (Tok Pisin)	Papua New Guinea	English-based pidgin	1m–1½m
Nepali (Gurkhali)	Nepal, Sikkim	Indo-European (Indo-Iranian)	5m–10m
Netherlandic (Dutch, Flemish)	Netherlands, Belgium, Suriname, Antilles	Indo-European (Germanic)	15m–20m
Nēwāri	C Nepal	Sino-Tibetan	400–600
Ngaju	S Borneo	Austronesian	1m–2m
Ngalum	New Guinea	Indo-Pacific	15
Ngamo	Nigeria	Afro-Asiatic	11
Ngando	NWC Africa	Niger-Congo	121
Ngindo	SE Africa	Niger-Congo	85
Ngizim	Nigeria	Afro-Asiatic	39
Ngola	WC Africa	Niger-Congo	41
Ngombe	NWC Africa	Niger-Congo	150
Ngoni	EC Africa	Niger-Congo	103
Ngulu	EC Africa	Niger-Congo	66
Nguni	SE Africa	Niger-Congo	6m
Ngurimi	NEC Africa	Niger-Congo	12
Nias	Nias and Batu Is.	Austronesian	50
Nicobarese	Nicobar Islands	Austro-Asiatic (Nicobarese)	10
Nika	NEC Africa	Niger-Congo	39
Nilamba	NEC Africa	Niger-Congo	170
Njēm-Bajue	NWC Africa	Niger-Congo	20
Nkom	Cameroon	Niger-Congo	15–17
Nkore <i>see</i> Nyankole			
Nkoya	WC Africa	Niger-Congo	19

Name	Where spoken	Language family	How many (000)
Nogai	USSR (N Caucasus)	Altaic (Turkic)	47
Norwegian	Norway, USA	Indo-European (Germanic)	4m–4½m
Nsenga	EC Africa	Niger-Congo	45
Ntombi-Bolia	NWC Africa	Niger-Congo	45
Nubian	Sudan, Egypt	Nilo-Saharan	1m
Nuer	Sudan, Ethiopia	Nilo-Saharan	40
Nung	Vietnam, S China	Tai	170–180
Nunuma	Burkina Faso	Niger-Congo	43
Nupe	Nigeria	Niger-Congo	325
Nyabungu	NEC Africa	Niger-Congo	15
Nyamwesi	NEC Africa	Niger-Congo	365–1m
Nyaneka	SWC Africa	Niger-Congo	40
Nyanga	NEC Africa	Niger-Congo	25
Nyanja (Chewa)	EC Africa	Niger-Congo	1m–5m
Nyankole (Nkore)	NEC Africa	Niger-Congo	773–1½m
Nyiha	EC Africa	Niger-Congo	59
Nyimang	Sudan	Nilo-Saharan	26–37
Nyole	NEC Africa	Niger-Congo	134
Nyoro	NEC Africa	Niger-Congo	592
Nyule	NEC Africa	Niger-Congo	57
Nzebi	NWC Africa	Niger-Congo	20–40
Occitan (Languedoc, Provençal)	S France	Indo-European (Romance)	9½m–12m
Oirat (Oyrat)	Mongolian PR, China	Altaic (Mongolian)	140–250
Ojibwa	C and E Canada, NC USA	Macro-Algonquian	40–50
Oraon(i) <i>see</i> Kurukh(i)			
Ordos	China, Mongolian PR	Altaic (Mongolian)	375
Oriya	India (Orissa)	Indo-European (Indo-Iranian)	20m–25m
Orokaiva	New Guinea	Indo-Pacific	25
Oromo (Galla)	Ethiopia, Kenya	Afro-Asiatic	7m–10m
Ossetic	USSR (Ossetic region)	Indo-European (Indo-Iranian)	350–500
Ostyak <i>see</i> Khanty			
Ostyak Samoyed <i>see</i> Selkup			
Otomí	Mexico	Oto-Manguean	300–500
Ovambo <i>see</i> Ambo			
Oyrat <i>see</i> Oirat			
Pacóh	S Vietnam, Laos	Austro-Asiatic (Mon-Khmer)	15
Paez	Colombia, Panama	Macro-Chibchan	20
Pai (Bai, Minchia)	SW China	Sino-Tibetan	900–1m
Paiwan	Taiwan	Austronesian	37
Pakhto <i>see</i> Pashto			
Palauan	Palau Is.	Austronesian	12
Palauing	Burma	Austro-Asiatic (Mon-Khmer)	140–150
Palu	C Sulawesi (Celebes)	Austronesian	200–300
Pangasinan	Philippine Is.	Austronesian	515–750
Pangwa	EC Africa	Niger-Congo	38
Panjabi (Punjabi)	Punjab (India, Pakistan)	Indo-European (Indo-Iranian)	40m–70m
Pao-an <i>see</i> Santa			
Papel	Guinea, Guinea-Bissau	Niger-Congo	36
Papiamentu (Papiamentu)	Dutch Antilles	Portuguese-based creole	200
Parji	India (Madhya Pradesh)	Dravidian	20–95
Pashto (Pakhto)	Afghanistan, Pakistan	Indo-European (Indo-Iranian)	12m–19m
Passamaquoddy	NE Canada, NE USA (Maine)	Macro-Algonquian	9–10
Pedi <i>see</i> Sotho, Northern			
Pende	WC Africa	Niger-Congo	27
Persian (Farsi)	Iran, Afghanistan, Iraq, Tadzhik SSR	Indo-European (Indo-Iranian)	20m–30m (55m)
Petats	Solomon Is.	Austronesian	10
Pho	Burma, Thailand	Sino-Tibetan	400
Piaroa	Venezuela	Andean-Equatorial	12
Pila(-pila)	Benin	Niger-Congo	40
Pilipino <i>see</i> Tagalog			
Pima-Papago	USA (Arizona), Mexico	Aztec-Tanoan	13–18
Piro	Peru	Andean-Equatorial	10
Pitu-ulunna-salu	S Sulawesi (Celebes)	Austronesian	175
Pogolo	EC Africa	Niger-Congo	63
Poke	NWC Africa	Niger-Congo	46
Pokoman	Guatemala, E Salvador, Honduras	Penutian	17–25
Pokomo	NEC Africa	Niger-Congo	17

Name	Where spoken	Language family	How many (000)
Pokonchi	Guatemala	Penutian	25–38
Pokot	Kenya, Uganda	Nilo-Saharan	90
Polish	Poland and surrounding areas, USA	Indo-European (Balto-Slavic)	37m–40m
Ponapean	Ponape Is.	Austronesian	15
Popoloc(a)	Mexico	Oto-Manguean	10–15
Portuguese	Portugal, Brazil, parts of Africa	Indo-European (Romance)	120m–135m (160m)
Provençal <i>see</i> Occitan			
Punjabi <i>see</i> Panjabi			
Punu	NWC Africa	Niger-Congo	46
Puóc	N Vietnam	Austro-Asiatic (Mon-Khmer)	5
Puyi (Buyi, Jui, Chung-chia)	SW China	Sino-Tibetan	1½m–2m
Quara	Ethiopia	Afro-Asiatic	47
Quechua	Colombia, Ecuador, Peru, Bolivia, Argentina, Chile	Andean-Equatorial	6m–10m
Quekchi <i>see</i> Kekchi			
Quiché	Guatemala, Mexico	Penutian	500–1m
Rade	Vietnam, Kampuchea	Austronesian	80
Rajasthani (Marwari, Mewari)	India (Rajasthan), Pakistan	Indo-European (Indo-Iranian)	20m–25m
Rawang	N Burma and surrounding areas	Sino-Tibetan	60
Redjang	SW Sumatra	Austronesian	250
Rek	Sudan, Ethiopia	Nilo-Saharan	40
Remi	NEC Africa	Niger-Congo	180
Rengao	S Vietnam	Austro-Asiatic (Mon-Khmer)	10–15
Rhaetian <i>see</i> Friulian, Ladin, Romansch			
Riff	Algeria, Morocco	Afro-Asiatic	1m–2m
Roglai	Vietnam	Austronesian	50
Romanian (Rumanian, Arumanian, Moldavian)	Romania, Yugoslavia and surrounding areas	Indo-European (Romance)	20m–25m
Romansch (Grishun, Rumantsch)	Switzerland (Grisons), N Italy	Indo-European (Indo-Iranian)	40–50
Romany (Romani, Gypsy)	S Asia, Near East, Europe, USA	Indo-European (Indo-Iranian)	450–900
Ron	Nigeria	Afro-Asiatic	12
Ronga	SE Africa	Niger-Congo	1m–2m
Ruguru	EC Africa	Niger-Congo	179
Ruihi	SE Africa	Niger-Congo	71
Rumanian <i>see</i> Romanian			
Rundi	NEC Africa	Niger-Congo	2m–2½m
Rungu	EC Africa	Niger-Congo	24
Russian	USSR	Indo-European (Balto-Slavic)	130m–150m (270m)
Rwanda	NEC Africa	Niger-Congo	5m–15m
Saamia	NEC Africa	Niger-Congo	124
Safwa	EC Africa	Niger-Congo	46
Sagala	EC Africa	Niger-Congo	20
Salampasu	WC Africa	Niger-Congo	60
Samo	Mali, Burkina Faso	Niger-Congo	128
Samoa	Samoa Is., New Zealand, USA	Austronesian	150–200
Samoyed(ic) <i>see</i> Nenets			
San (Bushman)	Angola, SW Africa	Khoisan	3–5
San (Caucasian) <i>see</i> Zan			
Sandawe	Tanzania	Khoisan	23
Sangir	Sangihe Is., Talaud Is., Philippine Is.	Austronesian	75
Sango	EC Africa	Niger-Congo (Bantu)	23
Sango	WC Africa	Niger-Congo (Adamawa-Eastern)	1m–2m
Sangu	NWC Africa	Niger-Congo	18
Santa (Pao-an)	China (Gansu)	Altaic (Mongolian)	180–250
Santali	India (Orissa, Bihar, W Bengal)	Austro-Asiatic (Munda)	3m–5m
Sara	Chad, C African Rep.	Nilo-Saharan	45
Sardinian	Sardinia	Indo-European (Romance)	500–1m
Scottish Gaelic	Scotland (esp. W Isles)	Indo-European (Celtic)	75–80
Sebuano (Cebuano, Bisaya)	Philippine Is.	Austronesian	9m–12m
Sedang	S Vietnam	Austro-Asiatic (Mon-Khmer)	40

Name	Where spoken	Language family	How many (000)
Seediq	Taiwan	Austronesian	14
Selkup (Ostyak Samoyed)	Khanti-Mansi region, USSR	Uralic (Samoyedic)	2–3
Sena	EC Africa	Niger-Congo	200
Senari	Ivory Coast	Niger-Congo	350
Serbo-Croat(ian)	Yugoslavia and some surrounding areas	Indo-European (Balto-Slavic)	17m–17½m
Serer	Senegal, Gambia	Niger-Congo	300–1m
Sgaw	Burma, Thailand	Sino-Tibetan	850
Shambaa	EC Africa	Niger-Congo	130
Shan	Burma, S China	Tai	2m
Sheko	Ethiopia	Afro-Asiatic	23
Shilluk	Sudan	Nilo-Saharan	110
Shluh	Morocco, Mauritania	Afro-Asiatic	1m
Shona	SE Africa	Niger-Congo	5m–6m
Shor	USSR	Altaic (Turkic)	12
Shoshone	WC USA	Aztec-Tanoan	5
Siane	New Guinea	Indo-Pacific	15
Sidamo	Ethiopia	Afro-Asiatic	800–850
Sierra Popoloca	Mexico	?Penutian	10–12
Simi	Burma	Sino-Tibetan	28–40
Sindhi	Pakistan (Sind), India (Kutch)	Indo-European (Indo-Iranian)	6m–10m
Sinhalese (Singhalese)	Sri Lanka	Indo-European (Indo-Iranian)	9m–12m
Sioux <i>see</i> Dakota			
Sira	NWC Africa	Niger-Congo	17
Sisala	Ghana, Burkina Faso	Niger-Congo	62
Slovak	E Czechoslovakia and some surrounding areas	Indo-European (Balto-Slavic)	4m–5m
Slovene (Slovenian)	Yugoslavia and some surrounding areas	Indo-European (Balto-Slavic)	1½m–2m
Soga	NEC Africa	Niger-Congo	745
Soli	EC Africa	Niger-Congo	13
Somali	Somalia, Djibouti, Kenya, Ethiopia	Afro-Asiatic	2m–5m
Somba	Benin, Togo	Niger-Congo	45–72
Somrai	Chad, C African Rep.	Afro-Asiatic	50
Songe	WC Africa	Niger-Congo	200
Songhai	Nigeria, Burkina Faso, Mali, Niger, Benin	Nilo-Saharan	1m–2m
Songo	WC Africa	Niger-Congo	15
Songomeno	NWC Africa	Niger-Congo	30–40
Soninke	W Africa	Niger-Congo	500
Sora	India (Orissa)	Austro-Asiatic (Munda)	200–400
Sorbian (Lusatian, Wendish)	E Germany	Indo-European (Balto-Slavic)	30–120
Sotho, Northern (Pedi)	SE Africa	Niger-Congo	800–2m
Sotho, Southern	S Africa, Lesotho	Niger-Congo	2m–3m
Spanish	Spain, C and S America, USA, Canary Islands	Indo-European (Romance)	150m–250m (280m)
Sranan	Suriname, Guianas	English-based creole	100
Stieng	S Vietnam	Austro-Asiatic (Mon-Khmer)	50
Subanun	Philippine Is.	Austronesian	73
Subi	NEC Africa	Niger-Congo	74
Sui	SE China	Kam-Sui (?Tai)	130–140
Suku	WC Africa	Niger-Congo	74
Sukuma	NEC Africa	Niger-Congo	890
Sundanese	W Java	Austronesian	15m–20m
Sungor	Sudan, Chad	Nilo-Saharan	39
Suppire-Mianka	Mali	Niger-Congo	300
Sura	Nigeria	Afro-Asiatic	20
Svan	NW Georgian SSR	Caucasian	20
Swahili	EC Africa	Niger-Congo	3m–4m (30m)
Swaka	EC Africa	Niger-Congo	13
Swazi (Swati)	S Africa, Swaziland	Niger-Congo	1m–1½m
Swedish	Sweden, Finland, USA	Indo-European (Germanic)	8m–8½m
Taabwa	EC Africa	Niger-Congo	13
Tabasaran	Eastern Daghestan SSR	Caucasian	35–50
Tadzhik (Tajik)	Tadzhik SSR, Afghanistan	Indo-European (Indo-Iranian)	1m–6m
Tagakaolo	Philippine Is.	Austronesian	21
Tagalog (Pilipino)	Philippine Is.	Austronesian	12m (30m–50m)
Tagbana-Dyimini	Ivory Coast	Niger-Congo	85
Tahitian	Tahiti Is., Society Is.	Austronesian	50–70

Name	Where spoken	Language family	How many (000)
Tajik <i>see</i> Tadjik			
Talaing <i>see</i> Mon			
Talensi	Ghana	Niger-Congo	33
Talysh	Iran, Azerbaijan SSR	Indo-European (Indo-Iranian)	150–200
Tama	Sudan, Chad	Nilo-Saharan	45
Tamashek (Tuareg)	Algeria, Libya, Mali, Niger, Burkina Faso	Afro-Asiatic	50–850
Tamil	SE India, N Sri Lanka, S Africa, Malaysia, Singapore, and throughout SE Asia	Dravidian	35m–55m
Tamprusi	Ghana	Niger-Congo	100
Tangole	Nigeria	Afro-Asiatic	36
Tangsa	NE India (Assam)	Sino-Tibetan	400
Tara	C Sulawesi (Celebes)	Austronesian	125
Tarahumar(a)	Mexico	Aztec-Tanoan	12–60
Tarasco (Tarasca(n))	Mexico	?Penutian	50
Tashōn	Burma	Sino-Tibetan	85
Tat	Azerbaijan and Daghestan SSR	Indo-European (Indo-Iranian)	100
Tatar	USSR (Tatar region), China, Bulgaria, Turkey, Romania	Altaic (Turkic)	5½m–6m
Tatog(a)	Tanzania	Nilo-Saharan	64
Taungthu	Burma, Thailand	Sino-Tibetan	200
Teda	Chad, Libya	Nilo-Saharan	16
Teke	NWC Africa	Niger-Congo	100–1m
Telugu	India (Andhra Pradesh, Malaysia)	Dravidian	38m–55m
Tem	Ghana, Benin, Togo	Niger-Congo	130
Temen (Temne)	Sierra Leone	Niger-Congo	650–1m
Tera	Nigeria	Afro-Asiatic	20
Teso	Uganda	Nilo-Saharan	350–500
Tetela	NWC Africa	Niger-Congo	30
Thai	Thailand, China, Laos, Vietnam	Tai	20m–30m (50m)
Tho	Vietnam	Tai	150–200
Tibetan	China (Tibet), Sikkim, Bhutan, Nepal, NE India (Kashmir)	Sino-Tibetan	3m–4m
Tigre	Ethiopia	Afro-Asiatic	117–600
Tigrinya	Ethiopia	Afro-Asiatic	3m–3½m
Tiini	NWC Africa	Niger-Congo	15
Tikar	Cameroon	Niger-Congo	200
T'in	Laos, Thailand	Austro-Asiatic (Mon-Khmer)	15–20
Tinggian	Philippine Is.	Austronesian	33–41
Tinombo	N Sulawesi (Celebes)	Austronesian	125
Tiruray	Philippine Is.	Austronesian	16
Tiv	Nigeria	Niger-Congo	1m–2m
Tlapanec	Mexico	?Hokan	14–24
Tlingit	USA (Alaska), NW Canada	Na-Dené	2
Toaripi	Papua New Guinea	Indo-Pacific	16
Toba (Batak)	Sumatra	Austronesian	2m–3m
Tobote	Ghana, Togo	Niger-Congo	130
Toda	S India (Ootacamund)	Dravidian	800–1m
Tojolabal	Mexico	Penutian	4–12
Tok Pisin <i>see</i> Neo-Melanesian			
Tonga	EC Africa	Niger-Congo	100–1m
Tongan	Tonga Is.	Austronesian	70–80
Toposo	Sudan	Nilo-Saharan	34
Toro	NEC Africa	Niger-Congo	163
Totela	SWC Africa	Niger-Congo	14
Totonac	Mexico	Penutian	64–130
Tripuri	India (Tripura)	Tibeto-Burman	300–400
Trukese	Truk Is., Mortlock Is.	Austronesian	26
Tsaiwa	SW China	Sino-Tibetan	50
Tsonga	SE Africa	Niger-Congo	1m–2m
Tswa	SE Africa	Niger-Congo	500
Tswana	S Africa, Botswana	Niger-Congo	850–3m
Tuareg <i>see</i> Tamashek			
Tuburi	Chad, Cameroon	Afro-Asiatic	100
Tucuna	NW Brazil	Andean-Equatorial	15
Tula	Nigeria	Niger-Congo	19
Tulu	SW India (Mysore)	Dravidian	1m–1½m
Tupí (Guaraní)	Paraguay, Brazil, Argentina, Bolivia	Andean-Equatorial	1m–3m
Tupuri	Chad, Cameroon	Niger-Congo	85
Turkana	Sudan, Kenya, Ethiopia	Nilo-Saharan	100–250

Name	Where spoken	Language family	How many (000)
Turkish	Turkey, Bulgaria, and some surrounding areas	Altaic (Turkic)	27m–45m (50m)
Turkmen	Turkmen, Kazakh and Uzbek SSR, Iran, Afghanistan	Altaic (Turkic)	2m–3m
Turuka	Burkina Faso	Niger-Congo	25
Tuvian (Tuva)	USSR (Tuva region)	Altaic (Turkic)	140–160
Twi see Akan			
Tzeltal	Mexico	Penutian	56–80
Tzotzil	Mexico	Penutian	65–120
Tzutuhil	Guatemala	Penutian	20–25
Udmurt (Votyak)	Udmurt ASSR	Uralic (Finno-Ugric)	550–600
Uighur (Uigur)	China (Xinjiang-Uigur), Uzbek SSR	Altaic (Turkic)	4m–6m
Ukrainian	Ukrainian SSR, Poland, Czechoslovakia	Indo-European (Balto-Slavic)	40m–45m
Urdu	Pakistan, N and C India, Bangladesh	Indo-European (Indo-Iranian)	25m–40m (85m)
Urhobo (Isoko)	Nigeria	Niger-Congo	135
Uzbek	Uzbek, Turkmen, Tadjik and Kazakh SSR, Afghanistan	Altaic (Turkic)	10m–14m
Vai	Liberia, Sierra Leone	Niger-Congo	96
Venda	S Africa, Zimbabwe	Niger-Congo	500–700
Veps (Vepsian)	USSR (South of L. Ladoga)	Uralic (Finno-Ugric)	7–8
Vere	Cameroon, Nigeria	Niger-Congo	11
Vidunda	EC Africa	Niger-Congo	10
Vietnamese	N and S Vietnam, Kampuchea, Laos, and many parts of the world	Austro-Asiatic (?Mon-Khmer)	30m–50m (60m)
Vogul see Mansi			
Votyak see Udmurt			
Waica	Venezuela, Brazil	Macro-Chibchan	25
Walamo	Ethiopia	Afro-Asiatic	900–1m
Wanji	EC Africa	Niger-Congo	18
Warjawa	Chad	Afro-Asiatic	30
Warlpiri	Australia (N Territory)	Australian	2–3

Name	Where spoken	Language family	How many (000)
Welsh	Wales	Indo-European (Celtic)	500
Wendish see Sorbian			
Western Desert	Australia (W, and N Territory)	Australian	3–7
Wolof	Gambia, Senegal	Niger-Congo	1½m–2½m
Xhosa	SE Africa	Niger-Congo	3m–5m
Yakurr	Nigeria	Niger-Congo	20
Yakut	USSR (Yakut region)	Altaic (Turkic)	285–300
Yambasa	NWC Africa	Niger-Congo	27
Yao (Man)	S China, N Vietnam, Laos, Thailand	Miao-Yao (?Sino-Tibetan)	1m–1½m
Yao	SE Africa	Niger-Congo	500–1½m
Yaqui	Mexico	Aztec-Tanoan	10–13
Yasing	Cameroon	Niger-Congo	25
Yela	NWC Africa	Niger-Congo	33
Yergham	Nigeria	Niger-Congo	30
Yiddish (Judaean-German)	C and E Europe, USA, Israel	Indo-European (Germanic)	200–500
Yoruba	Nigeria, Benin, Togo	Niger-Congo	17m
Yucatec see Maya			
Yukaghir	USSR (NE Siberia)	Palaeosiberian (but see p. 306)	½
Yunger	Nigeria	Niger-Congo	30
Yupik	USA (Alaska)	Eskimo-Aleut	19
Yurak see Nenets			
Zaghawa	Chad, Sudan	Nilo-Saharan	60
Zan (San)	Georgian and Abkhaz SSR, Turkey	Caucasian	350–400
Zanaki	NEC Africa	Niger-Congo	23
Zande (Azande)	WC Africa	Niger-Congo	700–2½m
Zapotec	Mexico	Oto-Manguean	300–400
Zaramo	EC Africa	Niger-Congo	180
Zayse	Ethiopia	Afro-Asiatic	21
Ziba	NEC Africa	Niger-Congo	264
Zigula	EC Africa	Niger-Congo	112
Zimba	NEC Africa	Niger-Congo	50
Zoque	Mexico	?Penutian	20
Zulu	SE Africa	Niger-Congo	3m–6m
Zumper	Nigeria	Niger-Congo	10–15
Zuni	New Mexico	Penutian	3½
Zyryan see Komi			

IV Further reading

Part I

For a general discussion of attitudes to language, including the topics of magic and taboo, see O. Jespersen, *Mankind, nation and individual* (London: Allen & Unwin, 1946). Attitudes to the English language are discussed in R. Quirk, *The use of English* (London: Longman, 2nd edn., 1968). A detailed account of the history of ideas relating to prescriptivism is found in J. & L. Milroy, *Authority in language* (London: Routledge & Kegan Paul, 1985). Orwell's views are related to the history of linguistic attitudes in W. F. Bolton, *The language of 1984* (Oxford: Blackwell, 1984). For popular attitudes to language change, see J. Aitchison, *Language change: progress or decay* (London: Fontana, 1981). Questions of linguistic excellence are reviewed in J. Edwards, *Language, society and identity* (Oxford: Blackwell, 1985). Glossolalia is discussed in W. J. Samarin, *Tongues of men and angels* (New York: Macmillan, 1972). The relationship of thought to language is the basis of Ch. 14 of H. H. Clark & E. V. Clark, *Psychology and language* (New York: Harcourt Brace Jovanovich, 1977). For Whorf's views, see J. B. Carroll (ed.), *Language, thought and reality: selected writings of Benjamin Lee Whorf* (Cambridge, Mass.: M.I.T. Press, 1956), esp. the paper 'Science and linguistics'. For Sapir's views, see D. G. Mandelbaum (ed.), *Selected writings in language, culture and personality* (Berkeley & Los Angeles: University of California Press, 1949).

Part II

The speaking and singing voice is presented in detail in Part A of R. Luchsinger & G. E. Arnold, *Voice – speech – language* (Belmont, Ca.: Wadsworth, 1965).

For developments in old age, see D. S. Beasley & G. A. Davis (eds.), *Aging: communication processes and disorders* (New York: Grune & Stratton, 1981). On voiceprinting, see P. Ladefoged, *A course in phonetics* (New York: Harcourt Brace Jovanovich, 2nd edn., 1982), Ch. 8. The psychological background is discussed in D. S. Wright, et al., *Introducing psychology: an experimental approach* (Harmondsworth: Penguin, 1970), esp. Chs. 18 and 19. On speech and personality, see K. R. Scherer, 'Personality markers in speech', in K. R. Scherer & H. Giles (eds.), *Social markers in speech* (Cambridge: C.U.P., 1979), pp. 147–209.

General introductions to dialectology, which cover all the matters raised in §8, are: J. K. Chambers & P. Trudgill, *Dialectology* (Cambridge: C.U.P., 1980) and K. M. Petyt, *Dialectology* (London: Deutsch, 1980). For linguistic variables, see W. Labov, *Sociolinguistic patterns* (Philadelphia: University of Pennsylvania Press, 1972). For ethnic and national identity, see J. Edwards, *Language, society and identity* (Oxford: Blackwell, 1985), and the papers in J. Edwards (ed.), *Linguistic minorities, policies, and pluralism* (London: Academic Press, 1984); also in P. Trudgill, *Sociolinguistics* (Harmondsworth: Penguin, 2nd edn., 1983), Chs. 3 and 7, where BEV is discussed.

For a general discussion of social identity and language, see P. Trudgill (*op. cit.*). The interaction of language and class is illustrated in detail in N. E. Blake, *Non-standard language in English literature* (Oxford: Blackwell, 1981) and K. C. Philipps, *Language and class in Victorian England* (Oxford: Blackwell, 1984). For other case studies, see: J. J. Gumperz & D. Hymes (eds.), *Directions*

in *sociolinguistics: the ethnography of communication* (New York: Holt, Rinehart & Winston, 1972); D. Hymes (ed.), *Language in culture and society* (New York: Harper & Row, 1964); J. A. Fishman (ed.), *Readings in the sociology of language* (The Hague: Mouton, 1968); R. Bauman & J. Sherzer (eds.), *Explorations in the ethnography of speaking* (Cambridge: C.U.P., 1974). Sexism is discussed in detail in P. M. Smith, *Language, the sexes and society* (Oxford: Blackwell, 1985) and B. Thorne, C. Kramarae & N. Henley (eds.), *Language, gender and society* (Rowley, Mass.: Newbury House, 1983).

For a theoretical discussion of contextual variables, see D. Hymes, *Foundations in sociolinguistics* (London: Tavistock, 1974). Several spoken and written varieties are illustrated in D. Crystal & D. Davy, *Investigating English style* (London: Longman, 1969); R. Quirk, *The use of English* (London: Longman, 2nd edn., 1968); R. Bauman & J. Sherzer (*ibid.*); and (for French) D. E. Ager, *Styles and registers in contemporary French* (London: University of London Press, 1970). Accommodation theory is discussed in H. Giles & R. St. Clair (eds.), *Language and social psychology* (Oxford: Blackwell, 1979), esp. Ch. 3. For slang, see E. Partridge, *Slang* (London: Barnes & Noble, 4th edn., 1970); for swearing, A. Montague, *The anatomy of swearing* (London: Rapp & Whiting, 1968). Seaspeak is introduced in *Seaspeak: essential English for international maritime use* (Oxford: Pergamon Press, 1983). Verbal art, hidden languages, and several other forms are discussed in B. Kirshenblatt-Gimblett (ed.), *Speech play* (Philadelphia: University of Pennsylvania Press, 1976). For cryptanalysis, see D. Kahn, *The codebreakers* (New York: Macmillan, 1967). Word games are thoroughly exemplified in T. Augarde, *The Oxford guide to word games* (Oxford: O.U.P., 1984), and puns are given separate treatment in W. Redfern, *Puns* (Oxford: Blackwell, 1984).

For general introductions to literary stylistics, see R. Chapman, *Linguistics and literature* (London: Edward Arnold, 1973) and *The language of English literature* (London: Edward Arnold, 1982); A. Cluysenaar, *Aspects of literary stylistics* (New York: St. Martin's Press, 1975); and (with special reference to French) S. Ullmann, *Language and style* (Oxford: Blackwell, 1964). There are several important collections of papers, such as D. C. Freeman (ed.), *Linguistics and literary style* (New York: Holt, Rinehart & Winston, 1970) and S. Chatman (ed.), *Literary style: a symposium* (London: O.U.P., 1971). The language of poetry is discussed in G. N. Leech, *A linguistic guide to English poetry* (London: Longman, 1969); W. Nowottny, *The language poets use* (London: Athlone, 1962); and D. Attridge, *The rhythms of English poetry* (London: Longman, 1982). For the language of the novel, see G. N. Leech & M. H. Short, *Style in fiction: a linguistic introduction to fictional prose* (London: Longman, 1981); W. Nash, *Designs in prose: a study of compositional problems and methods* (London: Longman, 1980); R. Fowler, *Linguistics and the novel* (London: Methuen, 1977); and S. Ullmann, *Style in the French novel* (Oxford: O.U.P., 1957). For the language of individual novelists, see the various volumes in the Blackwell/Deutsch *Language Library*. For dramatic language, see D. Burton, *Dialogue and discourse* (London: Routledge & Kegan Paul, 1980). Authorship studies are discussed in C. B. Williams, *Style and vocabulary: numerical studies* (London: Griffin, 1970) and L. Doležel & R. W. Bailey (eds.), *Statistics and style* (New York: American Elsevier, 1969). For a historical account of linguistic stylistics, including stylostistics, see N. E. Enkvist, *Linguistic stylistics* (The Hague: Mouton, 1973), and for a general bibliography, R. Bailey & D. M. Burton, *English stylistics: a bibliography* (Cambridge, Mass.: M.I.T. Press, 1968). For structuralism and related approaches, see R. Selden, *A reader's guide to contemporary literary theory* (Brighton: Harvester Press, 1985).

Part III

All linguistics textbooks contain a discussion of linguistic levels and associated matters of language structure: see references under Part XI. General questions of typology and universals are discussed in B. Comrie, *Language universals and linguistic typology* (Oxford: Blackwell, 1981). A range of typological approaches, including the notion of implicational universals, is presented in J. H. Greenberg (ed.), *Universals of language* (Cambridge, Mass.: M.I.T. Press, 1963). The distinction between formal and substantive universals is introduced in N. Chomsky, *Aspects of the theory of syntax* (Cambridge, Mass.: M.I.T. Press, 1965), and Chomsky's conception of the links between modern linguistics and early linguistic thought is presented in *Cartesian linguistics: a chapter in the history of rationalist thought* (New York: Harper & Row, 1966). The Port-Royal grammar is reprinted in facsimile by Scholar Press (Menston, Yorks, 1967). For an introduction to statistical issues in language, see G. A. Miller, *Language and communication* (New York: McGraw-Hill, 1951), Ch. 4, and C. Cherry, *On human communication* (New York: Science Editions, 1961), Ch. 5. For word-frequency information about English, see K. Hoffland & S. Johansson, *Word frequencies in British and American English* (Bergen: Norwegian Computing Centre for the Humanities, 1982; also published by Longman). Zipf's approach is presented in G. K. Zipf, *The psycho-biology of language: an introduction to dynamic philology* (Cambridge, Mass.: M.I.T. Press).

For a general introduction to grammar, see F. R. Palmer, *Grammar* (Harmondsworth: Penguin, 2nd edn., 1984). More detailed accounts are given in P. H. Matthews, *Morphology* (1974) and *Syntax* (1981), both Cambridge: C.U.P. For the original statement of generative grammar, see N. Chomsky, *Syntactic structures* (The Hague: Mouton, 1957). Note also the reference grammar by R. Quirk, S. Greenbaum, G. Leech & J. Svartvik, *A comprehensive grammar of the English language* (London: Longman, 1985). For general introductions to semantics, see F. R. Palmer, *Semantics* (Cambridge: C.U.P., 2nd edn., 1981); J. Lyons, *Language, meaning and context* (London: Fontana, 1981); J. R. Hurford & B. Heasley, *Semantics: a coursebook* (Cambridge: C.U.P., 1983); and S. Ullmann, *Semantics: an introduction to the study of meaning* (Oxford: Blackwell, 1962). For an advanced account, see J. Lyons, *Semantics*, Vols. 1 and 2 (Cambridge: C.U.P., 1977).

A wide-ranging collection of papers on dictionaries is: R. R. K. Hartmann (ed.), *Lexicography: principles and practice* (London: Academic Press, 1983). For the history of lexicography, see R. L. Collison, *A history of foreign-language dictionaries* (Oxford: Blackwell, 1982) and D. T. Starnes & G. E. Noyes, *The English dictionary from Cawdrey to Johnson* (Chapel Hill: University of North Carolina Press, 1946). For a more advanced discussion, see L. Zgusta, *Manual of lexicography* (The Hague: Mouton, 1971).

On general issues of naming, see E. Pulgram, *Theory of names* (1954). On personal names, see C. M. Matthews, *English surnames* (London: Weidenfeld & Nicolson, 1966); L. Dunkling & W. Gosling, *Dictionary of first names* (London: Dent, 1983), which also contains several references to works on foreign names; and E. G. Withycombe, *The Oxford dictionary of English Christian names* (London: O.U.P., 1977). For an introduction to place-name studies, see K. Cameron, *English place names* (London: Batsford, 1961) and C. M. Matthews, *Place names of the English-speaking world* (London: Weidenfeld & Nicolson, 1972). A classic work on English place names is E. Ekwall, *The concise Oxford dictionary of English place-names* (Oxford, 4th edn., 1960). For detailed British studies, see the various county volumes of the English Place-Name Society (C.U.P.), published from the 1920s. For American place names, see G. R. Stewart, *American place-names* (New York: O.U.P., 1970).

For an introduction to discourse, see M. Stubbs, *Discourse analysis* (Oxford: Blackwell, 1983); G. Brown & G. Yule, *Discourse analysis* (Cambridge: C.U.P., 1983); and M. Coulthard, *An introduction to discourse analysis* (London: Longman, 1977). The study of text is introduced in R. de Beaugrande & W. Dressler, *Introduction to text linguistics* (London: Longman, 1981). An introductory account of pragmatic issues is R. Wardhaugh, *How conversation works* (Oxford: Blackwell, 1985). More technical discussions are G. N. Leech, *Principles of pragmatics* (London: Longman, 1983); S. Levinson, *Pragmatics* (Cambridge: C.U.P., 1983), and D. Sperber & D. Wilson, *Relevance* (Oxford: Blackwell, 1986).

Part IV

Any introduction to phonetics will provide an account of the relevant anatomy, physiology, and neurology of speech, but some books deal with these matters in more detail, such as: G. J. Borden & K. S. Harris, *Speech science primer* (Baltimore: Williams & Wilkins, 2nd edn., 1984); Ch. 4; B. Malmberg (ed.), *Manual of phonetics* (Amsterdam: North-Holland, 2nd edn., 1968), Chs. 3, 9, 11; W. J. Hardcastle, *Physiology of speech production* (London: Academic Press, 1976); H. M. Kaplan, *Anatomy and physiology of speech* (New York: McGraw Hill, 2nd edn., 1971). For serious study, an anatomical atlas is recommended.

Acoustic analysis is introduced in D. B. Fry, *The physics of speech* (Cambridge: C.U.P., 1979); P. B. Denes & E. N. Pinson, *The speech chain* (New York: Doubleday, 1973); and also G. J. Borden & K. S. Harris (*ibid.*), Ch. 3. A convenient collection of more advanced reading is D. B. Fry (ed.), *Acoustic phonetics* (Cambridge: C.U.P., 1976). Speech instrumentation is reviewed in G. J. Borden & K. S. Harris (*ibid.*), Ch. 6; C. Code & M. Ball (eds.), *Experimental clinical phonetics* (London: Croom Helm, 1984); and C. Painter, *An introduction to instrumental phonetics* (Baltimore: University Park Press, 1979). See also: F. Strenger, 'Radiographic, palatographic, and labiographic methods in phonetics', in B. Malmberg (*ibid.*), pp. 334–64; and W. J. Hardcastle, 'Instrumental investigations of lingual activity in speech: a survey', *Phonetica* 29 (1974), pp. 129–57.

On the hearing mechanism, see J. L. Northern & M. P. Downs, *Hearing in children* (Baltimore: Williams & Wilkins, 1978), Chs. 2 and 3; P. B. Denes & E. N. Pinson (*ibid.*), Ch. 5; and G. J. Borden & K. S. Harris (*ibid.*), Ch. 5. For a general introduction to speech perception in the context of auditory perception in general, see D. A. Sanders, *Auditory perception of speech* (Englewood Cliffs, N. J.: Prentice-Hall, 1977); in the context of psycholinguistics, see H. H. Clark & E. V. Clark, *Psychology and language* (New York: Harcourt Brace Jovanovich, 1977), Ch. 5; in the context of deafness, see J. Bamford & E. Saunders, *Hearing impairment, auditory perception and language disability* (London: Edward Arnold, 1985).

For a general account of phonetics, see J. D. O'Connor, *Phonetics* (Harmondsworth: Penguin, 1973) and P. Ladefoged, *A course in phonetics* (New York: Harcourt Brace Jovanovich, 2nd edn., 1982). A more advanced account is given in B. Malmberg (*ibid.*). A detailed introduction to English phonetics and phonology is A. C. Gimson, *An introduction to the pronunciation of English* (London: Edward Arnold, 3rd edn., 1980). For a classical approach to phonology, see K. L. Pike, *Phonemics: a technique for reducing languages to writing* (Ann Arbor: University of Michigan, 1947). The pioneering monograph in the subject is N. Trubetskoy, *Principles of phonology* (trans. by C. M. Baltaxe of *Grundzüge der Phonologie*) (Berkeley & Los Angeles: University of California Press, 1939/1969). A modern introduction is R. Lass, *Phonology* (Cambridge: C.U.P., 1984). Generative phonology is introduced in L. M. Hyman, *Phonology: theory and analysis* (New York: Holt, Rinehart & Winston, 1975), metrical phonology in R. Hogg & C. B. McCully, *Metrical phonology: a course-book* (Cambridge: C.U.P., 1987). Suprasegmental features are introduced in E. Couper-Kuhlen, *An introduction to English prosody* (Tübingen: Niemeyer, 1986), A. Cruttenden, *Intonation* (Cambridge: C.U.P., 1985) and in D. L. Bolinger, *Intonation and its parts* (London: Edward Arnold, 1986). Most of the systems presented in the section are illustrated in D. L. Bolinger (ed.), *Intonation* (Harmondsworth: Penguin, 1972). Joshua Steele's *Melody and measure of speech* (1775) is available in facsimile from Scolar Press (Menston, Yorks., 1969). For pause, see D. Tannen & M. Saviile-Troie (eds.), *Perspectives on silence* (Norwood, N. J.: Ablex, 1985). Vocal composition is discussed in I. Anhalt, *Alternative voices: essays on contemporary vocal and choral composition* (Toronto: University of Toronto Press, 1984). For a discussion of sound symbolism, see S. Ullmann, *Language and style* (Oxford: Blackwell, 1964). The full text of *Jabberwocky*, in three languages, will be found in M. Gardner (ed.), *The annotated Alice* (Harmondsworth: Penguin, 1965).

Part V

The relationship between speech and writing is discussed in many introductory textbooks on language study, such as R. Quirk, *The use of English* (London: Longman, 2nd edn., 1968). For a more advanced discussion, see D. Tannen (ed.), *Spoken and written language* (Norwood, N. J.: Ablex, 1982). For graphic expression, see M. Twyman, 'The graphic presentation of language', *Information Design Journal* 3 (1982), pp. 2–22. On the history of writing, see R. Harris, *The origin of writing* (London: Duckworth, 1986), B. L. Ullman, *Ancient writing and its influence* (New York: Longman, 1963); on calligraphy, E. Johnston, *Writing and illuminating and lettering* (London: Pitman, 1925, 14th edn.), and the entry on calligraphy in the *Encyclopaedia Britannica* (15th edn.). Graphology (in the psychological sense) is introduced in E. Singer, *A manual of graphology* (London: Duckworth, 1953). On the development of printing, see M. Twyman, *Printing 1770–1970* (London: Eyre & Spottiswoode, 1970); on typing, B. Bliven, *The wonderful writing machine* (New York: Random House, 1954).

Standard texts on writing systems include D. Diring, *The alphabet: a key to the history of mankind* (London: Hutchinson, 1948, 3rd edn., 1968) and I. J. Gelb, *A study of writing* (Chicago: Chicago University Press, 1963). See also W. Haas (ed.), *Writing without letters* (Manchester: Manchester University Press, 1976). A more advanced theoretical discussion is J. Vachek, *Written language* (The Hague: Mouton, 1973). The English punctuation system is outlined in Appendix 3 to R. Quirk, et al., *A comprehensive grammar of the English language* (London: Longman, 1985). For shorthand, see H. Glatte, *Shorthand systems of the world* (London: Glatte, 1959).

The process of reading is introduced in A. W. Ellis, *Reading, writing and dyslexia: a cognitive analysis* (London: Erlbaum, 1984) and A. Kennedy, *The psychology of reading* (London & New York: Methuen, 1984). More specialized studies are to be found in A. S. Reber & D. L. Scarborough (eds.), *Toward a psychology of reading* (New York: Erlbaum, 1977) and J. F. Kavanagh & I. G. Mattingly, *Language by ear and by eye: the relationships between speech and reading* (Cambridge, Mass.: M.I.T. Press, 1972). On spelling, see U. Frith (ed.), *Cognitive processes in spelling* (London: Academic Press, 1980). On writing, see M. Nystrand (ed.), *What writers know: the language, process, and structure of written discourse* (New York: Academic Press, 1982). On spelling reform, see W. Haas (ed.), *Alphabets for English* (Manchester: Manchester University Press, 1969) and G. Dewey, *English spelling: roadblock to reading* (New York: Teachers' College Press, 1971).

Part VI

For an introduction to sign, see E. Klima & U. Bellugi, *The signs of language* (Cambridge, Mass.: Harvard University Press, 1979) and J. G. Kyle & B. Woll, *Sign language* (Cambridge: C.U.P., 1985). Several aspects of sign language are introduced in R. L. Schiefelbusch (ed.), *Nonspeech language and communication: analysis and intervention* (Baltimore: University Park Press, 1980). A more advanced discussion of many aspects of sign is to be found in I. M. Schlesinger & L. Namir (eds.), *Sign language of the deaf: psychological, linguistic,*

and sociological perspectives (New York: Academic Press, 1978), and W. C. Stokoe, *Semiotics and human sign languages* (The Hague: Mouton, 1972).

Part VII

An introductory account of child language is D. Crystal, *Listen to your child* (Harmondsworth: Penguin, 1986). See also P. & J. De Villiers, *Early language* (London: Fontana, 1979), J. Bruner, *Child's talk: learning to use language* (Oxford: O.U.P., 1983); C. Garvey, *Children's talk* (London: Fontana, 1984); G. Wells, *The meaning makers* (London: Hodder & Stoughton, 1987); and M. Donaldson, *Children's minds* (London: Fontana, 1978). For more detailed studies, see A. Cruttenden, *Language in infancy and childhood* (Manchester: Manchester University Press/St. Martin's Press, 1979), P. Fletcher, *A child's learning of English* (Oxford: Blackwell, 1985), C. G. Wells, *Language development in the pre-school years* (Cambridge: C.U.P., 1985), and P. Fletcher & M. Garman (eds.), *Language acquisition* (Cambridge: C.U.P., 2nd edn., 1986). On phonological development, see J. L. Locke, *Phonological acquisition and change* (New York: Academic Press, 1983). On pragmatic development, see M. Ectear, *Children's conversation* (Oxford: Blackwell, 1985) and the papers in E. Ochs & B. B. Schieffelin (eds.), *Developmental pragmatics* (New York: Academic Press, 1979). On twins, see S. Savić, *How twins learn to talk* (London: Academic Press, 1980).

On language awareness and the school curriculum, see E. Hawkins, *Awareness of language: an introduction* (Cambridge: C.U.P., 1984); C. Cazden, V. P. John & D. Hymes (eds.), *Functions of language in the classroom* (New York: Teachers College Press, 1972); D. Barnes, J. Britton & H. Rosen, *Language, the learner and the school* (Harmondsworth: Penguin, 1969, 3rd edn. by Barnes, Britton & M. Torbe, 1986); P. Doughty, J. Pearce & G. Thornton, *Language in use* (London: Edward Arnold, 1971); and D. Crystal, *Child language, learning and linguistics* (London: Edward Arnold, 2nd edn., 1987), Ch. 3. On learning to read and write, see D. Mackay & J. Simo, *Help your child to read and write, and more* (Harmondsworth: Penguin, 1976); K. Perera, *Children's writing and reading: analysing classroom language* (Oxford: Blackwell, 1984); and H. Cowie (ed.), *The development of children's imaginative writing* (London: Croom Helm, 1984). On learning to read in general, see F. Smith, *Reading* (Cambridge: C.U.P., 1978) and E. Ferreiro & A. Teberosky, *Literacy before schooling* (London: Heinemann, 1983). On the teaching of reading, see R. Karlin, *Teaching elementary reading* (New York: Harcourt Brace Jovanovich, 3rd edn., 1980) and C. Matthes, *How children are taught to read* (Lincoln, Neb.: Professional Educators Publications, 1972). On handwriting, see C. Jarman, *The development of handwriting skills* (Oxford: Blackwell, 1979) and R. Sassoon, *The practical guide to children's handwriting* (London: Thames & Hudson, 1983).

Part VIII

The structure and function of the human brain is discussed in S. J. Dimond & J. G. Beaumont (eds.), *Hemispheric function in the human brain* (London: Elek Science, 1974) and with reference to language in E. H. Lenneberg, *Biological foundations of language* (New York: Wiley, 1967), where critical period theory is presented. Collections of papers on language and neurology include: S. J. Segalowitz & F. A. Gruber (eds.), *Language development and neurological theory* (New York: Academic Press, 1977) and S. J. Segalowitz (ed.), *Language functions and brain organization* (New York: Academic Press, 1983). Neurological models are the subject matter of M. A. Arbib, D. Caplan & J. C. Marshall (eds.), *Neural models of language processing* (New York: Academic Press, 1982). Slips of the tongue are discussed in V. A. Fromkin (ed.), *Speech errors as linguistic evidence* (The Hague: Mouton, 1973).

For a general introduction to language handicap, see D. Crystal, *Introduction to language pathology* (London: Edward Arnold, 1981); W. H. Perkins, *Human perspectives in speech and language disorders* (Saint Louis: C. V. Mosby, 1978); G. H. Shames & E. H. Wiig, *Human communication disorders: an introduction* (Columbus: Merrill, 1982); and J. E. Nation & D. M. Aram, *Diagnosis of speech and language disorders* (San Diego: College-Hill Press, 2nd edn. 1984). On deafness, see E. D. Schubert, *Hearing: its function and dysfunction* (Vienna: Springer, 1980), J. L. Northern & M. P. Downs, *Hearing in children* (Baltimore: Williams & Wilkins, 2nd edn. 1978), and J. Bamford & E. Saunders, *Hearing impairment, auditory imperception and language disability* (London: Edward Arnold, 1985). On aphasia, see A. R. Lecours, F. Lhermitte & B. Bryans (eds.), *Aphasiology* (London: Baillière Tindal, 1983) and R. Lesser, *Linguistic investigations of aphasia* (London: Edward Arnold, 1978). On adult dyslexia, see M. Coltheart, K. Patterson & J. C. Marshall (eds.), *Deep dyslexia* (London: Routledge & Kegan Paul, 1980) and K. E. Patterson, J. C. Marshall & M. Coltheart (eds.), *Surface dyslexia* (London: Erlbaum, 1985); on child dyslexia, M. Thomson, *Developmental dyslexia* (London: Edward Arnold, 1984) and P. Bryant & L. Bradley, *Children's reading problems* (Oxford: Blackwell, 1985). For a general account, see A. W. Ellis, *Reading, writing and dyslexia: a cognitive analysis* (London & Hillsdale: Erlbaum, 1984).

On voice, see M. C. L. Greene, *The voice and its disorders* (London: Pitman Medical, 4th edn., 1980); on cleft palate, M. Edwards & A. C. H. Watson (eds.), *Advances in the management of cleft palate* (London: Churchill Livingstone, 1980); on articulation, M. Edwards, *Disorders of articulation* (Vienna: Springer, 1984); on fluency, P. Dalton & W. Hardcastle, *Disorders of fluency* (London: Edward Arnold, 1977); on language delay, C. T. Wren (ed.), *Language learning disabilities* (Rockville, Md.: Aspen, 1983). Alternative systems are discussed in R. L. Schiefelbusch (ed.), *Nonspeech language and communication: analysis and intervention* (Baltimore: University Park Press, 1980); technological aids in D. Hawkrigge, T. Vincent & G. Hales, *New information technology in the education of disabled children and adults* (London: Croom Helm, 1985).

Part IX

On the languages of the world, see C. F. & F. M. Voegelin, *Classification and index of the world's languages* (New York: Elsevier, 1977); B. Comrie (ed.), *The world's major languages* (London: Croom Helm, 1987); E. Gunne-mark & D. Kenrick, *A geolinguistic handbook* (Gothenburg: privately printed, 2nd edn., 1986); S. H. Muller, *The world's living languages* (New York: Ungar, 1964); M. Ruhlen, *A guide to the languages of the world* (Stanford, 1976); K. Klatzner, *The languages of the world* (London: Routledge & Kegan Paul, 2nd edn., 1986); and A. Meillet & M. Cohen, *Les langues du monde* (Paris: Champion, 1952). The most comprehensive account is in T. A. Sebeok (ed.), *Current trends in linguistics*, Vols. 1–14 (The Hague: Mouton, 1963–76). On the origins of language, see O. Jespersen, *Language: its nature, development and origin* (London: Allen & Unwin, 1922). Lost children are discussed in L. Malson & J. Itard, *Wolf children and The wild boy of Aveyron* (London: N.L.B., 1972). The fossil evidence is reviewed in P. Lieberman, *The speech of primates* (The Hague: Mouton, 1972); see also his *On the origins of language* (New York: Macmillan, 1975).

For a general introduction to language change, see J. Aitchison, *Language change – progress or decay?* (London: Fontana, 1981). Historical linguistics is presented in W. P. Lehmann, *Historical linguistics: an introduction* (New York: Holt, Rinehart & Winston, 1962) and A. Arlotti, *Introduction to historical linguistics* (Boston: Houghton Mifflin, 1972). The history of English is detailed in B. M. H. Strang, *A history of English* (London: Methuen, 1970); a social perspective is found in D. Leith, *A social history of English* (London: Routledge & Kegan Paul, 1983). A general theoretical study is R. Lass, *On explaining language change* (Cambridge: C.U.P., 1980).

An introductory account of Indo-European linguistics is provided by W. B. Lockwood, *Indo-European philology* (London: Hutchinson, 1969), and the languages themselves are introduced and illustrated by several texts in the same author's *A panorama of Indo-European languages* (London: Hutchinson, 1972). Archaeological, cultural, and linguistic data are brought together in G. Cardona, H. M. Hoenigswald & A. Senn (eds.), *Indo-European and the Indo-Europeans* (Philadelphia: University of Pennsylvania Press, 1970). The debate over laryngeals is reviewed in W. Winter (ed.), *Evidence for laryngeals* (The Hague: Mouton, 1965). The Celtic languages are outlined and illustrated in W. B. Lockwood, *Languages of the British Isles: past and present* (London: Deutsch, 1975).

For a general account of pidgins and creoles, see L. Todd, *Pidgins and creoles* (London: Routledge & Kegan Paul, 1974); for a detailed account of English-based varieties, with particular reference to Tok Pisin and Cameroon, see also her *Modern Englishes: pidgins and creoles* (Oxford: Blackwell, 1984). Specialized studies are included in D. Hymes (ed.), *Pidginization and creolization of languages* (Cambridge: C.U.P., 1971) and D. DeCamp & I. F. Hancock (eds.), *Pidgins and creoles: current trends and prospects* (Washington: Georgetown University Press, 1974).

Part X

The field is presented in J. A. Large, *The foreign-language barrier: problems in scientific communication* (Oxford: Blackwell, 1983). The commercial aspect is reviewed in D. Liston & N. Reeves, *Business studies, languages, and overseas trade: a study of education and training* (London: Macdonald & Evans/Institute of Export, 1985). Theoretical aspects of translation are presented in J. C. Catford, *A linguistic theory of translation: an essay in applied linguistics* (London: O.U.P., 1965) and P. Newmark, *Approaches to translation* (Oxford: Pergamon Press, 1981). A practical account is I. F. Finlay, *Translating* (London: Teach Yourself Books, 1971). Both translation and interpreting are covered in R. W. Brislin (ed.), *Translation: applications and research* (New York: Gardner Press, 1976). A historical perspective is given in L. G. Kelly, *The true interpreter: a history of translation theory and practice in the West* (Oxford: Blackwell, 1979). On machine translation, see B. M. Snell (ed.), *Translating and the computer* (Amsterdam: North-Holland, 1979).

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Bilingualism is introduced in F. Grosjean, *Life with two languages: an introduction to bilingualism* (Cambridge, Mass.: Harvard University Press, 1982); see also H. Baetens Beardsmore, *Bilingualism: basic principles* (Clevedon, Avon: Tieto, Multilingual Matters, 1982). Many issues of language planning are dealt with in J. Edwards, *Language, society and identity* (Oxford: Blackwell, 1985). A more specialized discussion is found in J. Edwards (ed.), *Linguistic minorities, policies and pluralism* (London: Academic Press, 1984) and J. Cobarrubias & J. A. Fishman (eds.), *Progress in language planning* (Berlin: Mouton, 1983).

Short introductions to foreign language learning are W. Littlewood, *Foreign and second language learning* (Cambridge: C.U.P., 1984) and D. A. Wilkins, *Second-language learning and teaching* (London: Edward Arnold, 1974). A detailed account is W. M. Rivers, *Teaching foreign-language skills* (Chicago & London: University of Chicago Press, 2nd edn., 1981). For a selection of texts illustrating new approaches, see R. W. Blair (ed.), *Innovative approaches to language teaching* (Rowley, Mass.: Newbury House, 1982). Communicative language teaching is introduced in D. A. Wilkins, *Notional syllabuses* (London: O.U.P., 1976) and discussed in K. Johnson & D. Porter (eds.), *Perspectives in communicative language teaching* (London: Academic Press, 1983). See also C. James, *Contrastive analysis* (London: Longman, 1980), S. D. Krashen, *Principles and practice in second language acquisition* (Oxford: Pergamon, 1982), and S. P. Corder, *Error analysis and interlanguage* (London: O.U.P., 1981). On laboratories, see P. S. Green (ed.), *The language laboratory in school* (Edinburgh: Oliver & Boyd, 1975). On testing, see A. Hughes & D. Porter (eds.), *Current developments in language testing* (London: Academic Press, 1983).

Part XI

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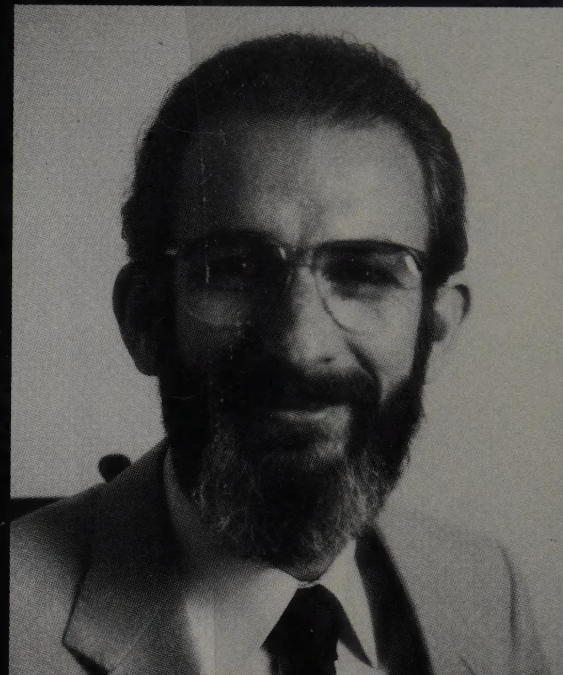
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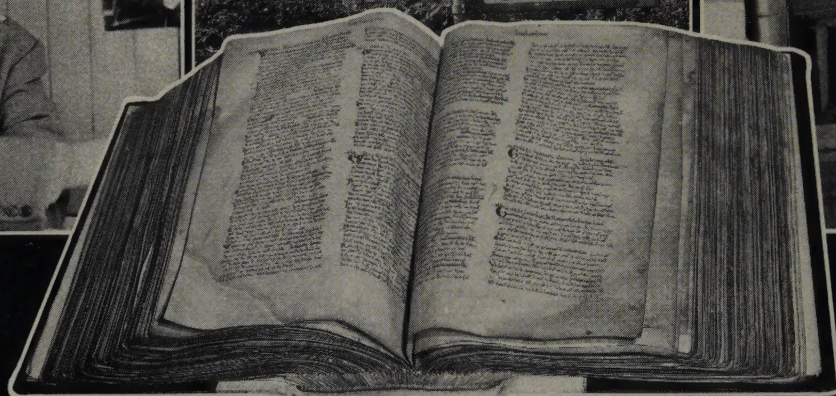
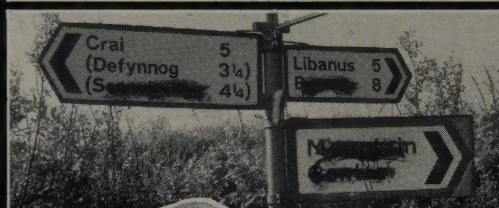
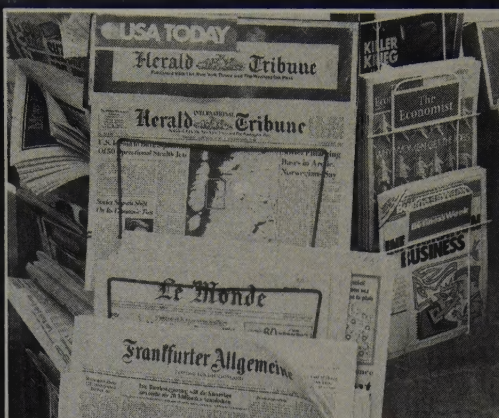
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David Crystal was born in 1941 and brought up in Holyhead and Liverpool. He read English at University College London, where he obtained his doctorate in 1966. He was Professor of Linguistic Science at the University of Reading from 1975 to 1985. He now combines a Professorial Fellowship at the University College of North Wales, Bangor, with writing, lecturing and regular broadcasting on language and linguistics topics. His interests include research into the English language, intonation, stylistics, language handicap, as well as developing the relationship between the linguistic sciences and language teaching in schools.

David Crystal is currently Consultant Editor of *English Today* and Editor of *Child Language Teaching and Therapy* and *Linguistics Abstracts*. He has contributed to *A Comprehensive Grammar of the English Language*, *A Dictionary of Modern Thought*, *The Reader's Digest Book of Facts* and to numerous volumes on language, communication, teaching and reading. His publications include *What is Linguistics?*, *A First Dictionary of Linguistics and Phonetics*, *Clinical Linguistics*, *Who Cares about English Usage?*, and *Listen to your Child*.



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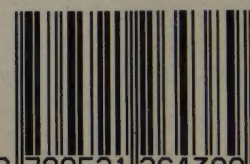
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