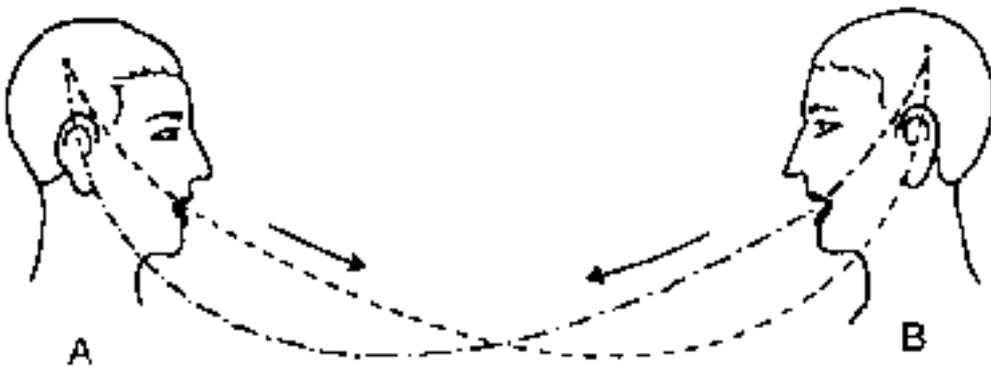


Chapter 2

From meaning to form

The figure below shows how one of the founding fathers of modern linguistics, Ferdinand de Saussure, envisaged the speech situation:



Person A produces speech sounds to transmit ideas from his mind to the mind of person B. Person B more or less successfully reconstructs the ideas of person A in his own mind on the basis of the sound waves that his ears pick up. Since most people are not mind-readers, they need a medium for communication, and language is such a medium.

The traditional branches of linguistics cover different stages on the way from ideas to sound waves (and back again). At one end, we have **semantics**, the study of linguistic meaning. At the other end, we have **phonology**, the study of speech sounds. From one perspective, meaning is what language is all about, the other branches of linguistics being concerned with how meaning is given form, so that it may be conveyed between speakers and hearers. Sounds, on the other hand, are not strictly necessary, and some languages, most notably the sign languages of the deaf, convey linguistic meaning without the use of speech sounds. In the vast majority of languages, however, sounds play a crucial role.

In between semantics and phonology, there are two other branches of linguistics, and both are concerned with the structural principles for the combination of meaningful elements. In traditional terminology, **morphology** is the study of word structure, of how smaller units are combined into words (as in English *sing-er-s*), while **syntax** is the study of sentence structure, of how words are combined into phrases (like *the old man*), clauses (like *that he was dying*) and sentences (like *The old man knew that he was dying*). Syntax and morphology have partly overlapping tasks, and languages differ radically in the degree to which they make use of these two branches to convey meaning. Some languages, such as Vietnamese, have little morphology and much syntax, whereas other languages, such as Inuit (Eskimo), have

much morphology and comparatively little syntax. In this book, the term **grammar** will be used as a cover term for morphology and syntax.¹

2.1 Lexicon and grammar

All languages make use of a **lexicon** and a **grammar**. The lexicon is a mental dictionary containing all **lexical items** (such as words and fixed expressions) in a given language. The grammar is a set of **rules** for the usage of these lexical items, especially for ways of combining them with each other.

2.1.1 Lexical items

A lexical item consists in a relation between meaning and form.²

The **meaning** of a lexical item is different from its **reference**. For instance, the English word *tree* represents a mental **concept** rendered by the *Oxford English Dictionary* as 'a perennial plant having a self-supporting woody main stem or *trunk* (which usually develops woody branches at some distance from the ground), and growing to a considerable height and size'. This concept is something that exists in the mind of a speaker of English; it is a psychological entity. The actual trees found in the physical world all belong to the reference of the word *tree*, not to its meaning, though there is obviously a close connection between the two. As a matter of convention, meanings are put between simple citation marks: 'tree'.

A distinction between psychological and physical entities is also made in the case of **form**. Although the phonetic form of a lexical item is concrete and physical, consisting of sound waves produced and modulated by the various speech organs, the sound shape of a word also has its psychological aspects. For instance, although the sounds [t^h] (aspirated *t*, as in *tea*) and [t] (unaspirated *t*, as in *steal*) are phonetically different (just hold your hand in front of your mouth to feel the difference between the two), this difference is not enough to make speakers of English feel that they are different sounds. This contrasts with speakers of Chinese, for whom the same distinction is vital, because it constitutes the only difference between words like [t^hwó] 'pull' and [twó] 'many; much'.³ In Chinese, therefore, the distinction between [t^h] and [t] has a psychological reality that it lacks in English. A physical sound is called a **phone** and put between square brackets ([t^h] and [t]), while a psychological sound is called a **phoneme** and put between slashes (/t^h/ and /t/). We shall return to this distinction, and the problems it involves, later in this chapter.

Basically, the relation between the meaning and the form of a lexical item is **arbitrary**. There is no good reason why a tree is called *tree* in English, except that most speakers of English agree that this is the case. It is a matter of **convention**. Other languages follow other conventions. On the one hand, the same meaning may be expressed through different forms, as when 'tree' is called *arbre* in French, *mti* in Swahili, *ju* in Japanese and *tlugvi* in Cherokee. On the other hand, one and the same form may express different meanings, as when the syllable written or transcribed *ni* is used to represent the number 'nine' in Norwegian and Danish, the dative particle

¹ Some linguists prefer the term 'morphosyntax' and use 'grammar' in a wider sense, to refer to all the underlying rules of language, including semantics and phonology.

² Saussure uses the terms 'sign', 'signified', and 'signifier' ('signe', 'signifié' and 'signifiant' in French) in basically the same meanings as 'lexical item', 'meaning' and 'form'.

³ Written *tuō* and *duō* in pinyin transcription.

(corresponding to English 'at', 'on', 'in', 'to' etc.) in Japanese, the first-person pronoun 'I' in Hausa and the second-person pronoun 'you' in Chinese. In all these cases, there is no obvious motivation for the relation between meaning and form. There are many interesting exceptions, and we will return to some of them in chapter 3, but it remains true that the relation between the meaning and the form of a lexical item is *basically* arbitrary and conventional.

2.1.2 Grammatical structure

Language does not only consist of individual lexical items, but also of rules for the usage and combination of these items. Such rules also have both meaning and form. Consider, for instance, the following two sentences:

- A. Peter will come.
- B. Will Peter come?

Both sentences are combinations of the same words, but they differ both in meaning (statement vs. question) and form (word order).⁴ In this case, the meaning is expressed through the **structure** of the sentence, not directly through its sounds. Of course, the structure also has consequences for the phonetic shape of the sentence, but the crucial difference does not lie in the phonetic difference between *p-e-t-e-r-w-i-l-l* and *w-i-l-l-p-e-t-e-r*, but between the order of the subject and the following auxiliary.⁵ Compare the following two sentences:

- C. Mary must die.
- D. Must Mary die?

With regard to meaning, the difference between C and D is exactly the same as the difference between A and B. The same is true about the difference in structure, with both pairs representing a contrast between *subject-auxiliary-verb* and *auxiliary-subject-verb* word order. With regard to phonetic shape, however, the difference between C and D (*m-a-r-y-m-u-s-t* vs. *m-u-s-t-m-a-r-y*) is not the same as that between A and B.

There are several differences between lexicon and grammar. The lexicon contains particular **items** that must be remembered individually (such as *Peter*, *will* and *come*), while the grammar contains general **rules** (such as the rule stating that a question may be formed by moving the auxiliary in front of the subject). Lexical form consists in strings of **sounds** (such as /*pɪ:tə*/, /*wɪl*/ and /*kʌm*/), while grammatical form also involves **structural** patterns (such as the ordering of subject and auxiliary). Also, the lexicon tends to treat each item as a whole, while the grammar is always concerned with a combination of meaningful elements.

	<i>Objects</i>	<i>Form</i>	<i>Complexity</i>
<i>Lexicon</i>	individual items	strings of sounds	whole
<i>Grammar</i>	general rules	structural patterns	combination

⁴ For the sake of simplicity, we shall look away from the fact that they also differ in intonation pattern, or, in writing, in the use of punctuation marks.

⁵ The terms 'subject' and 'auxiliary' are discussed later in this chapter.

The distinction is not absolute. First, what is a rule? Is the auxiliary *will* a lexical item meaning 'to be going to' or a grammatical marker employed by the rule for future marking in English? Second, grammatical meaning is expressed not only through structure, but also through affixes (like plural *-s*) and function words (like the perfect marker *have*). And third, the lexicon also contains a large number of complex items, such as irregularly inflected words like *children*, derived words like *kindness*, compounds like *milk-shake* or idioms like *kick the bucket*. In such cases, grammatical structure also enters into the lexicon. In fact, information about the grammatical properties of each lexical item, such as word class (noun, verb, adjective etc.), is an important part of the lexicon. The fact that there is some overlap, however, does not make the distinction between lexicon and grammar less important.

As we have seen, the connection between meaning and form in simple lexical items is usually arbitrary. This is much less true of grammatical structure, which is often at least partly **motivated**. While both *milk* and *shake* are arbitrary names, the compound *milk-shake* is not, since knowing the words *milk* and *shake* is enough to indicate, albeit imprecisely, the meaning of the word *milk-shake*. And while the plural form *men* is arbitrary, the plural form *hens* is not, since knowing the word *hen* and the plural affix *-s* is enough to determine the meaning of *hens*. ??

Furthermore, some grammatical structures are not only motivated, but **iconic** in the sense that they function as images of the reality that they refer to. The most obvious case is temporal iconicity. In the following famous sentence, reportedly uttered by Julius Caesar after he had conquered the Pharnaces, the sequence of the three clauses reflects the temporal sequence of the events referred to:

I came, I saw, I conquered.

If the sequence of the clauses were changed, so would the temporal sequence of the events referred to. The temporal iconicity principle is extended to cover a number of other grammatical structures:

1. Given information tends to precede new information (since in the mind given information exists prior to new information).
2. In conditional sentences, the if-clause tends to precede the then-clause (since the if-clause usually refers to events that exist prior to the events of the then-clause).
3. Clauses expressing cause tend to precede clauses expressing effect (since a cause precedes its effect in time).

None of these principles are unbreakable, but they seem to apply to a greater or lesser extent in all known languages across the world.

2.1.3 Concepts

We noted above that meanings are mental concepts. The meaning of the word *ball*, for instance, is a mental idea of what it takes to be a ball, defined by the Oxford English Dictionary as a 'globular body'. Of course, such concepts are assumed to have a reference, to refer to some kind of external reality, either in the physical world or in other mental or even spiritual realms. (What is, for instance, the reference of the word *God*?) Meaning and reference, however, are not the same. The meaning of the

word *ball* is not the actual balls that happen to roll around (or fail to do so) in our physical world (or even in our fantasy or in some spiritual realm), but, again, our concept or idea of what it implies to be a ball, to be a globular body.

Many concepts are clearly **socially constructed**, formed by the child (or, sometimes, the adult) in the process of learning how to relate words and grammar to reality. To form a concept of a

computer, for instance, one needs a certain experience or, at least, extensive explanation. In the case of *ball*,

however, some linguists would argue that the concept of a globular body is not, or at least not only, socially constructed, but **innate**. While most of us have hardly ever seen a perfectly globular body, all of us have a concept of what it means for something to be one. Is that because we are born with this

idea? Some would say yes and insist that

the basic elements of semantics are universal and innate. Others would say no and insist that even if the concept of a ball should turn out to be universal, that is not because of some innate idea, but because the experience of (nearly) globular bodies is common to mankind all over the world. Whether or not some basic concepts are innate, however, the complex webs of meaning in natural languages are undoubtedly socially constructed. An innate idea of a globular body will not help a speaker of English to understand how the word *ball* can be used to refer to an American football or an English rugby ball, none of which is particularly globular.

All concepts belong to one or more semantic **domains**, to larger areas of linguistic meaning. For instance, seconds, minutes, days, weeks, and years belong to the *temporal domain*; red, green, blue, and yellow belong to the *colour domain*, offside and penalty kicks belong to the *football domain*, and ski wax and pistes belong to the *skiing domain*. Some domains, like the temporal domain and the colour domain, are universal, while others, like the football domain and the skiing domain, are only found in certain cultures. Domains are of many different kinds; some are quite general, while others are highly specific.

Dictionary definitions are often based on such domains. In the *Oxford English Dictionary*, the meaning of the noun *milk* is explained as follows:

The meaning of milk

A whitish fluid, rich in fat and protein, secreted by the mammary glands of female mammals (including humans) for the nourishment of their young, and taken from cows, sheep, etc., as an article of the human diet.

Among the domains that this definition is based upon are those of *color*, *anatomy*, *zoology*, *alimentation*, and *dairying*. Without some basic knowledge about these domains, we cannot understand all the aspects of this definition. Of course, not all speakers of English have such a broad understanding of what milk is. As children of 4 or 5 years we may only know that milk is a white liquid that is kept in the refrigerator and that our parents give us to drink in a cup.

Another way of studying concepts is by analyzing them into smaller components, often referred to as **semantic features** (or components or properties).



Is a non-globular ball a ball?

Such analysis builds on the similarities and differences between various concepts. For instance, the concepts of ‘man’, ‘woman’, ‘boy’ and ‘girl’ all share the feature HUMAN, ‘man’ and ‘woman’ share the feature ADULT, ‘boy’ and ‘girl’ share the feature YOUNG, ‘man’ and ‘boy’ share the feature MALE, and ‘woman’ and ‘girl’ share the feature FEMALE:

		MALE	FEMALE
HUMAN	ADULT	‘man’	‘woman’
	YOUNG	‘boy’	‘girl’

The features MALE and FEMALE clearly belong within the same axis, the **semantic category** of gender, while the features ADULT and YOUNG belong within another axis, the semantic category of age.

Such analysis into semantic categories and features is useful in bringing out both parallels and differences between sets of concepts. For instance, there are both clear parallels and one clear difference between the concepts for human beings above and the terms for ovine, bovine and equine beings below:

		MALE	FEMALE
OVINE	ADULT	‘ram’	‘ewe’
	YOUNG	‘lamb’	

		MALE	FEMALE
BOVINE	ADULT	‘bull’	‘cow’
	YOUNG	‘calf’	

		MALE	FEMALE
EQUINE	ADULT	‘stallion’	‘mare’
	YOUNG	‘foal’	

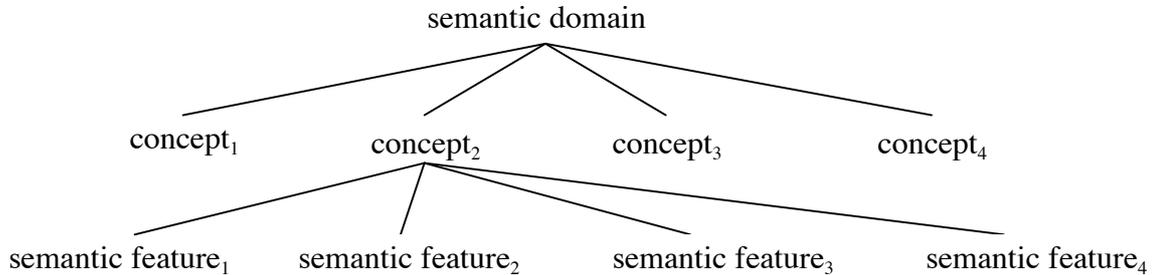
All four sets of concepts are analyzable in terms of the same semantic categories and features: gender (MALE vs. FEMALE) and age (ADULT vs. YOUNG). The difference is that young humans are subdivided into male and female, whereas the young non-human animals are not. In other words, the concepts for young human beings are **marked** (or specified) for gender, whereas the concepts young ovine, bovine and equine beings are **unmarked** (or neutral or unspecified) for gender.⁶

Strictly speaking, we should distinguish more clearly between concepts and the actual words of a living language. Although the English language does not distinguish between terms for ‘male lamb’ and ‘female lamb’, ‘male calf’ and ‘female calf’, ‘male foal’ and ‘female foal’, this does not necessarily mean that speakers of English do not have these mental concepts. Most speakers of English are certainly

⁶ Note some other differences between the four sets of terms analyzed here: In humans, the terms marked for gender and age are all commonly used in everyday language, while the unmarked term *person* is slightly more technical. In ovines and equines, the unmarked terms *sheep* and *horse* as well as the young terms *lamb* and *foal* are common, while *ram* and *ewe* as well as *stallion* and *mare* are more specialized. In bovines, there is no unmarked term at all, the species usually being referred to by the adult female term *cow*, though *ox* and *calf* are also common terms. Cf. the discussion of basic level terms later in this chapter.

able to form such concepts. It is only that their vocabulary does not prompt them to do so.

From what has been said above, one might get the impression that each semantic domain contains a number of concepts, each of which may in turn be analyzed into semantic features:



In fact, however, semantic domains (like *color*, *anatomy*, *zoology*, *alimentation*, and *dairying*) are also concepts, and so are semantic features (like MALE, FEMALE, ADULT, and YOUNG). To a large extent, semantic analysis implies analyzing concepts in terms of other concepts.

Furthermore, the difference between semantic domains and semantic features should not be exaggerated. In fact, features like HUMAN, OVINE, BOVINE, EQUINE, MALE, FEMALE, ADULT, and YOUNG may also be used to form classes of concepts that share the same feature, so-called **semantic classes**. These are very similar to what we have called semantic domains.

2.1.4 Conceptualization

In addition to being shaped by our social experience and our genetic endowment, our concepts are also partly shaped and reinforced by our language. Different languages **conceptualize** the same reality in different ways. English, for instance, treats blue and green as different colours, while other languages, like the Mexican language Tarahumara, treat them as variants of the same colour. English has one term for 'cousin', while many European languages distinguish between male and female cousins (French *cousin* vs. *cousine*, Spanish *primo* vs. *prima*, German Vetter vs. Base), and Chinese has eight different terms for 'cousin' based on gender (male vs. female), age (older vs. younger) and whether or not they have the same family name (paternal vs. maternal).

Learning a new language, therefore, often implies learning new conceptual distinctions, like the one between 'blue' and 'green', 'male cousin' and 'female cousin', 'paternal cousin' vs. 'maternal cousin', etc. In other cases, we learn to look away from conceptual distinctions routinely made by our own language. Speakers of French, Spanish and German who learn the English word *cousin*, also learn a new concept, viz. one that is unmarked with regard to gender. Chinese-speaking learners of English will have to learn to look away from not only the distinction between male and female, but also that between older and younger, as well as paternal and maternal cousins, since Chinese also lacks an unmarked term corresponding to English *cousin*. And while English makes a conceptual distinction between 'blue' and 'green', it lacks an unmarked term corresponding to Tarahumara *siyóname* (which covers both blue and green).

Basically, language contributes to conceptualization in two ways, through lexicon and grammar. A concept is given **lexical expression** (or it is being **lexicalized**) when a word (or some other lexical item) is used to represent it, as when German *Vetter* and *Base* lexicalizes the concepts of 'male cousin' and 'female cousin'. A concept is given **grammatical expression** (or it is being **grammaticalized** or **grammaticized**)⁷ when a morphological or syntactic construction is used to represent it, as when English marks the conceptual distinction between 'substance' and 'object' by distinguishing between mass nouns (*water, clay, love*) and count nouns (*house, sculpture, idea*). Morphologically, mass nouns have no plural form, while count nouns do; syntactically, mass nouns cannot be directly preceded by numerals or words like *many*, while count nouns can. A large number of languages across the world do not make an equally clear distinction between the two types, because their nouns do not have plural forms and may not be directly preceded by numerals, and because the same word is used for *much* and *many*. We will come back to the distinction between mass nouns and count nouns later in this chapter.

Whether or not a concept is lexicalized in a given language is not always an either-or question. It makes sense to talk of **degrees of lexicalization**. For instance, it has been proposed that all languages lexicalize the concepts of 'man' and 'woman'. In most languages this is done by means of simple words like English *man* and *woman*.⁸ The corresponding Chinese words, however, are complex terms consisting of the word *nán* 'masculine' or *nǚ* 'feminine' plus the word *rén* 'person':

nán-rén 'man'
nǚ-rén 'woman'

Japanese goes one step further and adds the grammatical particle *no* between *otoko* 'masculine' or *onna* 'feminine' and *hito* 'person', marking clearly that each expression consists of two separate words (in addition to the particle), the first of which modifies the second:

otoko no hito 'man'
onna no hito 'woman'

Even in the Japanese case, however, one may still argue that *otoko no hito* and *onna no hito* are fixed expressions, and that the concepts of 'man' and 'woman' are lexicalized, although they are represented by fixed, idiomatic phrases rather than single words. The degree of lexicalization, however, is much weaker than in English. We get the following correspondence between linguistic form and degree of lexicalization:

⁷ The terms 'grammaticalization' and 'grammaticization' are, however, more often used in another meaning, viz., the historical development of a word into a grammatical marker, as when the English numeral corresponding to modern *one* developed into the article *an* or *a*.

⁸ Historically, even *woman* is a complex term, going back to Old English *wīfman*, from *wīf* 'woman' and *man* 'person'.

Degrees of lexicalization	STRONG	MEDIUM	WEAK
Linguistic form	simple word	complex word	fixed phrase
Examples	<i>man</i> <i>woman</i>	<i>nán-rén</i> <i>nǚ-rén</i>	<i>otoko no hito</i> <i>onna no hito</i>

The difference in degree of lexicalization is reflected in actual language use. While the English terms *man* and *woman* are often used even if the gender of the person involved is irrelevant, the Chinese terms *nán-rén* / *nǚ-rén* and the Japanese terms *otoko no hito* / *onna no hito* are normally only used when the gender of the person is highlighted. In contrast to its Chinese and Japanese equivalents, the English word *person* sounds slightly formal and technical. Thus, although it may be true that the concepts of 'man' and 'woman' are lexicalized in all living languages, they are so to different degrees and in different ways.

2.2 Meaning

One way of studying meaning is to do it on the basis of the relationship between language and the world surrounding us. As learners of foreign languages, we often find ourselves in the following two situations:

THE SEMASIOLOGICAL SITUATION	THE ONOMASIOLOGICAL SITUATION
We present a word and ask a native speaker, "What kinds of objects can it appropriately be used about?"	We present an object and ask a native speaker, "What words can appropriately describe it?"

In the following, we shall start by looking at meaning from these two perspectives.

2.2.1 Semasiology and prototypes

In the **semasiological situation**, our perspective goes from language to the world. Let us imagine that you are talking to Li, a native speaker of Chinese, in his home. You ask him to show you an appropriate instance of the kind of object that is designated by the Chinese word *bēizi* 'drinking vessel'. Hopefully, Li will show you a drinking vessel of some kind, but there are many kinds of drinking vessels. They vary in material, size, and shape, they come with and without a handle or two, with and without a lid etc. Some of the variation is shown in PICT. 1.



PICTURE 1. Drinking vessels

Probably, Li will be of the opinion that some drinking vessels are better representatives of the category that *bēizi* is used about than others, and, since he wants to help you in your study of the Chinese language, he will show you a good representative of the category, an instance that we may talk about as a **prototypical** instance. Most concepts have prototypical instances, or **prototypes**, entities to which a word is typically applied. We may guess that a *bēizi* made of porcelain (also known as china!) will be closer to Li's idea of the prototypical *bēizi* than those made of glass, paper, silver or some other material. He will probably point to something resembling a cup, like one of those in the upper row in PICTURE 1, especially the two in the middle. In fact, *bēizi* is translated into English as 'cup' in most Chinese–English dictionaries, but this translation is based on the prototypical meaning, and in fact all the drinking vessels in PICTURE 1 can be referred to as *bēizi*. It is tempting to translate *bēizi* into English as 'drinking vessel, and in particular a porcelain cup' as a reflection of its usage.

Just as concepts may differ from language to language (*bēizi* covering both English *cup* and *glass*), so may prototypical representatives of the same concept. In one study, for instance, it turned out that native English speakers in Britain tended to regard the potato as a prototypical vegetable, while many immigrants in the country did not regard it as a proper vegetable at all.

2.2.2 Onomasiology, hyponymy and basic level terms

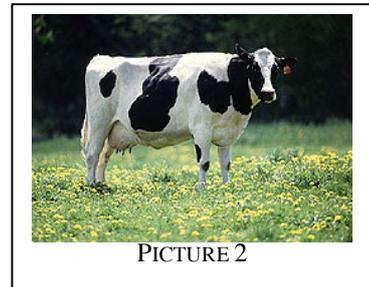
In the **onomasiological situation** our perspective goes from the world to language. You show Li a cup, and ask him to tell you what Chinese word(s) he would regard as an appropriate name or designation for it. We expect him to mention at least the word *bēizi*. But there are many other possible designations. Li might have called it *chábēi* 'teacup', *qìmǐn* 'vessel', or even *dōngxi* 'thing, object'! The four words *chábēi*, *bēizi*, *qìmǐn*, and *dōngxi* may all be used correctly about the cup. These words belong to different *levels* in a system of classification, with an increasing degree of generality:

teacups, cups, and vessels are kinds of things; teacups and cups are kinds of vessels, and teacups are kinds of cups. In semantics, a less general term is a **hyponym** of the more general term, and this phenomenon is referred to as **hyponymy**. *Jiǔbēi* ‘winecup’ and *chábēi* ‘teacup’ are hyponyms of *bēizi* ‘drinking vessel (and in particular a china cup)’, which in turn is a hyponym of *qìimǐn* ‘vessel’. The more general term is referred to as a **hyperonym** or simply a **superordinate** term, so that *qìimǐn* ‘is superordinate to *bēizi*, and *bēizi* is superordinate to *jiǔbēi* and *chábēi*.

Li did not refer to the cup as *bēizi* just by coincidence, but because cups are habitually called *bēizi* in Chinese. In the hierarchy of terms that can be applied to cups, *bēizi* is the **basic level term**, the term used unless there are good reasons to do otherwise. The basic level is the highest level at which we can form a mental image of a concept. We can easily form a mental image of a teacup or a cup, but vessels vary too much in shape, and we have to go back down to the basic level. Terms above the basic level tend to have a technical or scientific flavor, which is the case with Chinese *qìimǐn* ‘vessel’.

Let us imagine that you are asking Aamadu, a native speaker of Fula, what he sees on PICT. 2. He will probably tell you that it is a *nagge* ‘cow’. But he could also have called it *jamale* ‘cow with big patches of black and white’ or *wumale* ‘cow without horns’. Alternatively, he could have stated that it is a picture of *ndabbawa wuro* ‘domestic animal’ (literally, ‘animal of the village’), simply *ndabbawa* ‘animal’, or *huunde*, a noun meaning ‘animal’ or ‘thing’ more generally.⁹

But *nagge* is clearly the basic level term applied to the «entity» in PICT. 2 (just as *cow* is the basic level term in English). It is the term a native speaker of Fula comes up with when seeing the picture. The terms *jamale* and *wumale* are technical terms for cow experts (who, admittedly, there are lots of among the Fula, traditionally a people of cattle nomads), while simply telling that it is *ndabbawa wuro* ‘domestic animal’ or *ndabbawa* ‘animal’ sounds like a conscious attempt to be less informative than expected. We can easily form a mental image—or make a drawing—of a cow, while the same cannot be said of a domestic animal, which is a generalization across cows, horses, sheep and goats. These latter animals, on the other hand, are also easy to conceptualize.



PICTURE 2

Basic level terms vary from language to language. For instance, both English *cow* and Fula *nagge* are gender-specific terms, while the corresponding basic level term in Chinese, *niú*, is not specified with regard to gender, and its hyponyms *gōng-niú* ‘ox’ and *mǔ-niú* ‘cow’ are clearly less basic. As it happens, it is a general tendency for Chinese basic level terms to be gender-neutral where English and many other languages have gender-specific terms. As we saw above, *man* and *woman* are basic level terms in English, the hyperonym *person* being slightly more technical in flavour, while the Chinese basic level term is the gender-neutral *rén* ‘person’, the hyponyms *nán-rén* ‘man’ and *nǚ-rén* ‘woman’ being less basic and therefore much less commonly used.

⁹ *Huunde* means ‘animal’ explicitly in expressions like *huunde ladde* ‘wild animal’ (literally, ‘animal/thing of the bush’).

2.2.3 Polysemy, homonymy, and synonymy

Meaning is not only about relations between language and the outside world, but also between elements within the language itself. We have already seen this in the case of hyponymy discussed above. In the present subsection, we shall look at three other types of semantic relations.

The first of these is **polysemy**, the phenomenon of a single word having several related meanings. Take, for instance, the English word *date*, which may refer to, among other things, a point in time or an appointment (especially an appointment with romantic undertones). The relationship between 'point in time' and 'appointment [at a certain point in time]' is obvious; these meanings are clearly related. In these senses, therefore, *date* is only one polysemous word:

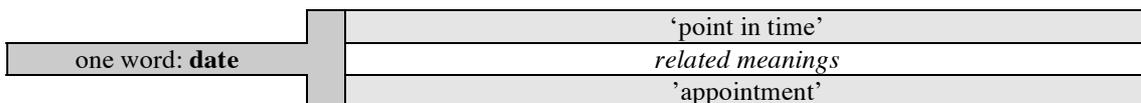


FIGURE 2. The polysemy of the English noun *date*: one pronunciation, two (or more) related meanings

The same word may even be used to refer to the person with whom one has an appointment, especially if the appointment is a romantic one. The relationship between 'appointment' and 'person with whom one has an appointment' is also clear, and again we have a case of polysemy.

Polysemy may be fruitfully contrasted with **homonymy**, the phenomenon of two words with unrelated meanings having, by accident, the same pronunciation. As it happens, the English spelling *date* (and its pronunciation [deɪt]) may also represent another word, which refers to the fruit that grows on a date palm. The meaning of this word is clearly unrelated to the meanings of the word *date* 'point in time; appointment; person with whom one has an appointment'. The two words *date* are homonyms:

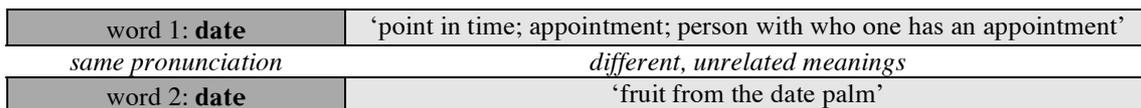


FIG. 3. The homonymy of the two English words *date*: one pronunciation, two unrelated meanings

Both words are in fact polysemous, the fruit term also sometimes referring to the whole fruit tree (the date palm). Homonymy, therefore, holds between independent words each of which may be polysemous:

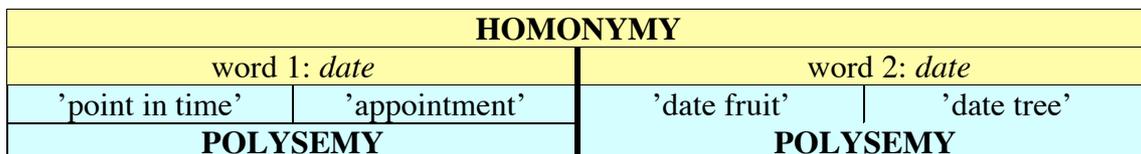


FIG. 4. The homonymy and polysemy of the two English words *date*

Actually, homonymy is not a semantic relation at all. The meanings in question are unrelated, though they happen to be expressed through the same form.

When different words (with different pronunciations) have identical meanings, we have **synonymy**. The words *date* (in one of its meanings) and *rendezvous* are synonyms:

word 1: <i>date</i>	'appointment'
different pronunciation	<i>same meaning</i>
word 2: <i>rendezvous</i>	'appointment'

FIGURE 5. The synonymy between English *date* and *rendezvous*: two pronunciations, one meaning

However, *date* and *rendezvous* are not totally synonymous, only partially so. Not only do they have different connotations, a *date* being much more casual than a *rendezvous*, but the two words do not have the same set of related meanings. The word *rendezvous* does not have the meaning 'point in time', but it does have other meanings that *date* lacks, such as 'an appointed place of meeting' and 'a base for naval ships or for military units'. Both words are polysemous, but in different ways:

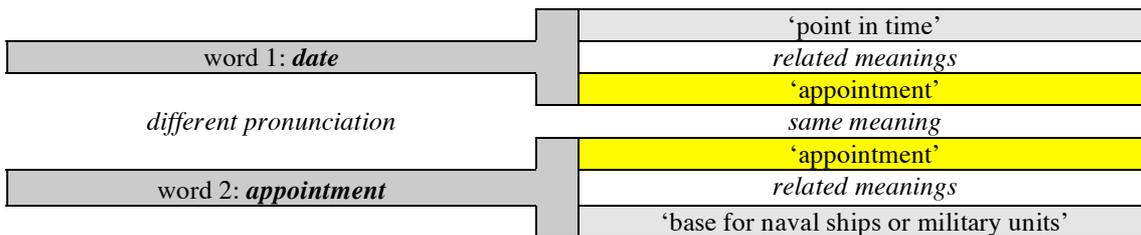


FIG. 6. The partial synonymy between English *date* and *appointment*

In natural languages, total synonymy is very rare, if it exists at all. Synonymy nearly always means **partial synonymy**.

2.2.4 Metaphor and metonymy

The English noun *foot* is highly polysemous, and has at least the following five meanings:

The meanings of foot

- I. 'the part of the leg beneath the ankle'
- II. 'a length unit; 12 inches'
- III. 'a rhythm unit in poetic meter; a stretch of syllables of which one has primary stress'
- IV. 'lower part of an object (such as a mountain)'
- V. 'the part of a stocking that covers the foot'

On the basis of *foot*, we shall take a closer look at how **semantic relatedness** can be described in a more precise way.

The meaning 'the part of the leg beneath the ankle' is placed as *number I* on the list. This is the **primary** (or *basic* or *central*) **meaning**, from which the other **extended meanings** are most naturally derived. There is an associative relationship between the primary meaning and meaning number II, since the length unit *foot* is originally based on the length of the body part. There is also an associative relationship between the primary meaning and meaning number III, since the rhythm unit *foot* reflects the common habit of using the foot to beat the rhythm while reciting poetry. Both of these relationships are instances of **metonymy**:

Metonymy: an expression that basically designates one entity comes to be used of another entity in the same domain. The two entities are closely associated in space, time or cause, or by one being a part of the other.

Cases where one entity is part of the other are common. In now obsolete usage among anatomists, *foot* could refer to the whole leg. This is referred to as **pars-pro-toto**.

The relationship between the primary meaning and meaning IV is different. The foot of a person and the foot of a mountain are not associated in space, time or cause, or by one being a part of the other. Instead, this usage of *foot* reflects the fact that we may, to some extent, structure a mountain in terms of our own bodies. Just as human feet are (usually) the lowest parts of the human body, so the foot of a mountain is the lowest part of a mountain. This is called **metaphor**:

Metaphor: one domain is thought of or understood in terms of another domain.

The human body is one domain and the topography of mountains is another. When mountains are thought of in terms of the human body, it follows that the lowest part of a mountain may be called its *foot*. The foot of a human being and the foot of a mountain are analogous entities in two different domains. Metaphors are *mappings between different domains*, where the structure of one domain, the **source domain** (like the human body) is imposed on another domain, the **target domain** (like the topography of mountains). As a general rule, the source domain is a more familiar knowledge structure than the target domain.

An interesting example of structure imposition from a familiar source domain to a less familiar target domain is found in the Fula dialect of Maasina in Mali, where the bicycle is called *pucel njamndi*, literally ‘little iron horse’ (from *pucel* ‘little horse’ and *njamndi* ‘iron’). This name indicates that the speakers have imposed a «horse structure» on the bicycle. On the basis of this creative and fruitful construal of a new technical device, the Fula speakers started using equine terminology for the different parts of the bicycle, as illustrated in TABLE 1.

TABLE 1. *Maasina Fula horse and bicycle terms*

TERMS	MEANING IN THE SOURCE DOMAIN	MEANING IN THE TARGET DOMAIN
<i>koyngal</i>	‘foot, leg’	‘wheel’
<i>yitere</i>	‘eye’	‘lamp’
<i>kirke</i>	‘saddle’	‘seat’
	HORSE 	BICYCLE 

Let us finally return to the English word *foot* and compare its primary meaning to meaning V. On the one hand, the part of a stocking that covers the human foot is spatially associated with the human foot; thus we may see this as an instance of metonymy. On the other hand, as in the foot of a mountain, this part of the stocking is also its lowest part, and the two entities belong to different domains (body part vs. clothing); thus we may also see this as an instance of metaphor.

2.2.5 Sentence meaning

Words are assembled into **sentences**. The meaning of a sentence is determined by the meaning of the words (or other lexical units) and grammatical structures of which it is composed.

Sentences designate **situations**, that is, mental representations of a state of affairs. To get an understanding of how language describes situations, the following four elements must be distinguished:

THE FOUR ELEMENTS OF A SITUATION

- The **event**
- The **participants** in the event
- The **setting** where the event and its participants are situated
- The **ground** - the situation in which the sentence is uttered

Sentence semantics typically concerns the associations between the elements of a situation. The event is linked to the participants. The event and the participants are linked to a setting. The event, the participants, and the setting are linked to the ground.

EVENT

Events are usually referred to with verbs.

PARTICIPANTS

The participants are **entities** playing different roles in the event, referred to as **thematic roles** (sometimes called semantic roles). The study of entities belongs to lexical semantics, while the roles entities play in an event is an important part of grammatical semantics. Roles differ somewhat from one verb to another, so that the roles of *beat* are *the beater* and *the beaten*, and the roles of *devour* are the *devourer* and the *devoured*, but linguists have tried to make some generalizations. Some important roles are **agent**, **instrument**, **patient**, and **benefactive**.

The meaning of the prototypical verb as an **energetic interaction** where energy from an **energy source** (*agent*) is transferred to an **energy sink** (*patient*), as illustrated in the Arabic sentence in (9), meaning ‘the father [=agent] beat his son [patient]’.

The prototypical **agent** is an animate entity that instigates an active event with will and intention, while the prototypical **patient** is an inanimate entity that undergoes, is changed by, or is affected by the active event. A prototypical **instrument** is an inanimate entity by means of which an active event is carried out. It is used by the agent to affect the patient, and energy may be said to “flow” through it on its way from the agent to the patient, as depicted in FIG. 9.

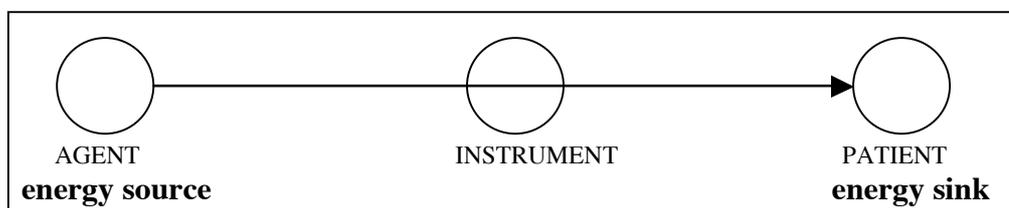


FIGURE 9. *The energy flow from agent through an instrument to a patient.*

These three roles are illustrated by sentence (11), where ‘he’ is the agent, ‘thief’ is the patient, and ‘truncheon’ is the instrument:

- (11) He beat the thief with a truncheon.
 AGENT PATIENT INSTRUMENT

The event, the participants, and the setting are anchored to the ground in several ways:

The past tense form *shot* places the event at a point in time preceding the ground. The agent is identified as one of the participants in the ground, that is, the speaker: *I*.

Definite articles give the information that the patient and the instrument are already known to the participants in the ground: *the fox, the gun*.

2.3 Words

All languages have **words**, and most of us feel that we know what a word is. A wide variety of modern written languages mark word boundaries by means of spacing. But even English is not consistent in this respect. Should one, for instance, write *tax payer*, *tax-payer* or *taxpayer*? Why, according to the *Oxford English Dictionary*, is *road map* written as two words, while *roadwork* is written as one, and *road-horse* with a hyphen? And why are *today* and *tonight* written in one word, while *to hand* and *to work* (meaning 'at work' in colloquial American English) are written in two words? Such idiosyncracies of English orthography prompt us to ask: What is a word?

One possible answer is that a word is a meaningful unit with a relatively high degree of autonomy. Thus, *happier* is one word and *more happy* two, because *-er* is less autonomous than *more*, although they have the same meaning. In other words, the degree of cohesion between different elements within a word is much higher than that between different words within a phrase.

The degree of autonomy of the word, as well as the degree of cohesion within the word, is reflected both in its grammatical and phonological properties. While *happier* is inseparable (nothing may be inserted between *happi-* and *-er*), *more happy* is not, as is clear from sentences like *After my divorce, I have become more, not less happy*. And while *redneck* has one main stress, *red neck* has two. Exactly how word boundaries affect grammar and phonology varies from language to language.

The term 'word' is useful in describing most languages in the world. The famous linguist Edward Sapir taught a speaker of the American Indian language Nootka to write his own language. The Indian had no difficulty in determining the words, and in the hundreds of pages of Nootka text that he wrote down, word boundaries are virtually always placed exactly where a linguist would place them.

The centrality of the word, however, varies a lot across the world. Many languages do not have a non-technical word for 'word'. Chinese is one of them, and written Chinese does not mark word boundaries. Even when the language is written with the Roman alphabet, it is much more common to insert a space between every syllable than between every word. There is much disagreement even among specialists on how to parse a Chinese sentence into words.

2.3.1 Word classes

Words belong to different **word classes** (or parts of speech), each class being characterized by a mixture of semantic and grammatical properties. Different languages have different word classes, though some word classes seem to be more or less universal.

NOUNS AND VERBS

The two most basic word classes are **nouns** (like *man, dog, sunflower, stone, water, clay* etc.) and **verbs** (like *kill, fall, grow, like* etc.). The distinction between nouns and verbs is found in most languages. A few languages have been reported to lack this distinction, though this is controversial. In the following word pairs from the native American language Nootka, the same stem is used for nounlike and verblike meanings:

[qo:ʔas] ‘a man’ vs. [qo:ʔas-ma] ‘[he] is a man’
[wa]a:k] ‘a going; a trip’ vs. [wa]a:k-ma] ‘[he] goes’.

It remains true, however, that the vast majority of languages in the world do make a distinction between nouns and verbs.

The basic semantic properties of nouns and verbs are more or less the same everywhere. Nouns typically refer to **entities** (objects or substances), while verbs typically refer to **processes** (events or states). Both entities and processes may be **concrete**, such as the entity *ball* and the process *walk*, or **abstract**, such as the entity *democracy* and the process *become*. Furthermore, processes may be **entified** (seen as entities) and referred to by nouns, e.g. *singing* (in *his singing never ended*).

The grammatical characteristics of nouns and verbs vary a lot from language to language. In many languages, including English, nouns typically function as subjects and objects. English verbs may also be used as subjects or objects, but only in the infinitive (*to sing*) or the gerund (*singing*) forms. In English, nouns, but not verbs, may occur directly after the articles *the* and *a(n)*. And while English verbs are inflected for tense, mood, person and number, nouns are only inflected for number, if at all.

COMMON NOUNS VS. PROPER NOUNS

One group of words that is usually included among nouns is names like *Tom, Brazil, January* and *Adidas*. While ordinary nouns are referred to as **common nouns**, such names are referred to as **proper nouns**. Like common nouns, proper nouns refer to entities, though they do not have a general meaning, only a specific reference. Like common nouns, proper nouns typically function as subjects and objects. But unlike common nouns, they do not occur directly after the articles *the* and *a(n)*, and they are never inflected for number. The term ‘noun’ is primarily used to refer to common nouns.

COUNT NOUNS VS. MASS NOUNS

In many languages, there is a clear distinction between **count nouns** and **mass nouns**. English count nouns, such as *horse*, share the following grammatical characteristics:

- they have a singular and a plural form (*horse* vs. *horses*)
- they may occur with words such as *many* or *few* (*many/few horses*)
- they may occur with numerals (*two horses*)
- they may occur with the indefinite article (*a horse*)

In contrast, English mass nouns, such as *smoke*, share the following characteristics:

- they do not have a plural form (**smokes*)
- they occur with *much* or *little* rather than *many* or *few* (*much/little smoke*)
- they do not occur with numerals (**two smokes*)
- they do not occur with the indefinite article (**a smoke*)

Count nouns typically refer to **objects**, while mass nouns typically refer to **substances**.

- An **object** is a sharply delineated entity, and if it is divided into smaller pieces, these pieces are no longer instances of the same object.
- A **substance** is not sharply delineated, and if it is divided into smaller pieces, these pieces are instances of the same substance.

While a horse cut in two does not give two horses, smoke remains smoke even if divided in two.

The distinction between count nouns and mass nouns plays a central role in the grammar of English, as it does in Swahili and many other languages of the world.¹⁰ There are also many languages, however, where it plays at best a peripheral role, since their nouns make no distinction between singular and plural forms, they make no distinction between *many/few* and *much/little*, numerals never precede nouns directly, and they have no indefinite article. This is true of a large number of languages along the Pacific Rim, in East and Southeast Asia, Polynesia and native America.

CLASSIFIERS

In languages where the distinction between count noun and mass noun plays a peripheral role, numerals do not directly modify any nouns. In these languages, numerals are typically followed by a **classifier** (sometimes called a measure word). Classifiers resemble English nouns like *cup*, *piece* and *spray* in *a cup of tea*, *a piece of meat* and *a spray of flowers*, but there are also many differences:

1. Classifiers are used in connection with all nouns, not just mass nouns. It is as if one is saying *one piece [of] man* instead of *one man*.
2. The meaning of many classifiers is weakened. In a way, one does not really say *one piece [of] man*, since the word corresponding to *piece* often has no clear meaning at all.
3. Unlike English *cup*, *piece* and *spray*, classifiers clearly constitute a separate word class, and most of them are never used as ordinary nouns. In Chinese, for instance, the noun for 'cup' is *bēizi*, while the classifier for 'cup' is *bēi*.

¹⁰ The correspondence between the count/mass noun distinction and the distinction between objects and substances is only approximate. In English, for instance, *cloud* is a count noun, although dividing a cloud in two does produce two clouds, and *furniture* is a mass noun, although cutting a piece of furniture in two does not produce two pieces of furniture. Note that many words have both count noun and mass noun usages, such as the mass noun *oil* (denoting the substance) vs. the count noun *oil* (pl. *oils*, denoting a type of oil).

PRONOUNS

Words that typically "stand for" a noun or a noun phrase are called **pronouns**. The most common pronouns are **personal pronouns**, like the following English forms:

		1st person	2nd person	3rd person		
				masculine	feminine	neuter
Singular	Subject form	<i>I</i>	<i>you</i>	<i>he</i>	<i>she</i>	<i>it</i>
	Object form	<i>me</i>		<i>him</i>	<i>her</i>	
Plural	Subject form	<i>we</i>		<i>they</i>		
	Object form	<i>us</i>		<i>them</i>		

As far as we know, all languages have personal pronouns. Personal pronouns are always distinguished according to person (1st, 2nd and 3rd), though quite a few languages have two variants of the 1st person plural, an inclusive form (the 'we' that includes 'you') and an exclusive form (the 'we' that excludes 'you'). Personal pronouns are also usually distinguished according to number (singular vs. plural; in some languages the dual and even the trial are given special forms), even in languages that do not distinguish singular and plural forms of nouns. The distinctions of case (subject form vs. object form) are much less common, though there are many languages with a much more fine-meshed case system than English.

A related set of pronouns are **reflexive pronouns**, which are typically used to refer back to the subject of the clause of which they are a part. Compare the following two sentences:

- A. *She killed herself.*
 B. *She killed her.*

In A, the reflexive pronoun *herself* must refer to the same person as the subject pronoun *she*, while in B, the personal pronoun *her* must refer to some other person than the subject pronoun *she*.

English reflexive pronouns are differentiated on the basis of person, number and gender: *myself, yourself, himself, herself, itself, ourselves, yourselves* and *themselves*. Many other languages have only one reflexive pronoun (corresponding to English *self*), but often use it in conjunction with personal pronouns.

The languages of the world differ from each other in the types of pronouns they possess. Consider the following two examples of such differences:

1. English has a number of possessive pronouns (*my/mine, your/yours, his, her(s), its, our(s), their(s)*), while other languages use personal pronouns plus possessive markers instead (cf. Japanese *watashi no* 'my/mine' from *watashi* 'I' and the possessive marker *no*).
2. English has four types of pronouns for which other languages, like Chinese, have only one. Depending on the context, many Chinese indefinite pronouns (*shéi* 'who(ever)', *shénme* 'what(ever)/which(ever)', *nǎ/něi* 'which(ever)') may be used

where English uses interrogative pronouns (*who(m)*, *what*, *which*), negative pronouns (*no*, *no one*, *none*, *nobody*, *nothing*, *neither*), universal pronouns (*all*, *every*, *each*, *everyone*, *everybody*, *everything*) and indefinite pronouns (*some*, *someone*, *somebody*, *something*, *either*, *any*, *anyone* *anybody*, *anything*).

It is not uncommon to call Japanese *watashi no* a possessive pronoun, it may be translated by English *my/mine*. It is even more common to call Chinese *shéi*, *shénme*, *nǎ/něi* interrogative pronouns, since they most commonly occur in contexts where English would use *who(m)*, *what* or *which*. By doing so, however, we are in fact imposing an English terminology on languages for which they are not suitable.

DYNAMIC VS. STATIVE VERBS

Verbs may be **dynamic** or **stative**, depending on the kind of process they refer to:

- A **stative process** is a sequence of uniform states.
- A **dynamic process** is a sequence of heterogeneous states.

If you make a movie of a dynamic process, you get a sequence of pictures where you can observe a gradual change from one picture to the next. If you make a movie of a stative process, you get a sequence of identical pictures. In FIG. 7, the three pictures in each row represent three states following each other in time, with the first state being the one on the left and the last state the one on the right. The earth going round is a typical dynamic process, while a house standing on the ground at the end of a small road is a typical stative process.

A dynamic process			
A stative process			
	<i>1st state</i>	<i>2nd state</i>	<i>3rd state</i>

FIGURE 7. A dynamic and a stative process

Verbs like *run*, *die* and *roll* are dynamic, while verbs like *have* (in the sense of 'possess'), *love* and *know* are stative.

The difference between stative and dynamic processes plays an important role in the grammar of many languages. A number of grammatical constructions are fully acceptable with dynamic verbs like *run*, but less so with stative verbs like *know*:

- 1) Dynamic verbs have a progressive form, while stative verbs do not:¹¹
 - a) *John is running.*
 - b) **John is knowing the answer.*
- 2) Verbs like *force* can be used with dynamic verbs, but not with stative verbs:
 - a) *I forced John to run.*
 - b) **I forced John to know the answer.*
- 3) Dynamic verbs have imperative forms, while stative verbs do not.
 - a) *Run!*
 - b) **Know the answer!*

¹¹ Note how the McDonald's chain makes the stative verb *love* into a dynamic verb by saying *I'm lovin' it*.

4) Dynamic verbs may occur in the "pseudo-cleft construction"; stative verbs may not:

- a) *What John did was run.*
- b) **What John did was know the answer.*

English has relatively few stative verbs, most of them denoting mental processes. Non-mental (as well as some mental) stative processes are usually expressed by adjectives (see below). In many languages across the world, however, there is no sharp distinction between verbs and adjectives.

LEXICAL VS. AUXILIARY VERBS

In English, a small subgroup of verbs called **auxiliary verbs** (or just auxiliaries) are clearly distinguished from other verbs (known as **lexical verbs**) in a number of ways:

1. Auxiliaries typically precede other verbs without the use of *to* (as in *I hate to say this*):

- a) *You may go home.*
- b) *I have seen you.*
- c) *He is dancing.*

2. They form questions by inversion rather than by means of *to do* (as in *Do you study linguistics?*):

- a) *May I go home?*
- b) *Have you seen me?*
- c) *Is he dancing?*

3. They are negated by the simple negator *not*, without the help of *to do* (as in *He does not study linguistics*):

- a) *You may not go home.*
- b) *I have not seen you.*
- c) *He is not dancing.*

Many auxiliaries also have deviant patterns of inflection. While most languages have words resembling English auxiliaries in meaning and usage, the distinction between lexical verbs and auxiliary verbs is often much less clearly marked than in English.

THE COPULA

One verb with a very special position is the **copula**. A copula is used to link a subject and predicate, and it may imply a number of different semantic relations between the two, such as:

1. Identity: *When the area behind the dam fills, it will be a lake.*
2. Class membership: *He is a bachelor.*
3. Property: *The house is blue.*
4. Location: *I am here.*

Some languages allow other semantic relations to be expressed by the copula, as when the Chinese copula *shì* is used to express a possessive relation:

Zhāng xiānsheng shì ge Rìběn tàitai.
'Mr. Zhang is [one who has] a Japanese wife.'

A few languages have no copula at all.

ADJECTIVES

In English, **adjectives** also constitute a large and important word class.

Semantically, adjectives typically refer to **properties**: *red, hard, cold* etc. Like entities and processes, properties may also be abstract, such as *serious* and *brilliant*. And like processes, properties are sometimes entified and referred to by nouns, e.g. *happiness* and *brilliance*.

Syntactically, adjectives typically have two different functions, **attributive** and **predicative**. In English, attributive adjectives mostly precede the noun whose property they describe:

red dust
hard times
cold water

The opposite is the case in many other languages, such as French:

jupe noire 'black skirt'
film interessant 'interesting film'

In English, predicative adjectives occur after verbs like *be, become, turn* and a few others:

The dust became red
Times are hard
The water has turned cold

Other languages, such as Hungarian, do not require a verb before a predicative adjective:

Róbert öreg 'Robert [is] old'

As in many other languages, English adjectives have a comparative form (either *happier* or *more happy*) and a superlative form (either *happiest* or *most happy*).

While nouns and verbs are more or less universal, there are many languages that do not have a significant word class corresponding to English adjectives. In Southeast Asian languages, for instance, most words corresponding to English adjectives are verbs. *Red, hard, cold* etc. are not only properties, but also states, and in this they resemble stative verbs, such as *like* or *fear*.

ADVERBS

The English words called **adverbs** constitute a very heterogeneous group. Semantically, they cover a number of different meanings, such as:

manner: *slowly, badly*
degree: *very, somewhat*
time: *then, now*
place: *here, everywhere*
cause: *therefore, thus*
concession: *nevertheless*
condition: *otherwise*

Syntactically, they typically modify verbs (*walk slowly*), adjectives (*really noisy*), other adverbs (*very badly*), or whole clauses or sentences (*He then left the country*), but some words usually classified as adverbs are not modifiers at all (*go home*).

Some types of adverb are closely related to other word classes. For instance, English manner adverbs are usually derived from adjectives, most often by adding the suffix *-ly* (as in *slowly* and *badly*), and they resemble adjectives in having comparative (*more slowly*) and superlative forms (*most slowly*). They are also semantically related, since adjectives may be seen as describing the properties of entities, while manner adverbs may be seen as describing the properties of processes.

In English, there is also a strong connection between time and place adverbs and prepositions, the same word often being used as both adverb and preposition:

Adverb: *He went up and down.*

Preposition: *He went up and down the road.*

In such cases, one and the same word simultaneously belongs to two different word classes.

The class of adverbs, if it exists at all, is equally heterogeneous in other languages.

ADPOSITIONS

In their concrete meaning, English **prepositions** (like *on, at, in, to, until, from, of, off, over, above, under, below, with, by, about, among, before, after, behind, through* etc.) typically locate an entity in space or time:

under the tree

after midnight

But prepositions are also often used in more abstract senses:

under surveillance

he is named after his grandfather

The majority of prepositions may also be used as adverbs (see above). Prepositions are never inflected. When followed by pronouns, they are always followed by the oblique form (*me, him, her, us, them*) rather than the subject form (*I, he, she, we, they*).

In other languages, such as Japanese, words corresponding to English prepositions are typically placed after the noun:

Tookyoo kara 'from Tokyo'
Kyooto made 'to Kyoto'

Such words are called **postpositions**. Even English arguably has three postpositions:

ten years ago
ten years hence
ten miles away

Both prepositions and postpositions may be referred to by the common term **adposition**.

In some languages, adpositions do not constitute a separate word class. For instance, Chinese prepositions (like *cóng* 'from' and *zài* 'at, on, in') are a subclass of verbs, while Chinese postpositions (like *yǐqián* 'before' and *lǐmiàn* 'inside' are a subclass of nouns.

DETERMINERS

In English, the class of **determiners** basically consists of the **demonstratives** *this/these* and *that/those* and the **articles** *a(n)* (indefinite) and *the* (definite). They typically stand at the very beginning or (in some languages) the very end of a noun phrase, making it more or less definite.

Many languages have no articles, choosing either to leave the noun unmarked for definiteness or to use a numeral meaning 'one' instead of the indefinite article and a demonstrative instead of the definite article.

Quite a few languages have a larger number of demonstratives than English. For instance, both Japanese and Thai make the following three-fold distinction:

	'this'	'that'	'that over there'
Japanese	<i>kore</i>	<i>sore</i>	<i>are</i>
Thai	<i>nîi</i>	<i>nân</i>	<i>nóon</i>

NUMERALS

Virtually all languages have **numerals**. Some languages are reported to have very few of them, such as the Australian aborigine language Pitjantjatjara, which apparently only has the numerals 'one', 'two' and 'three'. Only the Amazonian language Pirahã is reported to have no numerals whatsoever.

Like many languages, English makes a basic distinction between **cardinal numbers** (*one, two, three* etc.) and **ordinal numbers** (*first, second, third* etc.).

CONJUNCTIONS

Conjunctions are words that bind elements together within or beyond the sentence.

Coordinative conjunctions like *and, or, but* are used to bind together words, phrases, clauses, sentences or stretches of speech larger than the sentence. The elements on each side of a coordinative conjunction are conceived as being of more or less equal weight, and often (though far from always) it is possible to change the order of the elements without changing the meaning of the whole expression: *you and me* vs. *me and you*.

Subordinative conjunctions (sometimes called complementizers) include one subordinate clause within a superordinate clause:

If you touch me, I'll shout.
He told me that you would come.
A girl that I knew appeared in the newspaper.

In the first example, the subordinate if-clause has the same syntactic function within the superordinate clause as adverbs like *tomorrow* and *otherwise*, and such clauses are called **adverbial clauses**. In the second example, the subordinate that-clause has the same syntactic function within the superordinate clause as noun phrases like *your story* or *many lies*, and such clauses are called **nominal clauses**. In the third example, the subordinate that-clause has the same syntactic function as an attributive, and such clauses are called **relative clauses**.

In English, many subordinative conjunctions are also used as prepositions and/or adverbs, such as *before* and *after*:

He gave it to me before he left. (subordinative conjunction)
He gave it to me before last summer. (preposition)
He gave it to me before. (time adverb)

But this is not necessarily the case in other languages.

PARTICLES

The term **particle** is used about any small, unstressed grammatical word that does not readily fall into any other word class. In Japanese grammar, for instance, the term is often used about phrase-final case markers (like *wa* for topic, *ga* for subject, *wo* for object and *ni* for indirect object) and sentence-final mood markers (like *ka* for question).

INTERJECTIONS

All languages appear to have a separate class of **interjections**, resembling English words like *wow*, *psst*, *mhm* and *wham*. The phonological make-up of interjections is often different from that of other words, and in any other word class, words like *psst* and *mhm* would have been impossible.

Interjections may be divided into four basic subclasses: expressive (*ouch*, *oh*, *wow*, *aha*), directive (*hush*, *psst*, *hey*), phatic (*mhm*, *yes*, *no*, *huh*) and descriptive ideophones (*wham*, *thud*, *bang*).

OPEN VS. CLOSED WORD CLASSES

Of all the word classes examined above, some are **open** classes that readily admit new members, while others are **closed** and seldom admit new members. Nouns, verbs, adjectives, (some types of) adverbs and (in their own special way) interjections are the clearest examples of open word classes, while determiners, pronouns, classifiers, adpositions, conjunctions and auxiliaries are all closed sets that do not easily change.

CONTENT WORDS VS. FUNCTION WORDS

To a large extent, the distinction between open and closed word classes coincides with the distinction between **content words** and **function words**. Content words are full words with a lexical meaning, denoting concrete or abstract entities, processes, properties etc. The meaning of function words, on the other hand, is more akin to the meaning of grammatical constructions. Usually,

Often, the meaning expressed by function words in one language is expressed by grammatical constructions in another language. For instance, the meaning expressed by English prepositions (like *in*, *at*, *from* etc.) is often expressed by special forms of the noun called case forms in Finnish and Hungarian.

Sometimes, even one and the same language has two alternative ways of expressing the same meaning, either with a function word or with a grammatical construction. For instance, *more* in *more happy* is equal in meaning to the comparative ending *-er*. The pronoun *he* is also very close in meaning to the verb ending *-s* (as in [*he*] *runs*), except that the latter contains no information about gender.

2.3.2 Word structure: inflection

Morphology is the study of word structure, of how smaller meaningful units are combined into words, as in English *sing-er-s*. Morphology may be divided into two branches, **inflection** and **word formation**. The present subsection will be concerned with inflection.

LEXEME AND WORD FORM

We use the word *word* when talking about the vocabulary of the English language, as when we say *Some people believe that the English language has more **words** than most other languages, probably because English dictionaries have so many pages*. When talking about the word from the perspective of vocabularies and dictionaries, we shall introduce the term **lexeme**, reflecting the fact that linguists usually refer to the vocabulary of a language as its *lexicon* and that professional dictionary-makers are called *lexicologists*. We shall write lexemes with SMALL CAPITALS, usually followed by one or more subscript letters telling about the word class of the lexeme. For example, we have *nouns* like GIRL_N and BOOK_N, *verbs* like SING_V and WRITE_V, and *adjectives* like GOOD_{Adj} and BAD_{Adj}.

In many languages, lexemes show up in different inflectional forms, which we shall refer to as **word forms**. For example, *sing*, *sings*, *sang*, *sung*, *singing* are the word forms of the lexeme SING_V and *girl* and *girls* are the word forms of the lexeme GIRL_N. We may define **lexeme** and **word form** in the following way:

A **word form** is a word with meaning and form.

A **lexeme** is a family of word forms that are inflectionally related.

We shall come back to the meaning of *inflectionally related*.

For several reasons, it is important to distinguish between *lexemes* and *word forms*. It would be very confusing to count *word forms* when you discuss the size of the vocabulary of a language. In Chinese, there is a lexeme FÁNGZǐ_N ‘house’, which

has only one word form, *fángzi*, since Chinese nouns do not have any inflection. In Turkish, there is a lexeme EV_N ‘house’, which has 84 word forms. EV_N has singular forms and plural forms, and among both the singular forms and the plural forms there are six different case forms, as shown in TABLE 7.

Expression	Meaning	Expression	Meaning
<i>ev</i>	‘house; singular, absolutive’	<i>evler</i>	‘house; plural, absolutive,
<i>evi</i>	‘house; singular, accusative’	<i>evleri</i>	‘house; plural, accusative’
<i>evin</i>	‘house; singular, genitive’	<i>evlerin</i>	‘house; plural, genitive’
<i>eve</i>	‘house; singular, dative’	<i>evlere</i>	‘house; plural, dative’
<i>evde</i>	‘house; singular, locative’	<i>evlerde</i>	‘house; plural, locative’
<i>evden</i>	‘house; singular, ablative’	<i>evlerden</i>	‘house; plural, ablative’

TABLE 7. Some word forms of Turkish EV_N

For example, *evden* means ‘from (the) house’ and *evlere* ‘to (the) houses’.

In addition, Turkish nouns may have six different *possessive suffixes*, telling who is the owner, and these suffixes can be combined with singular, plural, and all the case forms. A few illustrations are given in TABLE 8, where all the possessive suffixes are added to the absolutive forms (notice that possessive suffixes follows the plural suffix *-ler*), and in TABLE 9, where forms with the 1sg possessive suffix is combined with different case forms (notice that possessive suffixes precede the case suffixes).

Expression	Meaning	Expression	Meaning
<i>evim</i>	‘house; 1sg, singular, absolutive’	<i>evlerim</i>	‘house; 1sg, plural, absolutive,
<i>evin</i>	‘house; 2sg, singular, absolutive’	<i>evlerin</i>	‘house; 2sg, plural, absolutive’
<i>evi</i>	‘house; 3sg, singular, absolutive’	<i>evleri</i>	‘house; 3sg, plural, absolutive’
<i>evimiz</i>	‘house; 1pl, singular, absolutive’	<i>evlerimiz</i>	‘house; 1pl, plural, absolutive’
<i>eviniz</i>	‘house; 2pl, singular, absolutive’	<i>evleriniz</i>	‘house; 2pl, plural, absolutive’
<i>evleri</i>	‘house; 3pl, singular, absolutive’	<i>evleri</i>	‘house; 3pl, plural, absolutive’

TABLE 8. More word forms of Turkish EV_N

Expression	Meaning	Expression	Meaning
<i>evim</i>	‘house; 1sg, singular, absolutive’	<i>evlerim</i>	‘house; 1sg, plural, absolutive,
<i>evimi</i>	‘house; 1sg, singular, accusative	<i>evlerimi</i>	‘house; 1sg, plural, accusative
<i>evimin</i>	‘house; 1sg, singular, genitive	<i>evlerimin</i>	‘house; 1sg, plural, genitive
<i>evime</i>	‘house; 1sg, singular, dative	<i>evlerime</i>	‘house; 1sg, plural, dative
<i>evimde</i>	‘house; 1sg, singular, locative	<i>evlerimde</i>	‘house; 1sg, plural, locative
<i>evimden</i>	‘house; 1sg, singular, ablative	<i>evlerimden</i>	‘house; 1sg, plural, ablative

TABLE 9. Even more word forms of Turkish EV_N ‘house’

For example, *evim* means ‘my house’ and *evlerimiz* ‘our houses’, while *evlerimde* means ‘in my houses’.

It would be meaningless to claim that for every Chinese noun there are 84 Turkish nouns, and that therefore Turkish has a much bigger vocabulary than Chinese. Vocabulary comparisons should be based upon *lexemes*, and the number of word forms in a lexeme does not influence the size of the vocabulary.

MORPHEMES

It is not difficult to discover that the Turkish word forms in TABLES 7–9 can be divided into smaller parts, each of which has its own meaning. These parts are called **morphemes**:

Morphemes are the *smallest meaningful parts that words can be divided into*.

Here are the morphemes of the Turkish word form *evlerimde* ‘in my houses’:

	morpheme 1	morpheme 2	morpheme 3	morpheme 4
Expression	<i>ev</i>	<i>ler</i>	<i>im</i>	<i>de</i>
Meaning	‘house’	‘plural’	‘1sg possessive’	‘locative’

TABLE 10. *The morphemes of the Turkish word form evlerimde ‘in my houses’*

We find the morphemes of a word by comparing it to other words. We notice that *ev* occurs in all the words in the three tables, and the only constant meaning is ‘house’. We may also compare *evlerimde* ‘in my houses’ with *ellerimde* ‘in my hands’, where the morpheme *el* ‘hand’ can be identified. The element *ler* occurs in all and only the words having the meaning ‘plural’, *im* occur in all and only those having the meaning ‘my’ or ‘1sg possessive’, and *de* occurs in all and only the words with the meaning ‘locative’.

Now, take a look at some word forms of KÖY_N ‘village’ in TABLE 11. We shall refer to a list of the word forms of a lexeme as a **paradigm**. This is therefore a *partial paradigm* for KÖY_N.

Expression	Meaning	Expression	Meaning
<i>köy</i>	‘village; singular, absolutive’	<i>köyler</i>	‘village; plural, absolutive’
<i>köyü</i>	‘village; singular, accusative’	<i>köyleri</i>	‘village; plural, accusative’
<i>köyün</i>	‘village; singular, genitive’	<i>köylerin</i>	‘village; plural, genitive’
<i>köye</i>	‘village; singular, dative’	<i>köylere</i>	‘village; plural, dative’
<i>köyde</i>	‘village; singular, locative’	<i>köylerde</i>	‘village; plural, locative’
<i>köyden</i>	‘village; singular, ablative’	<i>köylerden</i>	‘village; plural, ablative’

TABLE 11. *Some word forms of Turkish KÖY_N ‘village’*

Evi ‘house; singular, accusative’ contains the element *i* ‘accusative’, while *köyü* ‘village; singular, accusative’ contains the element *ü* ‘accusative’. In the same way, *in* ‘genitive’ is found in *evin* ‘house; singular, genitive’ and *ün* ‘genitive’ is found in *köyün* ‘village; singular, genitive’. There is a system to it: we find *i* and *in* when the preceding vowel is *i* or *e*, and we find *ü* and *ün* when the preceding vowel is *ü* or *ö*. The plural forms *köyleri* ‘village; plural, accusative’ and *köylerin* ‘village; plural, genitive’ confirm this generalization. Cf. also the word forms *gün* ‘day; singular, absolutive’, *günü* ‘day; singular, accusative’, *günün* ‘day; singular, genitive’, *diş* ‘tooth; singular, absolutive’, *dişi* ‘tooth; singular, accusative’ and *dişin* ‘tooth; singular, genitive’ (the letter *ş* is pronounced [ʃ], like in English *dish* [dɪʃ]).

Few linguists would say that *i* ‘accusative’ and *ü* ‘accusative’ are two different morphemes, but rather two **variants** of the same morpheme. It is also very common to use the term **allomorph** instead of **variant**.

The fact that morphemes have variants (or allomorphs) is rather unfortunate for our morpheme definition. One may claim that we find *allomorphs* when words are divided into meaningful parts, and that morphemes are not the smallest meaningful parts that words can be divided into, but rather *families of allomorphs with the same meaning*.

BASE AND OPERATION

Let us continue our analysis of Turkish word forms, starting with *evlerimde* ‘house; 1sg, plural, locative’. We often think of word forms like this as having been **formed** by adding one morpheme to another, as illustrated in TABLE 12.

	Base	<i>ev</i>
1st step:	Add <i>ler</i> to the right of the base (= <i>ev</i>)	<i>ev+ler</i> ⇒ <i>evler</i>
2nd step:	Add <i>im</i> to the right of the base (= <i>evler</i>)	<i>evler + im</i> ⇒ <i>evlerim</i>
3rd step:	Add <i>de</i> to the right of the base (= <i>evlerim</i>)	<i>evlerim + de</i> ⇒ <i>evlerimde</i>

TABLE 12. *Bases and suffixes*

Each step consists of adding a morpheme to the right of a **base**; we shall come back to a definition of **base** immediately.

Adding a morpheme to the base is an example of applying a **morphological operation** to the base. Morphological operations can change the base in almost any logically possible way, by **adding**, **modifying**, and **subtracting** elements. A fourth type may also be established, which implies **converting** the base without any formal changes. We shall give examples below.

From our discussion it follows that a **base** is simply an element that a morphological operation can apply to. A base consisting of one morpheme only is referred to as a **root**. Therefore, the base *ev* in TABLE 12 is a root, while the bases *evler* and *evlerim* are not.

ADDING ELEMENTS TO THE BASE

A morpheme that is added to the base is called an **affix**, and there are affixes of three kinds:

a **suffix** is added *to the right of* the base
 a **prefix** is added *to the left of* the base
 an **infix** is added *into* the base

Suffixes are the only affixes found in Turkish. A language with lots of prefixes is Swahili, as in the word forms *m-toto* ‘child’ (singular) and *wa-toto* ‘children’ (plural).

Infixes are a much rarer phenomenon, but it is common *inter alia* in the Malayo-Polynesian language Tagalog of the northern Philippines, where, as shown in TABLE 14, the past tense morpheme is an infix *in*, which is inserted after the leftmost consonant of the base.

present		past	
<i>ibigay</i>	‘give; present’	<i>ibinigay</i>	‘give; past’
<i>ipaglaba</i>	‘wash (for); present’	<i>ipinaglaba</i>	‘wash (for); past’
<i>ipambili</i>	‘buy (with); present’	<i>ipinambili</i>	‘buy (with); past’

TABLE 14. *Tagalog verbal word forms*

Infixes split morphemes into two parts, so that one part comes before and the other after the infix.

MODIFYING THE BASE

In cases of **modification**, no special element is added to the base; instead, the operation changes one or more of the sounds in the base, as in English plurals like *men* (from *man*) and *geese* (from *goose*) and English past forms like *spat* (from *spit*) and *wrote* (from *write*). While such forms are exceptional in English, they are regular in Arabic. Arabic nouns are divided into two types, those that form the plural by adding an affix and those that form the plural by modification, which in this case implies changing the vowels, as shown in TABLE 15.

SINGULAR		PLURAL	
<i>qalb</i>	'heart; singular'	<i>qulūb</i>	'heart; plural'
<i>kalb</i>	'dog; singular'	<i>kilāb</i>	'dog; plural'
<i>kitāb</i>	'book; singular'	<i>kutub</i>	'book; plural'

TABLE 15. *Some Arabic nouns*

SUBTRACTING ELEMENTS FROM THE BASE

In the Nilo-Saharan language Murle, which is spoken in southern Sudan, the plural of nouns is formed by **subtracting** the last consonant from the singular form; cf. TABLE 16.

SINGULAR		PLURAL	
<i>nyoon</i>	'lamb; singular'	<i>nyoo</i>	'lamb; plural'
<i>wawoc</i>	'white heron; singular'	<i>wawo</i>	'white heron; plural'
<i>onyiit</i>	'rib; singular'	<i>onyi</i>	'rib; plural'

TABLE 16. *Some Murle nouns*

CONVERTING THE BASE

Conversion means leaving the base formally unchanged (despite the meaning change), as in the English plural *sheep* (from *sheep*). Conversion creates **synchretism**, which is *homonymy among the word forms of a paradigm*.

REDUPLICATING THE BASE

Reduplication means repeating the base or part of it, as in Malay *anak-anak* 'children' (from the stem *anak* 'child').

MORE COMMENTS ON OPERATIONS

The plural forms of the Arabic noun *kutub* 'books' cannot at all be divided into a morpheme meaning 'book' and a morpheme meaning 'plural', the way we can divide English *books* into *book+s*. Word forms formed by non-affixing operations are not easy to analyze within the morpheme model.

2.4.3 Word structure: derivation and compounding

We will now turn our attention to the formation of new words. Consider the words *player* and *football*. Both consist of two morphemes, *play-er* and *foot-ball*. But there is a difference. In *play-er*, only the first morpheme may act as a word in its own right, whereas in *foot-ball*, both morphemes may act as words of their own. Both *player* and *football* are examples of word formation, but while *player* is an example of **derivation**, *football* is an example of **compounding**.

Both *player* and *football* constitute **inflectional bases**, that is, the bases that inflectional operations (such as the adding of the plural suffix *-s*) are applied to:

players, footballs. Inflectional bases are also known as **stems**. In the study of **word formation** we analyze the morphological structure of stems.

If the stem cannot be divided into smaller meaningful parts (or if the stem cannot be analyzed as a base plus one or more operations), the stem is a **root**. Both *play, foot* and *ball* are roots, while *player* and *football* are the results of derivation and compounding, respectively.

7.3.2.1 DERIVATION

The stem *player* can be divided into two morphemes, *play* and *er*. While *play* is both a stem and a root, however, *er* is neither, because it does not occur as the stem (inflection base) of any English lexeme. Instead *er* must be identified as a suffix added to verb stems to form stems of nouns designating actors. From the stem *sing* we get *singer*, and from the stem *ride* we get *rider*.

The suffix *er* is a **derivational affix**, that is, an affix added to a base to form a new stem. The stem *player* is derived from the stem *play* by suffixing *er*. In general, we may talk about **derivational operations**, which include *affixing, modification, subtraction, and conversion*.

The word form *players* (plural of *player*) has the morphological structure in FIGURE 14.

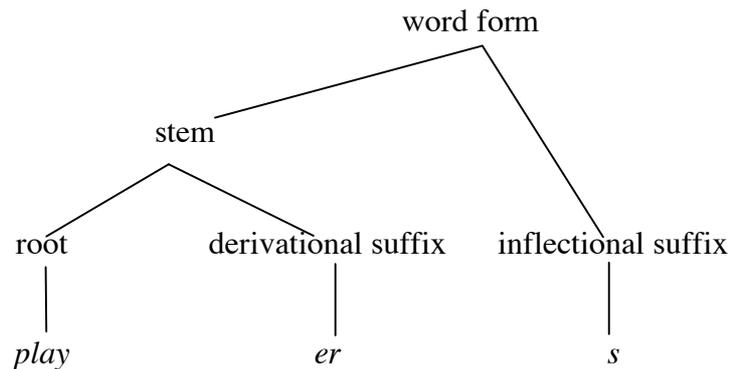
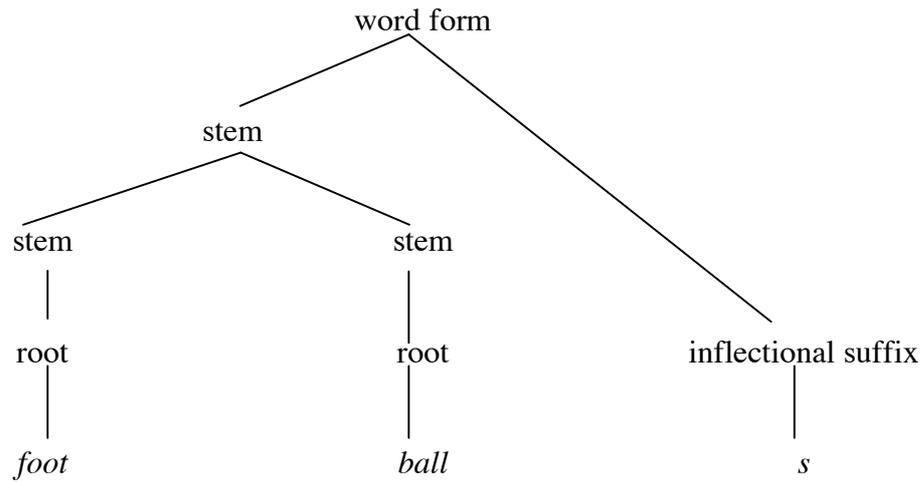


FIGURE 14. *The morphological structure of the word form **players***

COMPOUNDING

The stem *football* can be divided into two morphemes *foot* and *ball*. Both of them are both stems and roots. Consequently, the stem *football* is a **compound**, that is, a stem formed from two or more other stems.

The structure of the plural word form *footballs* is presented in FIGURE 15.

FIGURE 15. The morphological structure of Turkish *önsözde*

The two parts of the compound stem are also stems. In this case, they are also roots, though that does not have to be the case.

2.4 Sentences

Syntax is the study of sentence structure, of how meaning is given form at the sentence level. In other words, syntax studies the systematic covariation between meaning and form in sentences. Most commonly, syntactic form has to do with **word order**. In addition, it is common and in many ways useful to group words into larger constituents and view each sentence as having a **constituent structure**. Finally, we shall have a brief look at other structural devices used for syntactic purposes, in particular **agreement**.

2.3.1 Word order

In the English sentence (21), the three words *vultures*, *eat*, and *hyaenas* follow each other in a specific **order**:

(21) *Vultures eat hyaenas.*

In this sentence, *vultures* is the first word, *eat* the second, and *hyaenas* the third.

The most obvious aspect of word order has to do with **precedence**, with whether a given element precedes or follows some other element. In (21), for instance, *vultures* precedes *eat*, and *hyaenas* follows *eat*.

In addition, word order also has to do with **proximity**. Compare the following expressions from English and Fula:

1. *one big red ball*
2. *balloŋre wodeere mawnde woore*
 ball red big one

The two expressions, which have the same meaning, consist of the same words, but the words come in exactly the opposite order. Even with regard to word order, however, there is a striking similarity between the two expressions. In both languages, the word meaning 'red' is **closer** to the noun meaning 'ball' than the word meaning 'big', and in both languages, the words meaning 'red' and 'big' are closer to the noun meaning 'ball' than the word meaning 'one'. In neither language could these proximity relations be changed without creating ungrammatical or semantically odd noun phrases. In other words, the word order of the two expressions differ from each other with regard to precedence, but not with regard to proximity.

This is quite typical. Features of precedence vary a lot from language to language, while features of proximity are much less subject to variation. When comparing the word order of different languages, therefore, what is compared mostly has to do with precedence.

2.3.2 Constituent structure

Take a look at the English sentences in (23).

(23) Some English sentences

- (i) Dogs bite postmen
- (ii) Angry dogs bite postmen
- (iii) Dogs bite angry postmen

It is easy to see that sentence (23i) may be divided in three, since it consists of three words. It is less obvious that (23ii) and (23iii) may also be divided in three, since each of them consists of four words. But in (23ii), *angry* and *dogs* clearly belong together, and in (23iii), *angry* and *postmen* also clearly belong together. *Angry dogs* and *angry postmen* are **constituents** of sentences (23ii) and (23iii), respectively.

Constituents like *angry dogs* and *angry postmen* are bound together semantically, but they are also syntactic units. In many respects, *angry dogs* and *angry postmen* work syntactically in the same way as the single words *dogs* and *postmen*. For instance, if they are placed in other positions in the sentence, they have to keep each other company, as is the case when some statements may be made into questions by reversing the order of the subject and the auxiliary verb:

(22) Some English questions

- (i) Dogs will bite postmen --> Will dogs bite postmen?
- (ii) Angry dogs will bite postmen --> Will angry dogs bite postmen?

With few exceptions, therefore, elements within the same constituent always occur in proximity to each other. In English, at least, *angry* cannot occur in positions further away from *dogs*, as illustrated in (24ii) and (24iii):

(24) More English sentences

- (i) Perhaps angry dogs bite postmen
- (ii) *Perhaps dogs angry bite postmen
- (iii) *Angry perhaps dogs bite postmen

Sentence (24ii) is possible to understand, but it is not a grammatical English sentence. The asterisk (*) marks the sentence as ungrammatical. In sentence (24iii), *angry* is

separated from *dogs* by the adverb *perhaps*, and the sentence is clearly ungrammatical. *Angry* is too far away from *dogs*, and it is probably impossible to decide who is angry—dogs or postmen. We would get a grammatical sentence by saying *Perhaps dogs bite angry postmen*, but this sentence would claim that it is the postmen that are angry, not the dogs. The sentence would be unsuccessful as an attempt to characterize the dogs as angry.

There is an asymmetry between *angry* and *dogs*, since *angry* is optional. It is possible to say *Dogs bite postmen* and *Angry dogs bite postmen*, but not **Angry bite postmen*. When two words within a constituent are in an asymmetric relationship, the obligatory word is called a **head** and the optional word a **modifier**. Many linguists take one step further and claim that a head is the pivotal member of a specific type of syntactic unit usually referred to as a **phrase**:

A **phrase** is a *head* plus its *modifiers*, if there are any.

In the sentences (25), the *phrases* are placed between squared brackets, and *heads* are written in **bold** letters. Notice in particular that in (25i), *dogs* and *postmen* are regarded as phrases despite the fact that they are single words.

(25) English sentences again

-
- (i) [Dogs] bite [postmen]
 - (ii) [Angry **dogs**] bite [frightened **postmen**]
 - (iii) [The angry **dogs**] bite [the frightened **postmen**]

Phrases are classified into different types on the basis of the *word class* of their heads. If the head is a noun, we have a **noun phrase**—abbreviated NP—and if the head is an adjective, we have an **adjective phrase**—abbreviated ADJP. Adjectives can be modified by adverbs like *very*, *slightly*, *extremely*, to form adjective phrases like [very angry] and [quite frightened]. In a more complete analysis, (26ii) and (26iii) should therefore be analyzed as in (26). A word is then analyzed as the head of a phrase if it can take modifiers, whether they are present or not.

(26) English sentences again

-
- (i) [[Angry] **dogs**] bite [[frightened] **postmen**]
 - (ii) [The [angry] **dogs**] bite [the [frightened] **postmen**]

One consequence of the introduction of phrases into the syntactic analysis is the postulation of a **hierarchical syntactic structure**, implying the existence of *linguistic units smaller than the sentence and bigger than the word*. The term **constituent** is used as a name for a «sentence part» anywhere in the hierarchy. Sentence (26ii) may provisionally be analyzed as in FIG. 10, which, for obvious reasons, is called a **syntactic tree**.

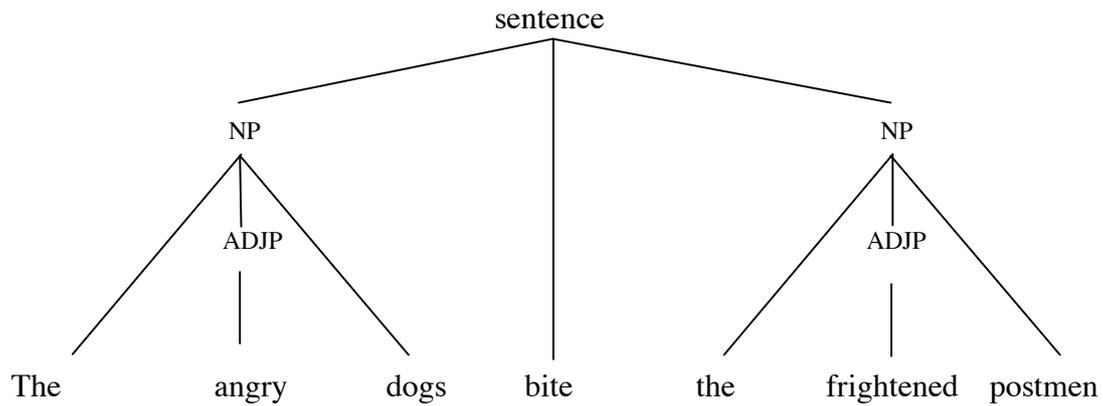


FIGURE 10. Constituent structure presented in a syntactic tree

First, sentence (27ii) is analyzed as having the three constituents, NP, *bite*, and NP. Secondly, the first NP is analyzed as having the three constituents, *the*, ADJP, and *dogs*, and the second NP is analyzed as having the three constituents *the*, ADJP, and *postmen*. Thirdly, the two ADJP's have the single constituents *angry* and *frightened*, respectively.

A syntactic tree may also contain information about the word class of each word in the sentence:

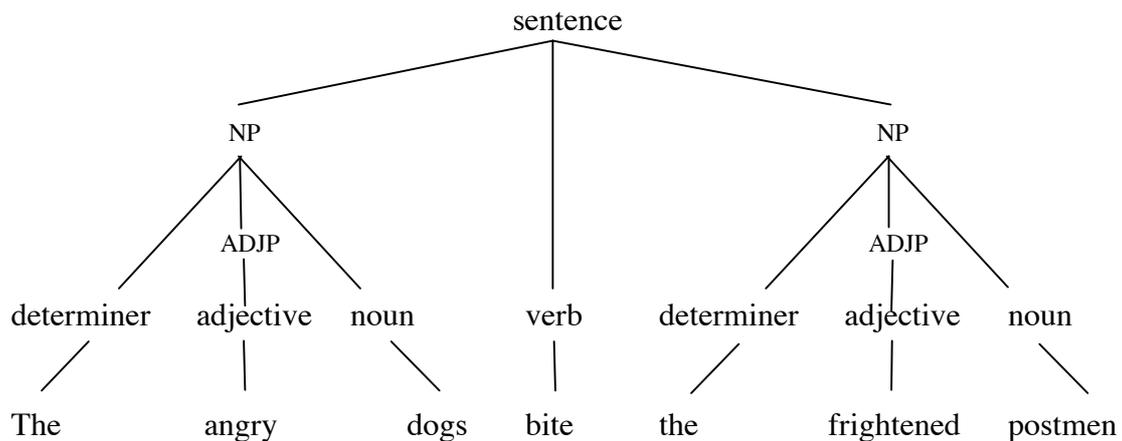


FIGURE 11. Syntactic tree including information on word classes

This makes it explicit which word is the head of each phrase, since the head of a noun phrase must be a noun, and the head of an adjective phrase must be an adjective.

Hierarchical syntactic structures have been postulated at least since the German psychologist Wilhelm Wundt (1832–1920) drew the first syntactic trees in his *Völkerpsychologie* ‘Ethnic Psychology’ (10 volumes, 1900–20). This way of viewing sentences has turned out to be very fruitful. However, there is in fact very little agreement about the exact constituent structure of even the most simple sentences, despite intense research through almost a whole century.

For instance, many linguists would claim that sentences containing a verb have a **verb phrase** (abbreviated VP), which, loosely speaking, consists of the verb plus all other constituents in the sentence apart from the subject. In our case, this would result in the following syntactic tree:

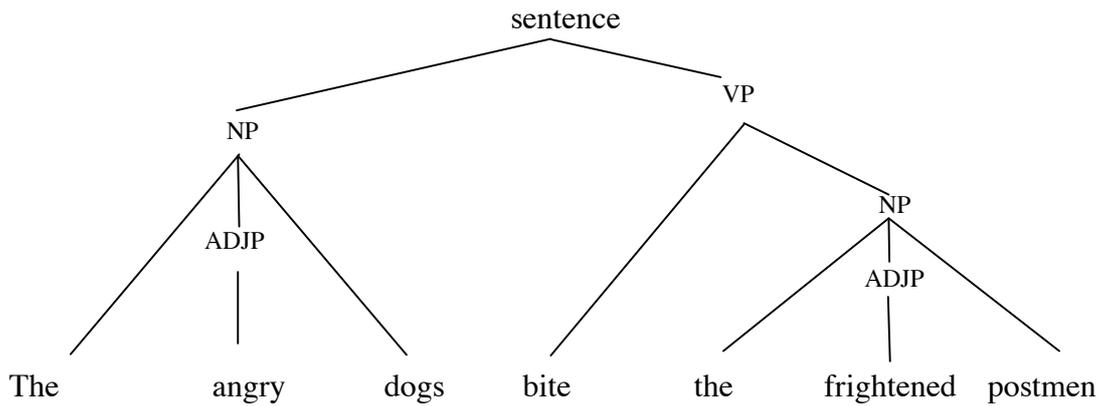


FIGURE 10. Syntactic tree including a verb phrase

Adherents of this analysis often define subject and object based on the position of noun phrases in a syntactic tree. Roughly, the object is defined as a noun phrase *inside* the VP, while the subject is defined as a noun phrase *outside* the VP. We shall return to alternative definitions of subject and object later in this chapter.

2.3.3 Participants

In the subsection on sentence meaning above, we have introduced the notion of thematic roles like agent, patient, instrument, benefactive etc. In general, thematic roles are not marked directly in sentences, but through a fascinating interplay with **syntactic functions**, the most important of which are **subject (S)**, **object (O)**, and **oblique (Obl)**. Take a look at the sentences in (13).

(13) *Some English sentences*

- a) *John opened the door with this key.*
- b) *This key opened the door.*
- c) *The door opened.*

The relationship between thematic roles and syntactic functions in the sentences in (13) is summed up in TABLE 4.

SUBJECT	VERB	OBJECT	OBLIQUE
<i>John</i>	<i>opened</i>	<i>the door</i>	<i>with this key</i>
AGENT	EVENT	PATIENT	INSTRUMENT
<i>This key</i>	<i>opened</i>	<i>the door</i>	
INSTRUMENT	EVENT	PATIENT	
<i>The door</i>	<i>opened</i>		
PATIENT	EVENT		

TABLE 4. *Thematic roles and syntactic functions*

In (13a), the subject is an *agent*, in (13b) a *patient*, and in (13c) an *instrument*. At first glance, this may give the impression that the subject varies so much semantically that it cannot be given a semantic definition, but this is not the case.

SUBJECT AND OBJECT

In fact, some important and central properties of the **subject** and **object** can be defined as follows:

The noun phrase immediately preceding the verb is the **subject**.
 The noun phrase immediately following the verb is the **object**.

FIG. 12 shows the meaning and form of subject and object in English:

	subject	object
meaning	'the only participant' or 'the participant closest to the energy source'	'the participant closest to the energy sink'
FORM	<i>the noun phrase immediately preceding the verb</i>	<i>the noun phrase immediately following the verb</i>

FIGURE 12. *Subject and object as linguistic signs*

The meanings of *subject* and *object* are valid for most or all languages, while the form varies. Arabic is an example of a language where word order signals syntactic functions, but in a different way:

(36) An Arabic sentence

	SUBJECT	OBJECT	
Ṭabaxat	zawjatī	aṭṭa ^c ām	'My wife cooked the food'
she.cooked	my.wife	the.food	

In Arabic, the subject as well as the object follow the verb, but the subject is the noun phrase closest to the verb and the object follows the subject.¹³

OBLIQUE AND ADVERBIAL

In English sentences, a *participant* may be referred to with an NP preceded by a preposition. A preposition + NP sequence is usually called a **prepositional phrase**, abbreviated PP. A participant consisting of a prepositional phrase has the syntactic function of **oblique**:

(39) *English sentences with PP oblique*

	SUBJECT		OBJECT	OBLIQUE
(a)	[The old man]	gave	[a dime]	[to [the little boy]].
(b)	[The little boy]	put	[the dime]	[in [his pocket]].

Now, compare this with sentence (40), where the PP contains an NP that does not refer to a participant, but to a setting (location). In such cases, the syntactic function of the PP is **adverbial**:

(40) *English sentence with PP adverbial*

	SUBJECT		OBJECT	ADVERBIAL
	[The girl]	met	[her friend]	[in [the train]].

Not surprisingly, words belonging to the word class of *adverbs* typically have adverbial function, as shown in (41).

(41) *An English sentence with an adverb as adverbial*

	SUBJECT		ADVERBIAL
	[My friend]	came	[yesterday]

¹³ This generalization is only valid in sentences where the subject is expressed as a separate noun phrase.

How do we distinguish **oblique** from **adverbial**? As already pointed out, the *oblique* function is for *participants*, while the *adverbial* function is for *settings*. The oblique is an integrated part of the event, while the adverbial describes the *scene* where the event and its participants are «located», as illustrated by the two homonymous English sentences in (42).

(42) *Two English sentences: oblique versus adverbial*

	SUBJECT		OBLIQUE		ADVERBIAL
(a)	[The committee]	decided	[on	[the boat]].	
(b)	[The committee]	decided			[on [the boat].

Sentence (42a) means that the committee reached a decision in favor of the boat, while (42b) means that the committee were on the boat when they reached a certain decision.

An important extra characteristic of the oblique is the **collocational** ties between the verb and the preposition. A **collocation** is a habitual juxtaposition of two or more words, like a verb and a preposition, and the preposition cannot be substituted by another preposition. In the case of the *adverbial*, there are in general no collocational ties, and the preposition can easily be substituted, as in *The committee decided under the bridge*.

INFORMATION STRUCTURE

Information structure may be defined in the following way:

Information structure is the way in which the words of a sentence are arranged so that a particular part of a message receives greatest attention.

Compare the two English sentences in (43). Notice in particular sentence (43b), which differs from (43a) by having two noun phrases before the verb.

(43) *Two English sentences*

- | | | | |
|-----|---------------|---------|----------------|
| (a) | [Bears] | like | [blueberries]. |
| (b) | [Blueberries] | [bears] | like. |

Sentences never have more than one subject, and in English the subject NP precedes the verb immediately, with very few exceptions. Therefore, there is no doubt that [bears] is the subject in both sentences. In (43a), [blueberries] is definitely the object, since it is an NP immediately following the verb. What about [blueberries] in (43b)? It also has to be the object.

In English, as in many other languages, most phrases have their privileged position in the sentence, but may, in addition, occur *in the beginning of the sentence*, before the subject, as illustrated in (44). A phrase in this position plays the role of **topic** in addition to its ordinary syntactic function. For example, *the money* is *object* in (44a), *object and topic* in (44b).

(44) *English sentences with a topic*

	topic	subject	verb	object	oblique	adverbial
a		John	gave	the money	to Peter	yesterday
b	The money	John	gave		to Peter	yesterday
c	To Peter	John	gave	the money		yesterday
d	Yesterday	John	gave	the money	to Peter	

Topic, which is grammatically marked by word order, may be semantically defined as the subject-matter of the sentence, that part of the sentence about which something is said. The rest of the sentence is then called the **comment**. (Some linguists use the terms theme and rheme instead.)

The reasons for putting a phrase in the topic position, for **topicalizing** it, are found in the wider linguistic context the sentence is used in. In conversation, topicalization is often necessary to link a sentence in an appropriate way to what has already been said—cf. the constructed dialogues in (44) between Mary (M) and Paul (P).

(44) *Some dialogues*

1st dialogue	M: What happened to the money? P: The money John gave to Peter yesterday.
2nd dialogue	M: What did John give to Peter? P: To Peter John gave the money (yesterday).
3rd dialogue	M: What did you say happened yesterday? P: Yesterday John gave the money to Peter.

When Mary asks, *What happened to the money?*, she establishes *the money* as the subject-matter of the conversation, and Paul maintains *the money* as subject-matter by topicalizing it.

Peter's answers are certainly not the only possible and appropriate ones, and instead of answering *The money John gave to Peter* he could have answered *John gave it to Peter yesterday*. But try to move the answers around a little, and the result is quite strange. If Mary asks, *What did you say happened yesterday?*, it would be very surprising if Paul answered, *The money John gave to Peter yesterday*, because it would destroy the *cohesion* of the text.

CASE

Case is variation in the form of pronouns, nouns or noun phrases to show their role in the structure of the sentence. In English, many personal pronouns distinguish between subjective case (as in *I, he, she, we, they*) and objective case (as in *me, him, her, us, them*). The subjective case is used in subject position, while the objective case is used in most other positions, notably object position and position within a prepositional phrase.

Case languages typically distinguish between two or more of the following cases, with their typical syntactic and/or semantic features in parentheses:

- nominative (subject)
- accusative (direct object)
- dative (indirect object)
- genitive (possessor)
- locative (at location)
- ablative (from location)
- allative (to location)

vocative ()
instrumental (instrument)
absolutive ()

In many cases, however, cases do not make complete syntactic or semantic sense.

Case may be expressed morphologically (by means of case affixes or special case forms) or syntactically (by means of function words, often referred to as case particles).

2.4.1 Events

TENSE

The grammatical category **tense** is related to the temporal setting of the ground, through a distinction between **past**, **present**, and **future**:

past is a time preceding the temporal setting of the ground
present is a time overlapping with the temporal setting of the ground
future is a time following the temporal setting of the ground

The time of the speech event, ‘now’, plays an important role in language. Most languages have a word meaning ‘now’, referring to the **present**; cf. the examples in TAB. 5. ‘Now’ is opposed to other times, ‘then’, away from the present and into the **past** or the **future**. – Closely related to ‘now’ are words referring to ‘today’, the day of the speech event. Following and preceding days are defined on the basis of their distance away from ‘today’ – often, but not always, with different words for days in the past and days in the future.

ASPECT

The grammatical category **aspect** refers to the phase of an event, distinguishing between **inchoative** (beginning), **progressive** (continuous), **perfective** (completed) and others. Some languages, like Chinese, have only aspect and no tense, while other languages, like Russian, show a complex interplay between the two.

MOOD

The grammatical category **mood** refers to forms that are typically associated with specific **speech acts**, such as **indicative** (plain assertion: *is*), **imperative** (injunction: *be!*), and **subjunctive** (hypothesis: *were*), **interrogative**.

VOICE

The grammatical category **voice** usually distinguishes between **active** (*He killed her*) and **passive** (*She was killed [by him]*).

2.4.2 Agreement

Agreement refers to a formal relationship between elements whereby a form of one word requires a corresponding form of another. In English, verbs in the present tense

agree with the subject in person (*I go* vs. *he goes*) and number (*he goes* vs. *they go*). Like word order and case forms, agreement helps to identify the roles or syntactic functions of each constituent in the sentence.

There are languages, among others Swahili and most other the Bantu languages of Africa, where the verb has not only subject agreement, but also object agreement (though only when the object is definite):

(48) *A Swahili sentence*

Adamu umekileta kisu. ‘Adamu has brought the knife.’

SUBJECT		OBJECT
Adamu	u- me- ki- let -a ki- su	
Adamu	CL.1-PERFECT-CL.7-bring-INDICATIVE	CL.7-knife

In Swahili and other Bantu languages, nouns belong to different **noun classes** or **genders**, and the gender of a noun can in most cases be seen from a prefix, as in *kisu* ‘knife’, which has the *ki* prefix, marking noun class 7 (CL.7). The name *Adamu* has no prefix, but it belongs to class 1 (CL.1), the class of singular human beings. The verb form *u-me-ki-let-a* ‘s/he brought it’ has three prefixes. The first one, *u*, is the subject agreement prefix, showing that the subject belongs to class 1; the second one, *me*, is a tense/aspect prefix marking perfect, and the third one, *ki*, is the (definite) object agreement prefix, showing that the object belongs to class 7.

The notion of **noun class** or **gender** is closely related to the notion of agreement:

Noun classes or **genders** are classes of nouns that influence the shape of words that are in constructions with them.

In French, for instance, nouns belong to one out of two genders, called masculine and feminine, and adjectives and determiners have to agree in gender with the noun they describe:

un petit garçon ‘a small boy’
une petite fille ‘a small girl’
Le garçon est petit ‘The boy is small’
La fille est petite ‘The girl is small’

There are masculine and feminine forms of the indefinite article (*un* vs. *une*), the definite article (*le* vs. *la*) and the adjective *petit/petite*. While grammatical gender usually reflects biological sex, this is not always the case, and for the vast majority of nouns it makes little sense to speak of biological sex, and masculine and feminine are, in this context, purely grammatical terms.

Gender or noun class systems are very common in African languages. In grammars of languages in the Niger-Congo family, the term noun class is more common than gender, and the number of noun classes may reach twenty, as in Fula, where the semantic definitions of the classes are a fascinating study. In this language, the noun classes influence the shape of demonstratives, definite articles, adjectives, numerals and participles that are in constructions with a noun, and the demonstratives are used as class names. Consider TABLE 3, with nouns from the NDE class and the ngol class.

	NDE CLASS	NGOL CLASS
Object	<i>yitere</i> ‘eye’ <i>hayre</i> ‘stone’	<i>boggol</i> ‘rope’ <i>mahol</i> ‘outer wall of a compound’
Place	<i>waalde</i> ‘cattle camp, corral’	<i>laawol</i> ‘road’
Writing	<i>harfeere</i> ‘letter of the alphabet’	<i>diidol</i> ‘line’
Process	<i>doyyere</i> ‘fall; loss’	<i>doyyol</i> ‘falling; losing’

TABLE 3. Some Fula nouns

The prototypical nouns of the NDE class designate relatively small, round, clearly delimited, three-dimensional objects like *yitere* ‘eye’, *hayre* ‘stone’, *bernde* ‘heart’, and *hoore* ‘head’. This structure is imposed metaphorically on two-dimensional «objects», that is, places like *waalde* ‘cattle camp, corral’, *wonorde* ‘locality, abode’, and *janngirde* ‘school’ (literally, ‘reading-place’), and on the domain of writing; the smaller unities of writing belong to the NDE class, cf. *harfeere* ‘letter (of the alphabet)’ and *hownde* ‘sukūn (a small circle placed above a consonant letter in the Arabic alphabet to indicate the absence of a vowel)’. NDE class nouns also designate relatively short one-dimensional «objects» in the process domain, that is, clearly delimited episodes like *doyyere* ‘fall; loss’ and *fuutere* ‘fart’.

The prototypical NGOL noun, on the other hand, designates long, thin or narrow three-dimensional objects: *boggol* ‘rope’, *mahol* ‘outer wall of a compound’, and *meetaleewol* ‘turban (that is, a long, narrow piece of cloth that is wound around the head)’. This long narrow structure is also found in NGOL nouns like *laawol* ‘road’; a road may be construed as a place that is narrow in one dimension and unlimited in the other dimension, and in the domain of writing, where NGOL class nouns designate long and narrow phenomena like *diidol* ‘line’ and *binndol* ‘writing’. Finally, in the process domain, NGOL class nouns designate events as phenomena without emphasis on the beginning and the end: *doyyol* ‘falling; losing’ and *puutol* ‘farting’.

These examples show how processes, which are usually designated by verbs, may be *entiified* and talked about with nouns, and how these entified processes are structured in analogy with other «things». The difference between the delimited «NDE class process» *doyyere* ‘fall; loss’ and the unlimited «NGOL class process» *doyyol* ‘falling; losing’ is analogous to the difference between the delimited «NDE class place» *waalde* ‘cattle camp, corral’ and the unlimited (in one of its two dimensions) «NGOL class place» *laawol* ‘road’. NGOL class process nouns are mass nouns, while most other NGOL nouns are count nouns. You can count occurrences of a *fuutere* ‘fart’, while *puutol* ‘farting’ is uncountable.

2.5 Sounds

Human languages may have existed for more than a hundred thousand years, and through most of this time languages have primarily been spoken. Writing was invented only five thousand years ago, and still only a few percentages of the 5,000–7,000 languages in the world are in daily use as written languages. Despite the existence of written languages—and sign languages (the “signed” languages of the deaf)—spoken languages have a privileged status that justifies treating it before written and signed languages.

We shall refer to the study of the sounds in language as **phonology**. The study of the sounds in language is usually divided into two parts, phonetics and phonemics, which can be defined in the following way:

PHONOLOGY	
The study of the sounds in language.	
PHONETICS	PHONEMICS
The study of the physiological, aerodynamic, and acoustic characteristics of speech sounds.	The study of how speech sounds are organized into systems and utilized in languages.

TABLE 19. *The branches of phonology*

In fact, most linguists these days refer to ‘the study of how sounds are organized into systems and utilized in language’ as *phonology*, while the term *phonemics* is not used at all, with the unfortunate result that they have no term for ‘the study of the sounds in language’ in general. We prefer to stick to the terminology introduced in TABLE 19.

2.5.1 Phonemes and allophones

Throughout 2.5 we have written the pronunciation of words in a **phonemic transcription**, which is marked by **slashes**: /.../. The letters of a phonemic transcription represent **phonemes**, which we can define as follows:

Phonemes are sounds that distinguish words (word forms) from each other.

We may compare the English words *pin* /^hpɪn/ and *tin* /^htɪn/, which are distinguished from each other phonologically by the contrast between the /p/ of the first word and the /t/ of the second. Consider also *pin* /^hpɪn/ and *pan* /^hpæn/, which are distinguished by the contrast between /ɪ/ versus /æ/, and finally *pin* /^hpɪn/ versus *pit* /^hpɪt/, which are distinguished by the contrast between /n/ and /t/. Pairs of words that are distinguished from each other by a contrast between two phonemes are called **minimal pairs**.

As a general rule, a phoneme may vary in pronunciation from one position in the word to another. In English for example, /p/, /t/, and /k/ are **aspirated** (they are followed by a strong breath, like an *h*) in word-initial position, for example in *pin* /^hpɪn/, *tin* /^htɪn/, and *kin* /^hkɪn/. On the other hand, they are **unaspirated** (they are not followed by a strong breath) when following /s/, like in *spin* /^hspɪn/, *sting* /^hstɪŋ/, and *skin* /^hskɪn/.

The different pronunciation variants of a phoneme are called the **allophones** of that phoneme, and we have a special **phonetic transcription** to write them in. Such a transcription is written in square brackets, [...]:

<i>Orthography</i>	<i>Phonemic transcription</i>	<i>Phonetic transcription</i>
pin	/ ^h pɪn/	[^h pɪn]
tin	/ ^h tɪn/	[^h tɪn]
kin	/ ^h kɪn/	[^h kɪn]
spin	/ ^h spɪn/	[^h spɪn]
sting	/ ^h stɪŋ/	[^h stɪŋ]
skin	/ ^h skɪn/	[^h skɪn]

TABLE 25. *Orthography, phonemic and phonetic transcription of six English words*

Sound differences that are **phonetic** (or **allophonic** or **non-distinctive**) in one language may be **phonemic** (or **distinctive**) in another language. For English, the contrast between unaspirated and aspirated stops is a *phonetic* contrast, while there are many languages where the same contrast is *phonemic*, for example in many languages of India—cf. the Hindi words *pāl* /pa:l/ ‘take care of’ and *kān* /ka:n/ ‘ear’ versus *phāl* /p^ha:l/ ‘edge of knife’ and *khaṅ* /k^ha:n/ ‘mine’. We have a tendency not to hear sound contrasts that are phonetic in our own language.

The phonemes may be characterized as *basic level terms* of speech sounds, the highest level at which we can form a mental image of a sound concept. We have no difficulties in forming a mental image of an English /p/-sound, /t/-sound, or /k/-sound, but we are not able to form a mental image of a voiceless stop, which is the hyperonym term of which /p/, /t/, and /k/ are hyponyms. As we have observed earlier, terms *above* the basic level tend to have a more or less technical or scientific «flavor»— which is certainly true of ‘voiceless stop’.

Even terms *below* the basic level tend to belong to the world of experts. And there is a level of hyponyms of the basic level phonemes, although the ordinary native speaker is seldom aware of its existence.

2.5.2 The speech organs

Strictly speaking, human beings do not have «speech organs» the way we have «visual organs» (eyes) or «auditory organs» (ears). The speech organs, the totality of which we have also referred to as the vocal tract, is simply those parts of the mouth and the respiratory tract that are used to produce speech sounds. While seeing is the primary function of the eyes and hearing the primary function of the ears, the primary functions of the speech organs are breathing, eating, and drinking. The vocal tract may be construed as a “quartet” with the these members:

«The Vocal Tract Quartet»			
The lungs & the windpipe	The larynx	The nasal cavity	The pharynx & the mouth

The members of the “quartet”—except the lungs—are depicted in FIG. 16.

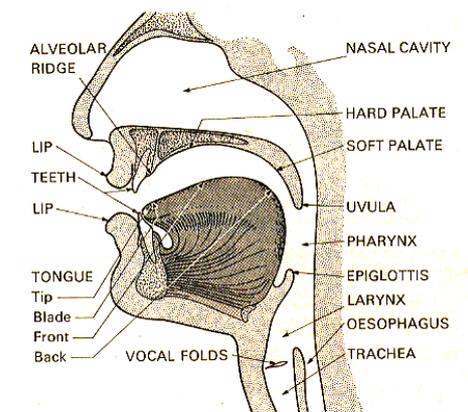


FIGURE 16. *The speech organs (except the lungs)*

THE LUNGS AND THE WINDPIPE

By increasing and decreasing the volume of the **lungs**, air is caused to flow into and out of the lungs. In all languages some—often most or all—sounds are produced on the basis of air flowing out of the lungs and the **windpipe** (trachea), through the throat and out of the mouth and/or the nasal cavity. We can also use the tongue and parts of the throat to cause air to flow through shorter parts of the vocal tract.

THE LARYNX

The **larynx** is a box-like structure sitting on the top of the windpipe—cf. FIG. 17, where the larynx is seen from the front, with the structure known as the Adam’s apple in the middle.

Inside the larynx are the vocal cords, two flaps of muscle across the windpipe. The vocal cords can be held in different positions, affecting the airflow from the lungs in different ways. The opening between the vocal cords is the **glottis**, seen from above in PICT. 3. The vocal cords are the light folds surrounding most of the glottis.

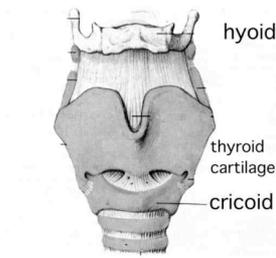
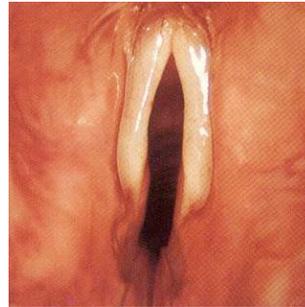


FIGURE 17. *The larynx*



PICTURE 3. *The glottis and the vocal cords*

THE NASAL CAVITY

The interior of the nose, the **nasal cavity**—cf. FIG. 16—is directly connected to the pharynx, so that air can flow from the pharynx, through the nasal cavity, and out. The passage between the nasal cavity and the pharynx—called the **nasal port**—can be opened and closed by lowering and raising the **velum** or **soft palate**, a muscular flap at the back of the roof of the mouth—cf. FIG. 16.

THE MOUTH AND THE PHARYNX: THE ORO-PHARYNGEAL TRACT

The **mouth cavity** and the **pharynx** (cf. FIG. 16), which is the tube starting right above the **larynx** (where the air-passage and the food-passage (*oesophagus*) divide on their way down) and going up to the back of the nose, constitute the **oro-pharyngeal tract**, which plays an important part in speech sound production.

Without comparison, the oro-pharyngeal tract is the quartet member with the heaviest and most challenging tasks. It is no coincidence that in many languages all over the world, language is referred to metonymically as «tongue» or «mouth». From a functional point of view, the mouth is the most important part of the oro-pharyngeal tract, and the tongue is the most important part of the mouth: without a tongue, no speech.

2.5.3 The basic components of speech production

Speech production has two basic components: **initiation** and **modulation**. Without these components there is simply no speech.

INITIATION

Initiation is a movement of a speech organ to create an outgoing or ingoing flow of air through the vocal tract. The main *initiation organs* are the *lungs*, which work like a pair of bellows. When muscles are used to decrease the lung volume, the air pressure inside the lungs becomes higher than the air pressure outside the body, causing an outgoing **airstream** through the vocal tract. When muscles are used to increase the lung volume, the air pressure inside the lungs becomes lower than outside the body, causing an ingoing airstream through the vocal tract.

Airstreams can also be initiated by a piston-like movement of the larynx or the tongue: (1) Close the opening between the vocal cords and move the larynx up or down like a piston, or (2) close the opening between the back of the tongue and the back of the roof of the mouth and move the tongue backwards or forwards. The former type of initiation creates implosives and ejectives, while the latter type creates clicks. Implosives are found in many Asian and African languages, while clicks are only found in languages in Southern Africa.

MODULATION

Modulation is an organic posture or movement of a speech organ that changes the airstream in such a way that a sound is created. There are three types of modulation: **phonation**, **nasality**, and **articulation**.

PHONATION

Phonation is modulation in the glottis, which—as mentioned earlier—is the opening between the vocal cords. Two postures of the glottis are found in all languages: **voiced** posture and **voiceless** posture.

In the **voiced** posture, the glottis is quite narrow, so that the air-stream from the lungs causes the vocal cords to vibrate—cf. Fig. 18. Sounds produced with this type of phonation are called **voiced sounds**, like the sounds in the English words *wall* /'wɔ:l/, *Monday* /'mʌndeɪ/, and *busybody* /'bɪzɪbɔ:di/.

In the **voiceless** posture, the glottis is wide open, and the vocal cords do not vibrate—cf. Fig. 19. Sounds produced with this phonation type are called **voiceless sounds**, like the consonants of the English words *fat* /'fæt/, *post* /'poust/, and *appetite* /'æpɪtaɪt/. The voiceless posture is also the posture of normal breathing.



FIGURE 18. *The glottis in the voiced posture.*



FIGURE 19. *The glottis in the voiceless posture.*

Several other postures of the glottis are possible, including whisper, breathy voice, creaky voice, and *glottal closure*, which are treated in more advanced books.

NASALITY

As mentioned earlier, the nasal port may be opened and closed by lowering and raising the velum, the velum or soft palate, a muscular flap at the back of the roof of the mouth—cf. Fig. 6. Sounds produced with a lowered velum are called **nasal** or **nasalized sounds**, while those produced with a raised velum are called **oral sounds**. The term *nasal* is used when there is a complete closure somewhere in the mouth; if not, the term *nasalized* is used. Some linguists use *nasal* in both meanings.

The consonants in the English word *meaning* /^hmi:nɪŋ/ are nasal, while those in *batik* /bə^hti:k/ are oral. Many languages all over the world distinguish between oral and nasalized vowels. In the French word *chanter* /ʃɑ̃te/ ‘sing’, the first vowel is nasal (this is marked with the /[~]/ above the vowel sign) and the second is oral. Another example is Hindi /yah[~]/ ‘here’.

ARTICULATION

Articulation is a modulation with a certain manner and place in the oro-pharyngeal tract.

Manner of articulation is type of stricture, while **place of articulation** is the location of the stricture in the oro-pharyngeal tract. For example, the initial consonant of the English word *pen* /^hpen/ is produced with a complete closure (a manner) between the lips (a place), while the initial consonant of the English word *sun* /^hsʌn/ is produced with a narrow passage causing friction in the air-stream (a manner) between the tongue blade and the gums (a place).

As already mentioned, the articulation is the most complicated part of speech production. Manner of articulation is treated in more detail in paragraph 2.5.3 and place of articulation in paragraph 2.5.4.

SUMMARY

The division of labor between the members of “The Vocal Tract Quartet” is summed up in TABLE 20. Dark grey shows the most important function of a quartet member, lighter grey shows less important functions.

	initiation	phonation	nasality	articulation
lungs				
larynx				
nasal cavity				
oro-pharyngeal cavity				

TABLE 20. *The functions of the “Vocal Tract Quartet” members.*

2.5.4 Manner of articulation

Speech sounds can be classified into several types on the basis of the **manner of articulation**. In a few cases, information about other modulations—nasality and place

of articulation—is also included in the classification. The following five types are most important: stops, nasals, fricatives, liquids, and vowels.

STOPS

Stops are defined by a complete closure in oro-pharyngeal tract and by a raised velum, preventing air from escaping through the nose. Stops are found in all languages. Voiced stops are a little less common than voiceless stops, and the former type is only found in languages with the latter type.

In English we find the *voiceless stops* /p t k/ and the *voiced stops* /b d g/, as illustrated by the words *pet* /¹pet/, *cat* /¹kæt/, *bed* /¹bed/ and *dog* /¹dɑ:g/.

NASALS

Nasals are defined by a complete closure in the mouth and by a lowered velum, allowing air to escape through the nose. Nasals are found in the overwhelming majority of the languages of the world. Voiceless nasals are rare, and are only found in addition to the voiced ones.

In English we find three nasals, /m n ŋ/, which are all voiced, as illustrated by the word *meaning* /¹mi:nɪŋ/.

FRICATIVES

Fricatives are defined by a narrow stricture in the oro-pharyngeal tract, causing audible friction as air passes by. Fricatives are common, but languages often have fewer fricatives than stops or nasals. Voiced fricatives are less common than voiceless ones, and are only found in addition to voiceless fricatives.

English has an exceptionally high number of fricatives, the four *voiceless* /f θ s ʃ/ and the four *voiced* /v ð z ʒ/, as illustrated by the words *thief* /¹θi:f/, *fish* /¹fɪʃ/, *these* /¹ði:z/, *vase* /¹veɪs/, *vision* /¹vɪʒən/.

LIQUIDS

Liquids are a less homogeneous group than stops, nasals, and fricatives, but the term is a very useful common denominator for “l-sounds” and “r-sounds”. The typical liquid is produced with a constriction between the front part of the tongue (i.e., the tip or the blade; cf. 2.5.4) and the roof of the mouth; it is oral and voiced. The constriction is «lighter» than the one found in stops, nasals, and fricatives: either shorter than in stops/nasals or more open than in fricatives.

Most languages have at least one liquid. Korean and many Bantu languages have a single liquid that varies in pronunciation between [l] and [r]. [l] is a **lateral**, which is characterized by an air-stream passing the tongue on one or two sides through openings that are wide enough to avoid friction. [r] is **tap**, which is like a very short [d], that is, a *momentary voiced stop*: the tip of the tongue touches swiftly the roof of the mouth. Another common liquid is the **trill** [r], produced by letting the tip of the tongue vibrate against the roof of the mouth two or more times.

2.5.5 Place of articulation

The initial consonants of the English words *pan* /^hpæn/, *tan* /^htæn/, and *can* /^hkæn/ are all *voiceless stops*, but they differ in **place of articulation**:

The **place of articulation** of a speech sound is the place in the oro-pharyngeal tract with the strongest constriction during the production of the sound.

To produce /p/, we make a *complete closure* between the lower lip and the upper lip; to produce /t/, we make a complete closure between the tip or the blade of the tongue and the alveolar ridge; to produce /k/, we make a complete closure between the back of the tongue and the velum.

At each *place of articulation*, there is a constriction between an **active articulator** and a **passive articulator**. The *active articulators* are the lower lip and the tongue, while the *passive articulators* are the upper lip, the upper teeth, the roof of the mouth, and the rear wall. Different languages utilize a different number of articulators, and the most important ones are presented in TABLE 21.

ACTIVE ARTICULATORS	PASSIVE ARTICULATORS
labium	labium
apex	dentes
lamina	alveoli
dorsum	postalveoli
	palatum
	velum
	uvular

TABLE 21. *The active and passive articulators*

The *active articulator* **labium** ('lip' in Latin) is *the lower lip*; the **apex** ('tip' in Latin) is *the tip of the tongue*; the **lamina** ('blade' in Latin) is *the blade of the tongue*; while the **dorsum** ('back' in Latin) is *the back of the tongue*. Sometimes it is practical to use **corona** as a common denominator for *the apex plus the lamina*.

The *passive articulator* **labium** is *the upper lip*; the **dentes** ('teeth' in Latin) is *the upper teeth*; the **alveoli** ('basins' in Latin) is *the alveolar ridge or the gums*, minus the back half, which is called the **postalveoli**; the **palatum** and the **velum** are *the hard palate* and in FIG. 16, respectively. The lower part of the velum is the **uvula**. There are adjectives corresponding to the nouns in Table 21: **labial, apical, laminal, coronal, dorsal; labial, dental, alveolar, postalveolar, palatal, velar, uvular**.

Terms for active and passive articulators are combined to define **places of articulation**. For example, when the active articulator is apical and the passive articulator is alveolar, the place of articulation is **apical-alveolar**. Two terms are irregular; we use **bilabial** instead of «labial-labial» and **labiodental** instead of «labial-dental». Quite often it is practical to mention only the active or only the passive articulator. For example, **alveolar** is a common denominator for *apical-alveolar* and *laminal-alveolar*. For **palatal, velar, and uvular** sounds, it is superfluous to mention the active articulator, which in these cases is always the *dorsum*.

In TABLE 22 we present some common sounds in the languages of the world, defined with parts of the terminology introduced so far.

		bilabial	labio-dental	dental	alveolar	post-alveolar	retro-flex	palatal	velar	uvular
stop	vc	p			t		ʈ	c	k	q
	vcl	b			d		ɖ	ç	g	ɢ
nasal	vc	m			n		ɳ	ɲ	ŋ	ɴ
fricative	vc	ɸ	f	θ	s	ʃ		ç	x	χ
	vcl	β	v	ð	z	ʒ			ɣ	ʁ
approx.	vc	w	ʋ		l	ɭ	ʎ	j		
tap	vc				r					
flap	vc						ɾ			
trill	vc				r					ʀ

Abbreviations: vc = voiced; vcl = voiceless; approx. = approximant.

TABLE 22. Some common speech sounds.

In TABLE 22, we have included a column with **retroflex** consonants, which strictly are **sublaminal-prepalatal**, that is, the active articulator is the area behind the apex, under the tongue, while the passive articulator is the front part of the palatum. However, the symbols for the retroflex consonants are also commonly used for **apical-postalveolar** sounds. Retroflex consonants are common in India, cf. Hindi *dyūṭī* /dju:ṭi:/ ‘duty’.

2.5.6 Vowels

While stops, nasals, fricatives, and liquids are **consonants**, we are now going to take a look at the **vowels**. The *prototypical consonant* has a relatively strong constriction in the oro-pharyngeal tract, while such a constriction is absent in vowels. Furthermore, the *prototypical consonant* belongs to the *margin of a syllable* (cf. the next paragraph), while the *prototypical vowel* belongs to the *nucleus of a syllable*.

Practically all languages distinguish at least three vowels, while the most common vowel inventory in the world is /i e a o u/, which is found for example in Swahili and Fula. We shall come back to a more detailed description of differences in vowel quality later.

Vowels are traditionally analyzed with a terminology that differs from that used for consonants. Three main dimensions are used in this classification:

- **Horizontal tongue position:** front / central / back
- **Vertical tongue position:** close / close-mid / open-mid / open
- **Lip position:** unrounded / rounded

Before explaining how this terminology is used, we present TABLE 23, where some vowel symbols are placed in a chart in accordance with their classification. All cells could have been filled, but we have left out some less commonly used symbols.

	front		central		back	
	unrounded	rounded	unrounded	rounded	unrounded	rounded
close	i	y			u	u
close-mid	e	ø	ə		ɤ	o
open-mid	ɛ					ɔ
open	a				ɑ	

TABLE 23. Some important vowel symbols

Let us start with **i**, which is **front**, **close**, and **unrounded**. *Front & close* means that the body of the tongue is pushed forward and upward, so that dorsum is as close to palatum as possible without creating audible friction. *Unrounded* means that the lips are spread, like in a smile. This is the vowel in English *feel* /^hfi:l/, where /: / tells that the vowel is long.

From **i** we move diagonally down to **ɑ**, which is **back**, **open**, and **unrounded**. *Back & open* means that the body of the tongue is pulled backwards and downwards, so that the root of the tongue is as close to the back wall of the pharynx as possible without creating audible friction. This is the vowel in English *father* /^hfɑ:ðə:/.

From **ɑ** we move upwards to **u**, which is **back**, **close**, and **rounded**. *Back & close* means that the body of the tongue is pulled backwards and upwards, so that the back of the tongue is as close to the velum as possible without creating audible friction. *Rounded* means that the lips are rounded, with a posture resembling the letter O when you look at them in a mirror. This is the vowel in English *fool* /^hfu:l/.

Let us move to the fourth corner, to **a**, which is **front**, **open**, and **unrounded**. *Front & open* means that the body of the tongue is pushed forward and downward as much as possible. This vowel is found as the first element in the vowel in English *price* /^hpraɪs/. This vowel is also found in French *chat* /ʃa/ ‘cat’ and German *da* /^hda:/ ‘there’.

Between **i** and **a** you can move the dorsum up and down and stop at whatever height you like, but in this system two vertical tongue positions between close and open have been given a special status: **close-mid** and **open-mid**. These positions are obtained by moving the tongue in three equally long steps between the close and open: **i** – **e** – **ɛ** – **a**. Here, **e** is the vowel of French *bébé* /bebe/ ‘baby’ and **ɛ** is the vowel of French *bête* /bet/ ‘animal, beast’.

In whatever position you have your tongue, the lips can vary between **unrounded** and **rounded**. For example, you can add rounding to **i** – **e** and get **y** – **ø**, which are the vowels of French *nu* /ny/ ‘naked’ and *nœud* /nø/ ‘knot’; **y** is also found in Turkish *üzüm* /yzym/ ‘grapes’.

Let us then go the vowels **u** – **o** – **ɔ**, which are all *back & rounded*, but which differ by being **close**, **close-mid**, and **open-mid**, respectively. These are the vowels of French *bout* /bu/ ‘end’, *beau* /bo/ ‘beautiful’, and *coteau* /kɔto/ ‘hillside’. If we remove the rounding of **u** – **o**, we get **ɯ** – **ɤ**, which are the vowels of Vietnamese *hu* /hu/ ‘spoiled’ and *co*’m /kɤm/ ‘rice’; **ɯ** is also the vowel of Turkish *kıptı* /kɯptu/ ‘Gipsy’.

The **central, close-mid, unrounded** vowel **ə** is the vowel of the first syllable of English *again* /ə’geɪn/. Central is the horizontal tongue position halfway between front and back.

2.5.7 Syllables

Speakers of most languages are able to tell how many **syllables** there are in a certain linguistic unit. Speakers of English are generally able to tell that the words *ape* /^heɪp/, *baboon* /bæ’bu:n/, and *gorilla* /gə’rɪlə/ have one, two, and three syllables, respectively.

Still, it is difficult to define the syllable in a simple way, and we shall simply present some characteristic features of the syllable.

The English word *book* /'bʊk/ consists of one syllable, and may be said to have the structure in FIG. 20—that is, it has three parts, **onset**, **nucleus**, and **coda**. The onset and the coda constitute the margin of the syllable, that is, its non-nucleus parts.

syllable		
onset	nucleus	coda
/b/	ʊ	k/

FIGURE 20. The syllable /'bʊk/

The vowel is the only sound type that is allowed to occur in the nucleus in all languages, while only consonants are allowed to occur in the margin in all languages. Some languages accept more than one consonant in the onset and in the coda, but such congestions of sound are rather rare. European languages (and a few others) are exceptional here—cf. English words like *strength* /'streŋθ/, where the onset is /str/ and the coda is /ŋθ/—but the languages of Europe constitute only about 3% of the languages of the world.

The only syllable type that is found in all languages is onset+nucleus, with one consonant in the onset and one vowel in the nucleus. There is a strong—but not exceptionless—tendency in the languages of the world for onsets to have a «richer» inventory of sounds than the coda.

2.5.8 Phonotactics

As mentioned a few lines above, *strength* /'streŋθ/ is an acceptable word in English, but in most languages of the world it is an impossible word, for two reasons.

First, because English has got sounds, for example /θ/, that are quite rare; /θ/ is found in Arabic and Swahili, but not in Hausa, Fula, Turkish, Modern Hebrew, Persian, Hindi, Indonesian, Chinese, Korean, and Japanese.

Secondly, the sound combinations in English are more complicated than in most languages outside Europe. The sound combination principles in a language are called the **phonotactic principles** of that language. They can be formulated on the basis of the word or the syllable. Consider the Japanese sentence in (49), where /./ marks syllable boundaries within words, that is, where one syllable ends and the next starts. Japanese onsets and codas never contain more than one consonant.

(49) A Japanese sentence

Zidoosya o motte Amerikazin wa arimasen ka?
 /dʒi.do:ʃa o mot.te a.me.ri.ka.dʒin wa a.ri.ma.sen ka/
 'Aren't there any Americans who don't own cars?'