1 Introduction

In this chapter we introduce some fundamental concepts of linguistics, including the notion of the *sign*, and outline the major features of human language. We also present linguistics as a science, and overview its main concerns.

Chapter contents

Goals

The goals of the chapter are to:

- present linguistics as a science and outline the main concerns of the discipline;
- lay out the main orientations of modern linguistics, situating them in a historical perspective;
- introduce some fundamental concepts of modern linguistics;
- overview the main distinguishing features ('design features') of human languages;
- draw a distinction between speech and writing, and show that speech is primary; and
- introduce deaf sign languages as fully fledged human languages.

Key terms

arbitrariness	duality	productivity	speech
cultural transmission	formalism	reflexivity	structuralism
deaf sign languages	functionalism	Saussure	symbol
design features	icon	scientific method	syntagmatic relation
displacement	paradigmatic relation	sign	writing

1.1 What is linguistics?

David Crystal's *Dictionary of Linguistics and Phonetics* begins the entry for linguistics with the words '[t]he scientific study of **language**' (Crystal 1980/2003: 272). He goes on to say that it is also called *linguistic science*, and refers to it as an academic discipline. Ask any linguist what linguistics is and you are likely to be given a similar answer mentioning both its scientific character and its subject matter, language.

Linguistics as a science

What does it mean to say that linguistics is a science or scientific field of study? To begin with, it says something about the approach taken to the subject matter. A scientific approach to the study of language involves a critical and inquiring attitude, and refusal to accept uncritically, on faith, or on authority, ideas or ways of thinking about language. It strives for objectivity, for developing hypotheses and putting them to the test by confronting them with observations. This means that linguistics is empirically grounded: it is based on actual language data, including observations of language use by speakers, and their intuitions about their language.

Linguistics is thus descriptive rather than prescriptive: its primary goal is to describe languages as they are actually spoken, indicating what they are like and how they are used, rather than prescribe how they ought to be spoken. Many people are concerned about how their language ought to be spoken, as a glance in a newspaper is likely to reveal: people often comment on 'wrong' grammar or pronunciation that people (usually others!) use.[1] At school you may have learnt that you should say *That is the child whom the dog bit* and not *That is the child who the dog bit*. But in modern English (Indo-European, England)[2] most people say the latter, and few could use the school rule consistently and properly without consciously thinking about it. Linguistics is concerned with what people actually say, not with what they should say.

A scientific approach is not purely empirical in the sense of merely collecting observations. It involves formulation and testing of hypotheses and generalizations, as well as theory development, development of ways of understanding language. This calls for rigorous and explicit formulation of ideas, as well as rigour in testing them. Linguistics as a scientific endeavour is as much a theoretical enterprise as an empirical one: whatever observations one makes are useful and make sense only in relation to hypotheses and theories.

As a science, linguistics is concerned with developing theories that account for and explain the phenomena of language and language use. Doing linguistics is concerned with theory development and testing, and with making generalizations about language – with uncovering regularities and repeated general characteristics. **Exceptions** play a crucial role: they challenge the generalizations, and force the investigator to rethink matters, and refine or revise their ideas. We will see in this book places where exceptions loom large in scientific thinking about language, and have resulted in significant new developments.

An important skill to develop is the ability to recognize the significance of observed phenomena as exceptional or unexpected. Linguistics is a relatively new science, and it is possible, as mentioned in the Preface, for beginners to observe new things about their language (even as well studied a language as English), including things that challenge existing theories. While reading this book you should be constantly thinking about and observing the language in use around you, and linking your observations to the discussion and generalizations we make.

Linguistics is often regarded as a humanities (or arts) subject, though in many ways it straddles the boundaries between humanities and sciences, with a foot in both camps. Links to humanities include to language history and philosophy, as well as to ancient and modern 'language' subjects taught in universities, such as English, French (Indo-European, France), German (Indo-European, Germany), Ancient Greek (Indo-European, Greece), Sanskrit (Indo-European, India) and so on; links to social sciences include to sociology, psychology, anthropology and archaeology. But there are also links to the 'hard' sciences such as biology, physiology, physics and mathematics, most obviously in the production and perception of speech.

The human side of linguistics is as central as its scientific face. Language is a human artefact, and many types of linguistic research involve interaction between the linguist and other human beings, speakers of languages. Their work thus not infrequently confronts linguists with human considerations, such as provision of professional expertise or services.

The subject matter of linguistics

Being a scientific subject, linguistics is in principle concerned with all aspects of language. This immediately raises the question: What is language? The term has many senses. People talk of the language of bees, the language of the genetic code, the language of science, body

language, computer language(s), the English language, the American language and so on. Here we use the term specifically in reference to natural human languages, such as French, Mandarin Chinese (Sino-Tibetan, Mainland China), Basque (Isolate, Spain and France) and Hausa (Afroasiatic, Nigeria). This is of course not a definition of the term; to provide one now would be premature, as it would presuppose much of the content of this book. In §1.3 we make a beginning by discussing some features that characterize human language and distinguish it from other communication systems, including those of other animals. The question is returned to a number of times in subsequent sections of the book, not always explicitly – so keep awake! By the time you have finished reading the book, you should have a clearer notion of what linguists mean by the terms *language* and *languages*, and an appreciation of some of the difficulties.

Perhaps the best way to begin is to shelve the terminological question, and outline the main branches of the subject. If you do a degree in linguistics, you are likely to study many of these branches, some of which will be covered in their own course. Each branch is touched on in this book, sometimes in its own chapter, sometimes in just a section or paragraph or two.

- **Phonetics** and **phonology** deal with the sounds of languages. Phonetics is concerned with the ways speech sounds are made, their nature (the physics of sound waves) and how they are perceived. Phonology is concerned with the ways sounds are patterned in a language, with those characteristics that are significant in the sound system of the language. These two branches are dealt with in Chapter 2.
- **Morphology** deals with the way the words of a language are structured, how they are made up of smaller meaningful parts. For example, *reads* is made up of *read* and the ending *s*, which tells you that the reading is being done by one person (not the speaker or hearer) at the present time or generally. Morphology is treated in Chapters 3 and 4.
- **Syntax** is concerned with the ways words go together to form sentences, and how the words are related to one another. For instance, *The boy reads comics* consists of a subject or doer of the action *the boy*, a verb representing an event *reads* and an object or patient of the action *comics*. Sometimes words go together to make up constructions of intermediate size – larger than words, but smaller than sentences. An example is *the boy* in our previous example. Syntax is the topic of Chapter 5. Syntax and morphology together make up the core of **grammar**.
- **Semantics** and **pragmatics** deal with meaning. Semantics is concerned with the aspects of meaning that are encoded by words and grammar. Pragmatics handles the aspects of meaning of an utterance that come from its use in a particular context. The sentence *Come again!* is made up of two words each of which has a meaning, as does the whole sentence (it is an instruction to the hearer to do something); these matters are the concern of semantics. But you can use this sentence in different ways to mean different things. If said when farewelling a visitor it could be interpreted as an invitation to return at a later time. In other contexts it could be interpreted as an expression of disbelief, or a request that the hearer repeat what they have just said. Such interpretations are the concern of pragmatics. Chapter 6 treats semantics and pragmatics.
- **Psycholinguistics** and **neurolinguistics** are concerned with the processes involved in language production (e.g. speaking and writing), comprehension (e.g. listening and reading) and acquisition. Psycholinguistics investigates the mental processes underlying language processing, while

neurolinguistics is biologically oriented, focusing on the brain's language processing activities. Psycholinguistics tends to adopt methods of psychology, neurolinguistics, medical methods and technology. These topics are treated in Chapters 8 and 9.

- **Typology** and **universals** are concerned with the range and limitations on structural variation among languages. Typology seeks to discover and account for the variation by classifying languages into types according to some structural feature (for instance, the order of subject, verb and object), and classifying linguistic structures according to their similarities and differences (e.g. whether possession is expressed by a 'have' verb, or a verb 'be at'). The study of language universals is concerned with identifying features common to all of the world's languages. These matters are the concern of Chapter 11.
- **Historical linguistics** studies how languages change over time. Languages never remain static for long; indeed they change rapidly. Historical linguistics has methods for working out what changes are likely to have happened over time to a language or group of languages. It is also concerned with establishing genetic relations amongst languages: that is, with showing that certain languages are related by having evolved from the same ancestor language. The comparative method is a technique devised for this purpose. Chapter 12 deals with historical linguistics.
- **Sociolinguistics** is concerned with language in its social context, with the relations between language and society. It explores the variation in languages associated with social phenomena such as the social group to which speakers and/or hearers belong (for instance, differences in speech according to class in Western societies). Other topics of interest in sociolinguistics are multilingualism, language choice (what motivates language choice in multilingual settings), attitudes to languages and language variation, and standard and non-standard varieties of a language. **Anthropological linguistics** has basically the same range of concerns as sociolinguistics, but takes inspiration more from anthropology than sociology, and usually deals with small-scale non-Western cultures. Sociolinguistics is dealt with mainly in Chapter 7.
- **Discourse analysis** examines stretches of language, both spoken and written, larger than the sentence. It attempts to find regularities in the formation of these stretches, and correlations with grammatical, phonological, lexical and semantic phenomena. Among the issues that have attracted interest are: how sentences are connected; how texts are made coherent; and the use of words like *well*, *like* and so on. **Conversation analysis** focuses attention on the properties of everyday conversation, including turn-taking (how conversation partners organize the exchange of speaker and hearer roles), negotiation of interactive expectations and goals, use of discourse markers and conversational coherence. We do not deal with discourse analysis in this book, although a chapter is included on the website for the book.

- **Evolutionary linguistics** is concerned with the origins of language, with how we came to speak. Perhaps the basic question is why are we the only species with language? Is language a part of our genetic make-up as human beings, or does biology merely permit us to speak? Some ideas about language origins and evolution are discussed in §10.3.

1.2 Fundamental concepts

The sign

One of the most important concepts of modern linguistics is the notion of the **sign**, a fundamental unit used in the representation and conveyance of information. The sign

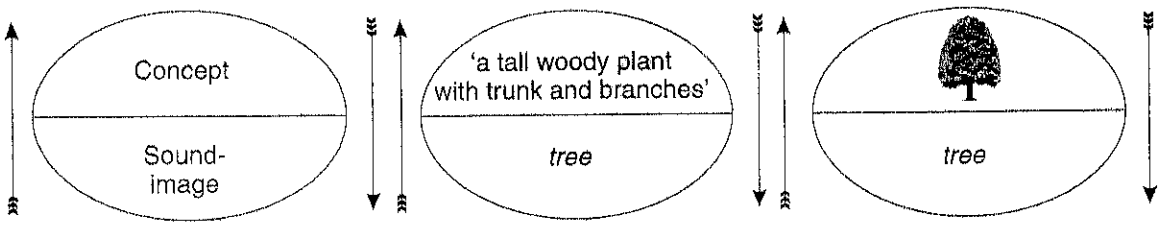

Figure 1.1 Saussure's conceptualization of the linguistic sign. Here 'sound-image' refers to 'form' (the idealized sound-shape of a word, ignoring variations in particular instances of production); 'concept' refers to 'meaning', illustrated here by means of an explanatory definition, and visually (see Saussure 1959/1974: 66–67).

involves a pairing of a **form** (roughly, something perceivable) and a **meaning** (a mental notion or idea). Some examples of written (or graphic) signs are: ♂, meaning 'male'; €, meaning 'euro'; &, meaning 'and'; and 3 meaning 'three'.[3] A gesture such as the 'thumbs-up' is also a sign, since it pairs the hand-shape with a meaning like 'OK, right, go ahead'. Signs can also involve sound forms, that can be heard rather than seen, as in the case of spoken words, for example, the spoken words *ten* and *tree*.

The fundamental properties of the sign are illustrated in Figure 1.1, which is based on Ferdinand de Saussure's diagram of the word as a linguistic sign (see p. 8), exemplified by the English word *tree*.

Saussure likened the sign to a coin: just as both faces are essential for a coin to count as an object that can be used in economic transactions, so also are form and meaning both essential to the sign as a unit in information exchange. Without a meaning we have no sign: the letter *h* of the Latin alphabet has no meaning in written English words, and so is not a sign: it can no more be used in information conveyance than the image of a head on a coin can be used in a shop. Nor is a disembodied meaning or concept without a form a sign.

Relations between form and meaning in the sign

Depending on how the form and meaning of a sign are related we can talk of iconic signs and symbolic signs. A third type, indexical signs, is identified in §10.1.

Iconic signs

An **iconic sign** or **icon** is a sign that has a form resembling its meaning in some way: the form shows some characteristics of the corresponding concept. Figure 1.2 gives some examples. Notice that the form of an icon is never an exact representation of the meaning; it shows salient features in stylized ways, ignoring other features. Different forms can iconically represent the same concept by selecting different features of the concept. The first two icons, (a) and (b), represent the same concept, 'telephone', although (b) depicts only a single aspect

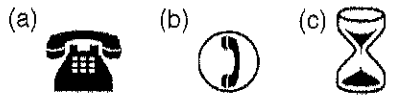

Figure 1.2 Some iconic signs. The forms of (a) and (b) visually depict silent characteristics of telephones, and thus iconically represent 'telephone'; (c) depicts characteristics of an hour glass in operation, and thus is used to indicate the passage of time as a computer processes data. (Note that (c) does not iconically represent time.)

Figure 1.3 Some symbolic signs. (a), the symbol for the mathematical operation of division in the English-speaking world, shows no likeness to the operation itself, and in Denmark represents instead subtraction. The cross in (b) indicates 'wrong, incorrect' when placed by a teacher next to an answer on a school test. This is a purely conventional link, and is often used in boxes on multiple-choice questions to indicate the correct option. (c) is used in comics to indicate that the words enclosed in it are representations of the thoughts of a character. The link between the graphic form and meaning is not based on any actual resemblance – thoughts do not look like (c) (although one might suggest a link via the notion that thoughts are fluffy things like clouds, to which (c) shows some similarity.)

of the concept, the receiver. Many manual gestures are iconic: holding up a hand with the digits spread out to represent the number 'five' is iconic.

Symbolic signs

A **symbolic sign** or symbol is a sign the form and meaning of which are related purely by convention, being established and acquired through repeated instances of use in communication: the form bears no apparent similarity to the meaning, nor is it naturally associated with it. Figure 1.3 gives some examples.

The line between symbols and icons is not clear-cut, and they are not really different types of sign. What is a symbol to one person might be an icon to another. To someone who knows only mobile phones, the signs in Figure 1.2 might appear completely arbitrary and inexplicable, established purely by convention. Iconic signs always involve some degree of conventionality and arbitrariness in the form–meaning link; they are not connected by necessity, and could be otherwise. Think of the equals sign =, which has a clear iconic basis, and was first used by the English mathematician Robert Recorde (1510–1558) with this in mind. Its orientation on the page is arbitrary, and some mathematicians of Recorde's time used the equally iconic ‖.

Language as a sign system

The examples discussed in the previous sections illustrate non-linguistic signs. It was one of Saussure's important insights that human language is a system of signs. This means first that human language is made up of signs, and second that the signs interrelate and form a system; they do not exist in isolation from one another.

Nature of signs in human language

Symbolic signs in language

We have already said that the word *tree* is a sign, being constituted in speech by a **phonetic** (sound) form and in writing by an **orthographic** (written) form in association with a meaning. The same goes for the word for 'tree' in other languages: *qoqa* in Aymara (Aymaran, Peru), *icimuti* in Bemba (Niger-Congo, Zambia), *miistsís* in Blackfoot (Algonquian, Canada and USA), *træ* in Danish (Indo-European, Denmark), *tree* in English, *girili* in Gooniyandi (Bunuban, Australia), *fa* in Hungarian (Uralic, Hungary), *arbor* in Latin (Indo-European, Italy), *uhs* in Papago (Uto-Aztecan, USA) and *laau* in Samoan (Austronesian, Samoa). Clearly these word-signs are symbolic. There is no natural connection between the sound or orthographic forms and the meaning; each form is as good as another for expressing the meaning 'tree', none is in any way suggestive of the meaning (if you did not know the language you would not be able to guess the meaning if you heard the form), and there is little similarity among the various forms (except in the case of the two closely related languages Danish and English). Most words in human languages are symbols.

> It is often said that linguistic signs are typically 'arbitrary' (see also §1.3). This is a potentially misleading statement: it does not mean that 'anything goes', that a speaker is free to choose whatever form or meaning they like to associate together in a sign. Humpty Dumpty may have believed that he could: '"When I use a word," Humpty Dumpty said, in a rather scornful tone, "it means just what I choose it to mean – neither more nor less"' (Carroll 1899: 123). Clearly communication would be impossible with such anarchy. Arbitrariness refers to the non-necessary relation between the form and the meaning of a sign.

Iconic signs in language

There are exceptions. Some words are iconic. The phonetic forms of words like *woof-woof*, *cock-a-doodle-do*, *baa-baa*, *meow*, *ding-dong*, *pop* and *ping* are quite suggestive of the meanings, which are sounds, the sound made by dogs, roosters, sheep and so on. The spoken form is somewhat similar to the sound it represents; such words are **onomatopoeic**. (The written forms of these words, however, do not resemble the meanings.)

Many languages have onomatopoeic words for the characteristic calls of animals. These need not be exactly the same in different languages – remember that icons also involve conventional associations of form and meaning – though they are often similar. The noise

made by a cat is *miau* in Hungarian (pronounced almost exactly as in English), *mjá* in Icelandic (Indo-European, Iceland), *nyao* in Japanese (Japanese, Japan), *miook* in Bulu (Niger-Congo, Cameroon), *mya:u(:)* in Hindi (Indo-European, India), *meu-meu* in Bengali (Indo-European, Bangladesh), *niaou* in Greek (Indo-European, Greece) and *ngeong* in Indonesian (Austronesian, Indonesia). No one would mistake these for the noise of a dog or horse. But we sometimes find no phonetic similarity in onomatopoeic forms: both *woof-woof* and *bow-wow* are onomatopoeic of the noise of a dog; they represent different sounds made by the same animal.

Young children often call a dog a *bow-wow*, and a sheep a *baa-baa*. In fact, in many languages we find words for at least a few animals (especially birds) that are identical with or similar to an onomatopoeic sign for their characteristic call. In Gooniyandi *minyawoo* is the word for 'cat'; the word for 'peewee, peewit, mudlark' is *diyadiya*, for 'galah' is *gilinygiliny* and for 'brolga' is *goorrarlga*. Anyone who has heard these birds will recognize the similarity to a characteristic call. We can regard these word-signs as iconic (they are not onomatopoeic since they denote animals not sounds).

A more complex example of iconicity in words is drawing out the pronunciation of the word *long* to *loooong* or *big* to *biiiig*. The increased length of the word represents increased size – that the thing is very long or big. Other languages allow similar things: in Gooniyandi you can lengthen *girabingarri* 'long' to *giraaabingarri* to mean 'very long' and *nyamani* 'big' to *nyaaamani* 'very big'. It is not the phonetic form of the words *loooong* or *giraaabingarri* that iconically represents the meaning 'long'. That meaning is associated with the word-forms *long* and *girabingarri* themselves. The iconicity comes in at a different level: the phonetic **difference** between *long* and *loooong* represents the meaning difference between 'long' and 'very long'. Here we have a sign with the form 'extra length word-form' and meaning 'very word-meaning'. This is why *teeny* can be lengthened to *teeeeeeny* in English, and *jiginya* 'small' to *jigiiiinya* 'really small'; the lengthened words obviously do not convey a sense of 'larger in size'.

Relations between linguistic signs

This brings us to the second aspect of language as a sign system, the notion of system: the notion that the signs of any human language interrelate to form a coherent whole. This happens on two dimensions, **syntagmatic** and **paradigmatic**.

Syntagmatic

In everyday speech and writing, linguistic signs occur in combination with other signs. Human beings often put together many signs to convey complex meanings; they are not restricted to producing single-sign utterances like one-year-old children and most animals. In speech, word-signs follow one another in order, even though the boundaries between them are fuzzy; in writing, they follow one another in a conventional spatial sequence (in the writing traditions of Europe, from left to right, top to bottom).

This dimension is called **syntagmatic**. The signs that go together to make up an utterance are not put together randomly, but are related in specific ways to one another. In *I will never forget that terrible day* the order of signs plays an important function. The fact that *I* precedes *will* tells us that the utterance is a statement. If these two words had occurred in the reverse order, we would have a question, *Will I never forget that terrible day?*

Relations between signs that appear in the presence of one another are **syntagmatic relations**. For example, *terrible* describes *day*, and is dependent on it (you can omit it, but you can't omit the following word *day*). The words *never* and *forget* are also syntagmatically related; but the relation is different: *never* does not describe *forget* in the way *terrible* indicates a quality of the day in question. The term **syntagm** refers to any coherent grouping of signs that form a unit together. Thus *I will never forget that terrible day* is a syntagm; so also is *that terrible day*: these three words belong together and function as a single unit (they cannot be split up or separated) in a way that *never forget that* does not.

Paradigmatic

Not only do speakers put signs together in strings, but they choose the signs that go in the sequence from a number of possible alternative signs that could have been used instead. This gives us the **paradigmatic** dimension, the notion that each sign invokes a contrast with other signs that might have been used instead; signs so related are in a **paradigmatic relation.**[4] Signs in paradigmatic relation form a **paradigm**.

The paradigmatic dimension is important because the set of signs in paradigmatic relation with a particular sign in a syntagm is restricted. In our example sentence *I will never forget that terrible day*, *I* contrasts with *you*, *he*, *she*, *my brother*, *John*, *John's older brother*, and many other signs, simple and complex. But it does not contrast with *hit*, *and*, *not*, *up*, *won't* and so on. The existence of such restrictions is evidence that the signs in the syntagm are genuinely syntagmatically related, that there is structure on the syntagmatic dimension, and that the signs are not arbitrarily placed in sequence one after the other.

If we examine the signs in paradigmatic alternation with *I* in our example sentence, it is clear that they relate in different ways to one another. *I*, *you*, *he* and *she* are more closely related to one another than any is to *John* or *John's older brother*. Imagine a game in which I say a word, and you respond with as many words as come to mind in 30 seconds. Most likely, if I say *I*, you would respond with *you*, *he*, *she*, *we*; responses *John*, *John's older brother* and *hit* would be less likely. If I were to say *brother*, the chances are that you would respond with words like *sister*, *father*, *mother*, *son*, rather than *we*, *you*, *atom* or *star*. The signs in the groups of likely responses have similar meanings. For *brother* and *sister* the difference is in terms of the sex of the relative; for *brother* and *father* it is in terms of the genetic relation. These dimensions of contrast recur throughout the paradigm.

The meaning of a sign in a language is dependent in part on the other signs in close paradigmatic relationship with it. In English *we* means 'me and someone else'; it contrasts with *I* in terms of the number of persons specified. Gumbaynggirr (Pama-Nyungan, Australia) has

four words for 'we', *ngalii*, *ngiyaa*, *ngaligay* and *ngiyagay*, as well as *ngaya* 'I'. The first two words, *ngalii* and *ngiyaa*, are used if the group includes the hearer; the second pair, *ngaligay* and *ngiyagay*, if it does not. The first word of each pair is used if there are just two persons in the 'we' group, the second, if there are more. The Gumbaynggirr word *ngalii* does not mean the same thing as English *we* partly because of the other words in paradigmatic contrast to it.

The meaning of a stretch of language depends both on the signs present in it and on the signs absent from it. The same goes for its grammatical structure. The two dimensions, paradigmatic and syntagmatic, are important both to meaning and to form; just as the meaning and form of a sign are inseparable, so also are the paradigmatic and syntagmatic dimensions.

1.3 Design features of human language

Many animals use signs to communicate with other members of their species. Some species of bees, for instance, use dances to indicate the location of a source of nectar (see §10.1). Human beings, however, are obsessed with signs, and can't help seeing them everywhere. Dress is a sign system; so also are the Hindu/Arabic numerals (1, 2, 3, . . .) and traffic lights. Human language occupies a privileged place among sign systems. It is a particularly elaborate sign system that has properties not manifested, or weakly manifested, in other sign systems.

What might these features be? The American linguist Charles Hockett proposed a set of **design features** of human language, a set of features satisfied by all human languages that distinguishes them from other sign systems. This set has undergone modifications and additions since it was first proposed in Hockett (1960). Below we discuss six of the most important features. Some of these will be taken up again in our discussion of animal communication in Chapter 10.

Arbitrariness

We have already mentioned **arbitrariness** as a property of word-signs in human languages, and explained that it is to be understood in the sense that the form and meaning of a word-sign are not connected by necessity. Arbitrariness is a matter of degree, and ranges from highly iconic and motivated (though never bereft of some conventionalization), to purely symbolic.

In the animal world, too, most signs show some degree of conventionalization. In some cases the signs are quite iconic – the dance of some bee species iconically represents the

direction to a nectar source by one of the axes of their figure-eight dance. But the forms for this meaning could easily have been otherwise. Mating and territorial calls and dances of animals are generally even more conventionalized.

Displacement

People often talk about things that are not present. They speak about events and things from distant times and places – about things that happened years ago in far-away places. Indeed, these may be entirely imaginary, like unicorns and time travel. This book would not have been possible otherwise, if language could only be used to describe what is actually physically present in the writer's environment. This is called **displacement**.

Animal communication systems sometimes allow limited displacement, for signalling things that aren't physically present and perceivable. The bees dance can signal presence of nectar at a distance of some kilometres from the hive. Some studies have shown that chimpanzees can sign about items that are not visible. In one study it was shown that the chimpanzee Panzee, using a system of signs on a monitor, could call attention to items of food it observed hidden by a trainer, sometimes days previously. But the displacement revealed in these examples is limited: what is communicated about is something that is relevant to the present circumstances. Thus the invisible food Panzee indicated seems to have always been the last item of hidden food, and the communication was concerned with its retrieval. Displacement is a matter of degree rather than an all-or-nothing thing.

Displacement is not always a good thing to have in a sign system. The system of alarm calls of vervet monkeys (see §10.1) would be compromised if it permitted displacement. It would then no longer be a system of alarm calls, but of calls sometimes used as alarms calling for immediate evasive action, and sometimes referring to the presence of a predator from a different occasion. Similarly, the system of sirens used on emergency vehicles would be of little use if it allowed displacement!

Cultural transmission

Children learn to speak the language or languages used in the environment in which they are reared; they do not inherit their language via parental genes, in the way they inherit hair and skin colour. Languages are passed on by **cultural transmission**. Many of the world's languages are endangered due partly to interruptions in transmission across the generations.

Animal communication systems by contrast are largely instinctive. The communicative noises produced by domestic cats appear to be the same regardless of whether the cat lives in Europe or New Zealand, and regardless of whether it was reared by humans in the virtual absence of other cats.

Some birds do require exposure to the songs of other members of their species. Lacking this, they still instinctively produce songs, but these will be abnormal in some way. This is like some types of body behaviour in human beings such as laughing, smiling and crying: though universal, they admit cultural modifications and elaborations.

Although the language a person speaks is culturally transmitted, the ability to speak is a genetic predisposition. The extent of this predisposition – what aspects of language are genetically encoded – is a controversial issue on which linguists take conflicting positions.

Duality

Utterances in human languages are patterned simultaneously on two levels, the level of form and the level of meaning. This is called **duality**. The Warrwa (Nyulnyulan, Australia) word *yila* 'dog' is made up of sounds that are meaningless in themselves, but when put together in a certain way make up the sign-form. Put together in a different way, for instance as *layi*, and we get a different word, meaning 'alone, singly'. Put together in yet other ways, for example, *iayl*, we get forms that are not possible words in the language. Duality of patterning permits a large number of different words to be made up from a small number of meaningless elements that are put together in various ways.

Duality of patterning is not found in animal communication systems. Their sign-forms are simple in the sense that they cannot be analysed into components that are re-used in other signs; there is an absence of patterning in the forms and the meanings. Each form is completely different from every other form, and does not involve components that are reused to make other forms. The various calls your cat produces are separate whole units, and cannot be divided into parts that can be reused to make other calls with other meanings – *miaou* is not divided into separate sounds like *m* and *i* (*ee*) that could be used in different orders, to produce different calls, say *im*.

Productivity

Productivity or creativity is the characteristic whereby speakers can make new meanings by producing new expressions and utterances. Linguistic signs can be put together to form sequences that may never have been produced before; and even if they are not entirely novel, they may be innovative in that they are not drawn from memory. Not only do we effortlessly create such utterances, but hearers have little difficulty understanding them.

A good deal of what we say is not new: we use formulaic greetings and farewells many times in the average day. We express meanings that have been expressed, with perhaps slight variations in wording, innumerable times before, as in the case of poetry, jokes, oral traditions and urban myths, for instance.

Another aspect of the productivity of language is that speakers can invent new words to express new ideas and new objects and events that they encounter. No living human language has a rigidly closed class of words, that admits no new members. Think of the number of new English words that have been invented in recent years to facilitate talking about computers and the internet. Some of the main ways that new words are incorporated into a language are discussed in §4.2.

The communication systems of non-human animals, by contrast, are typically non-productive, and do not admit new combinations of signs or the invention of new signs for new meanings. The systems allow for the expression of a small set of possible meanings. The honeybees' dance that indicates the location of a nectar source (see §10.1) is restricted to the horizontal dimension, and bees are incapable of communicating information about the location of a nectar source vertically above the hive.

Reflexivity

This book is about human language, and is written in a human language. Your lectures on linguistics are about language and are spoken in a human language. All human languages can be, and often are, used in this way, for conveying information about themselves. This need not be abstruse linguistic information; it could be something as simple as 'that word is not nice to use in polite company'. This property is **reflexivity**.

No known animal communication system allows reflexivity. Likewise, many sign systems human beings employ cannot be used to convey information about themselves. Traffic lights do not allow for messages about themselves, and nor do gestures or facial expressions.

1.4 Speech, writing and signing

The primacy of speech

Speech is the primary medium for language. With the exception of sign languages (which we will talk about soon) and some dead languages, most natural human languages are spoken most of the time. A good number of the world's languages have no tradition of writing, and are exclusively (or almost exclusively) spoken. Even for languages with longish traditions of writing (e.g. Chinese, French, Japanese) most people produce and hear more words in speech than in writing, and spend more time talking than reading or writing. In fact, writing is a recent invention. If you were able to travel back in time just 7,000 years you would find all languages were exclusively spoken – as they had been for tens of millennia previously.

Writing is a system of representing the words of a language visually; certain visual forms and combinations of forms represent words. Writing must be distinguished from other systems of visual representation (like paintings, carvings, notches on sticks and so on) which do not represent words of a language. All systems of writing represent, at least sometimes, aspects of the sound of the spoken word. How consistently and accurately they do this differs from system to system.