Part 3
Semantics and Grammar

Communication using isolated words is necessarily extremely limited: words need to be used together with other words. But a simple collection of words is not much use, either: combinations of words need to be governed by grammatical rules. Grammar has a dual role in producing intelligible messages. First, there are rules of combination, which determine what sort of global meaning results when constituent meanings are combined. Second, the grammatical elements which articulate grammatical structures (affixes, particles, constructions, syntactic categories, etc.) carry a distinguishable sort of meaning, which contributes in a special way to the meaning of whole constructions and sentences.

In this section, which has only one chapter, we survey those aspects of the meanings of larger syntactic units which are attributable to grammar.

CHAPTER 14

Grammatical semantics

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14.1 Grammatical meaning

In this chapter we look at the sort of meanings that grammatical elements of various kinds bear. It will be recalled that to perform their characteristic functions, any meaning carried by a grammatical element must be of an impoverished, 'thin', or very general nature, so as to permit wide collocability: typical 'rich' lexical meanings impose too many conditions on their collocants.

We shall survey the varieties of grammatical meaning, but no attempt will be made to be exhaustive (particularly typologically—most of the examples will be drawn from English). This is now a complex and well-researched area: some of the treatment will be fairly traditional, as an exposition of many modem treatments requires extensive background knowledge for which there is not sufficient space here.

14.2 The meaning of major grammatical categories

Traditionally, syntactic categories are defined semantically: nouns are defined as words referring to "persons, places or things", verbs are "doing words", that is, they refer to actions, whereas adjectives are "describing words". In early structuralist linguistics such definitions were shown to be seriously flawed: *(a) punch* refers to an action, but is a noun; *seem* is a verb, but does not refer to an action; in *John shouted, shouted* describes what John did, but is not an adjective, and so on. It was recommended that syntactic categories should be defined on syntactic criteria: for instance, nouns are inflected for number, gender, and case and take articles as modifiers; verbs are inflected for tense and aspect, etc. Connections with semantics were held to be non-systematic. More recently, the question of the semantic basis of grammatical categories has been raised once again.

One approach has been to utilize the insights of prototype theory: perhaps grammatical categories are like natural categories such as BIRD and FRUIT, not

definable by a set of necessary and sufficient criteria, but with fuzzy boundaries and graded typicality. We might then say, for instance, that a prototypical noun refers to a person or thing, a prototypical verb refers to an action, and so on, but that more marginal examples of these categories may not conform to these descriptions. There would seem to be some justification in this view. For instance, there are many respects in which *seem* does not behave syntactically like a typical verb: it does not occur in the passive *(*happy was seemed by John),* or the progressive aspect *(fJohn is seeming happy).* There is a certain plausibility in correlating the verb's semantic marginality with its syntactic marginality. Likewise, a semantically atypical noun like *jogging* (as in *Jogging is good for you)* is also syntactically atypical: it can be modified by an adverb *(Jogging gently is good for you),* it is unhappy with certain determiners *(this! that jogging),* and so on.

A more illuminating and unified approach pictures the difference between nouns, adjectives, and verbs in terms of temporal stability: all languages have a way of making a difference between persistent entities whose properties change relatively little over time, and highly time-sensitive experiences, that is, between entities and events, with nouns encoding entities and verbs encoding events. Adjectives, if they occur, denote experiences which fall between the two poles (but not all languages have adjectives, the functions they typically have in English being performed either by nouns or verbs).

This approach, too, falls foul of the same sorts of counterexample as the traditional approach: in what sense is a punch a temporally stable entity? Once again, one can fall back on the prototype escape clause, but this does not seem entirely satisfactory. Another line of defence is to say that the characterizations do not apply directly to referents, but to conceptualizations: when we say *John punched Bill,* we conceive the punch as a time-bound happening; but when we say *The punch John threw . . .* , we re-conceptualize it as something with a certain permanence, we, as it were, freeze it in midflight, to allow ourselves to examine it and say things about it.

Another approach takes a cognitive view and sees nouns as denoting a 'region of cognitive space' (Langacker 1991^), whereas adjectives and verbs denote 'relations', adjectives portraying the states of affairs they denote as atemporal and verbs presenting their denotations as temporal. The cognitive viewpoint here seems correct. However, the notion of a 'region of cognitive space' is not very perspicuous.

14.3 Grammatical meanings associated with nouns and noun phrases

Certain types of meaning are typically carried by grammatical elements—inflections, clitics, or markers—associated with nouns or noun phrases. The

most important of these are: definiteness, number, animacy, gender, and functional roles. Definiteness is dealt with in Chapter 15, and will not be discussed here; functional roles are as much concerned with verbs as with nouns and will be discussed in the next section. Here, we shall look at number, animacy, and gender.

14.3.1 Number

Number is an inflectional category of nouns or noun phrases, which is not found in all languages. Semantically, number systems are all concerned, one way or another, with how many there are of some item. Number systems are not to be confused with numeral systems, which are linguistic devices for counting *(one, two, forty-three, one hundred and ninety,* etc.); obviously there are connections between the two, but numerals are syntactically and semantically distinct from number markers.

The number system in English has only two terms: **singular** and **plural.** We shall examine the semantics of these in a moment. A minority of languages have a three-term number system including a **dual,** used for just two things. A very small minority have four-term systems, in which the fourth term is either a **trial** (for three things), or a **paucal** (for 'a few' things). No language has a trial or a paucal without also having singular, dual, and plural; no language that has a dual does not also have singular and plural. (Of course, the meaning of *plural* is not precisely the same in a two-term system as in a three- or four-term system: *plural* in English means "more than one"; in a four-term system it means either "more than three" or "many" (i.e. "more than a few")).

14.3.1.1 Count nouns and mass nouns

English nouns are traditionally divided into two classes, count nouns and mass nouns. They can be recognized by the following criteria:

(i) Count nouns:
  (a) cannot occur in the singular without a determiner:
  This cup! Cup is clean;*
  (b) occur normally in the plural;
  (c) are quantifiable by *a few, many,* and numerals:
  *a fewtmany cups; (*much cup), thirty cups.*

(ii) Mass nouns:
  (a) can occur in the singular without a determiner:
  Butter is good for you;
  (b) are odd in the plural (or require reinterpretation):
  butters, milks;
  (c) are quantifiable by *a little, much',*
  *a little/much milk; (*many milk).*

Count nouns present something as being manifested in discrete, bounded

units that in principle can be counted; mass nouns present their referent as an unbounded mass. Notice that this is a matter of conceptualization, not of objective reality: the blood referred to in *There was blood on the floor* may well have occurred in discrete drops and patches, but it is thought of as an undifferentiated substance.

What determines whether the name of something is a mass noun or a count noun? Obviously, if there is nothing to count, as with liquids and gases and many abstract notions, then the name will be a mass noun. But in the case of many mass nouns, there are observable particles of some sort: rice comes in discrete grains, and sugar in grains or crystals; even flour can be seen to consist of particles. In such cases, the crucial factor seems to be the size of the particles. The cross-over point seems to be somewhere between the size of an average pea and that of a typical grain of rice (at least for English). So, we have *beans, peas, noodles,* and *lentils* as count nouns, but *barley, rice, sugar,* and *flour* as mass nouns. The boundary is not rigid: *sweet corn* and *spaghetti* seem on the large side for mass nouns; and it is worth recalling that *peas* is a reanalysed form of *pease,* which was a mass noun. Some things are referable to indifferently by mass or count nouns. Some such cases are obviously 'mass' in nature: mashed potatoes/potato, scrambled eggs/egg. The dual use can perhaps be explained in terms of whether the conceptualization focuses on the original state of the ingredients (i.e. discrete units), or on the state of the final product. Cases where the final product is also in the form of discrete units are harder to explain: *poached eggs/egg.*

14.3.1.2 Secondary uses of count and mass nouns

In the above discussion it has been assumed that a given noun is 'basically' either mass or count. This has been disputed, on the grounds that the vast majority of nouns in English can be found with both count and mass uses. While this is true, it is also true that for the majority of nouns, one use is intuitively more basic than the other, and this enables us to identify two significant phenomena and enquire about their semantic correlates: basic count nouns used as mass nouns, and basic mass nouns used as count nouns.

Basic count nouns used as mass nouns

Examples:

(1) With a Lada you get a lot of car for your money.
(2) Could you move along a bit? I haven't got much table.
(3) I can hear too much piano and not enough violin.

Here, the count noun is metonymically reinterpreted to yield a mass notion: sound, in (3), working space in (2), perhaps just size in (1).

Basic mass nouns used as count nouns

Examples:

(4) Three beers/cheeses/cakes/chocolates
(5) Three wines

Mass nouns used as count nouns are usually to be interpreted in one of two ways, either as unit quantities of the continuous mass, or as different types or varieties. The first type is illustrated in (4). The type of unit is partly conventionally determined, partly contextually. Thus, *three beers* probably refers to three bottles or standard glasses of beer, *three cheeses,* three spherical entities with a single rind, as the cheesemaker first produces them, etc. This alternation does not only apply to edible substances: it is observable in *not much timelthey come at different times', not much spacelspaces between words,* etc.

The second type is sometimes known as the **distributive** plural. (Some languages have a special form for the distributive plural; in others the plural is only used distributively. For instance, the Arabic *ashjaar* is a plural of *shajar,* meaning "tree", but is indifferent to the number of trees, only to the number of tree varieties referred to.) Something like a distributive plural can be observed in English, with words that do not usually take the plural affix, such as *trout, deer,* etc. They can, on occasion, take the plural *~s,* and when they do the most likely interpretation is a distributive one: *the trouts of N America, the deers of N. Europe,* etc.

The semi-mass use of count nouns

In the previous paragraph we examined some cases of the anomalous presence of the plural marker. In this section, we look at the converse of this, namely, the anomalous absence of the plural marker. The following are examples:

(6) We shot three lion last week.
(*We shot three fox last week).
(7) He has three hectares of oak.
(8) There is a field of beetroot/tumip.
(9) Two rows of lettuce/*leek/*pea/*bean.

This is not ordinary mass use, because the words in question are plurals:

(10) Those lion we saw last week have moved on.
(n) The oak on the other side of the hill are showing signs of disease.

On the other hand, there is something 'mass-like' about this usage. It seems to be confined to experts, hunters, foresters, horticulturists, and so on (as, indeed, is the use of the anomalous plural -5). Somehow, the individuality of the referents does not matter, only their species.

14.3.1.3 Singular nouns with (optional) plural concord

Two further number anomalies are worth pointing out. The first concerns so-called group words. These are count nouns which have the peculiarity that in the singular form they can take either singular or plural concord with the verb:

(12) The committee is/are considering the matter right now.

These words refer prototypically to groups of humans (my student informants find *The flock have gone over the hill* odd, but in Gray's *Elegy* we find *The lowing herd wind slowly o'er the lea;* certainly, inanimate 'collections' do not behave in this way:

(13) *His library are all leather bound.
(14) *The forest are leafless at this time of the year.).

There is a subtle difference of meaning between the uses. With singular concord, the group is conceptualized as a unity; with plural concord, it is conceptualized as constituted out of separate individuals. Predicates which can only apply to each individual separately are anomalous with singular concord:

(15) The committee are wearing their hats.
(16) *The committee is wearing its hat/their hats.

Predicates which can only be true of the group as a whole are anomalous with plural concord:

(17) The committee was/*were formed six months ago.

It is only verbal concord which may vary: items inside the noun phrase must be singular:

(18) *Those committee are considering the matter now.

14.3.1.4 Plural nouns with (optional) singular concord

The second anomaly is the converse of the first, namely, plural nouns with singular concord:

(19) Five wives is more than enough for anyone.

This use seems to be confined to noun phrases with numerals in them:

(20) *Those wives is more than enough for any man.
(21) ?Several wives is too much for an old man.

In this usage, the quantified noun phrase is interpreted as a single quantity.

14.3.2 Gender and animacy

Gender is a classification system for nouns, which affects such grammatical matters as agreement and pronominal reference. Many different types of

gender system can be found in the world's languages, some of them quite exotic (like the case made famous by Lakoff, in which one gender class includes words referring to 'women, fire and dangerous things'); but the most widespread are those which correlate to a greater or lesser degree with the sex of the referent, and the present account will be limited to these.

It is usual to make a distinction between **natural gender** and **grammatical gender.** English is usually said to exhibit natural gender (in so far as it has gender at all—it affects only pronominal reference), since the appropriate pronoun *(he, she,* or *it)* can be predicted with a high degree of success purely on the basis of the sex (male, female, or neuter) of the referent. In languages possessing grammatical gender, at least a significant proportion of cases of gender assignment are apparently semantically arbitrary, although in some cases the arbitrariness is less than it seems at first sight. Often cited as exemplifying the semantic arbitrariness of gender are the German words *Lǫffel* ("spoon"; masculine); *Gabel* ("fork": feminine) and *Messer* ("knife": neuter). However, in German, as in French, there is a strong tendency for words referring to male beings (especially humans) to be grammatically masculine, and for words referring to females to be grammatically feminine (there are exceptions in both languages). (Since there are no languages with completely arbitrary gender assignment, we should probably think in terms of a scale of naturalness/arbitrariness, rather than an arbitrary/natural dichotomy.)

Gender is of course intimately bound up with animacy, since prototypically, only living things can be male or female. Many languages have grammatical processes which are sensitive to animacy, or relative animacy. On the basis of an examination of a wide range of languages the following scale has been put forward (after Frawley, 1992: animacy decreases from right to left):

1st Person > 2nd Person > 3rd Person > Human > Animal > Inanimate

An examination of the English pronoun system shows that it, too, correlates to some extent with the animacy scale:

helshe **only**	***helshelit***		***it*** **only**
non-infant humans	infant humans	animals	things
gods, angels			(cars, ships)

What seems to underlie the scale of animacy is perceived potency, or capacity to affect other things (including the human mind, hence, also saliency and relevance) and bring about changes. What a culture regards as potent may not coincide with our notions: it is reported, for instance, that Yagua, an Amazonian language, uses the same classifier for humans, animals, the moon and stars, rocks, brooms, and fans, while the sun, spoons, and other inanimates have a different classifier. This system makes more semantic sense when it is

realized that the Yagua are moon worshippers, while rocks, brooms, and fans are valued for the effects they produce (in the case of rocks, for crushing food).

14.4 Grammatical meanings associated with the verb

14.4.1 Tense

Semantically, the grammatical feature of tense serves essentially to locate the event referred to in the sentence with reference to the time at which the utterance was produced (although it may have other secondary functions). Only languages which encode timing distinctions by means of grammatical elements (usually inflectional morphemes or grammatical markers such as auxiliary verbs) can be properly said to manifest the grammatical feature of tense; many languages encode the timing of a designated event lexically, by means of expressions equivalent to *yesterday, last year, next week,* etc.

A distinction is usually made between **primary** (or **absolute)** tenses, which encode event time directly relative to time of speaking, and **secondary** (or **relative)** tenses, which encode event time relative to a secondary reference time which, in turn, is located relative to speaking time, thus making the relation between event time and speaking time an indirect one.

The tense systems of most languages are said to be **vectorial,** that is, they essentially indicate the direction along the time-line from speaking time to event time. Some languages also grammatically encode degrees of remoteness, equivalent to contrasts such as the following:

(22) I used to go for a run every morning, once, (distant past)
(23) I went for a run. (past)
(24) I've just been for a run. (recent past)

The alternative to a vectorial system is a **metrical** system of tense, based on definite intervals of time. The most frequent is the **hodiernal** system, which distinguishes "today" and "not today". Up to six of seven intervals may be distinguished, with, as in most tense systems, the past being more highly differentiated than the future. According to Comrie (1985: 99), Yagua makes the following distinctions in its grammatical tense system:

(i) past (today);
(ii) yesterday;
(iii) within a few weeks ago;
(iv) within a few months ago;
(v) distant past.

There are three basic primary tenses, past (event occurs before time of speaking); present (event occurs concurrently with speaking time, or includes it); and future (event is projected to occur after the time of speaking):

(25) John saw Bill.
(26) John sees Bill.
(27) John will see Bill.

In the case of secondary tenses, there are nine possibilities (in each of the following, the reference time is John's arrival, and the time of Bill's action is situated relative to that):

(28) At the time John arrived, Bill had switched on the lights,
(event prior to reference time; reference time in past)
(29) At the time John arrived, Bill switched on the lights,
(event coincident with reference time; reference time in past)
(30) At the time John arrived, Bill was about to/was going to switch on the lights.
(event subsequent to reference time; reference time in past)
(31) At the time John arrives, Bill has switched off the lights.
(event prior to reference time; reference time in present—can only receive a habitual interpretation)
(32) At the time John arrives, Bill switches off the lights.
(event coincident with reference time, reference time in present—can only receive a habitual interpretation)
(33) At the time John arrives, Bill is about to switch off the lights,
(event subsequent to reference time, reference time in present)
(34) At the time John arrives, Bill will have switched off the lights,
(event prior to reference time; reference time in future)
(35) At the time John arrives, Bill will switch on the lights.
(event coincident with reference time, reference time in future)
(36) At the time John arrives, Bill will be about to switch off the lights,
(event subsequent to reference time, reference time in future)

Presumably all languages can express all nine secondary tense relationships one way or another; however, no language with an inflectional tense system has distinct inflections for all nine.

14.4.2 Aspect

It is important to distinguish aspect clearly from tense. Tense serves to locate an event in time; aspect says nothing about when an event occurred (except by implication), but either encodes a particular way of conceptualizing an event, or conveys information about the way the event unrolls through time. It is also important to make a distinction between aspect as a semantic phenomenon, and aspect markers in a particular language, which may have a variety of semantic functions. To make things even more complicated, a lexical verb may encode aspectual information as part of lexical meaning; this may affect the way the meaning of the verb interacts with the meanings of aspectual markers with which it is associated.

14.4.2.1 Perfective/imperfective

One of the most widespread aspectual distinctions is that between imperfective and perfective. In many languages there is a formal distinction of some sort whose prototypical semantic function is to signal the perfective/imperfective contrast (e.g. Czech and Arabic). In English, there is no regular way of indicating the distinction, but it is often associated with the progressive/simple alternation and can be observed in the following:

(37) I saw the chicken cross the road, (perfective: the event was viewed in its entirety and is treated as unanalysable)
(38) I saw the chicken crossing the road, (imperfective: event is viewed as taking time, allowing other events to be temporally located within its boundaries. Makes no commitment as to whether the chicken successfully made it to the other side of the road, but sees the chicken's movement as part of a complete crossing)

The perfective aspect construes an event as completed, and as an unanalysable conceptual unit with no internal structure; it is sometimes described as viewing an event holistically, without any attention being directed to constituent parts. Notice that it does not say anything about the event itself, for example whether it is instantaneous, or takes time to happen (although, of course, events which take an appreciable time to be completed lend themselves to the imperfective aspect more readily than those which happen in an instant): what the perfective aspect does is to treat the event as if its time course was irrelevant. The imperfective aspect, on the other hand, opens up the internal temporal structure of the event, taking an inner rather than an outer viewpoint, and allowing intermediate stages between beginning and end to be relevant.

Although tense and aspect are to be rigorously distinguished, it is sometimes the case that information that is conveyed in one language by the tense system, is conveyed in another by the aspectual system. This occurs particularly with the perfective/imperfective contrast. It is arguable that Arabic, for instance, has no tense system. A sentence like *John killed* is translated into Arabic as *qatala Hanna,* whereas *John is killing* would be *yaqtala Hanna.* The verb *qatala* is not in the past tense, but in the perfective aspect; likewise, *yaqtala* is not strictly in the present tense, but the imperfective aspect. The connection between past tense and perfective aspect is that, prototypically, events that are complete are ones that happened in the past; similarly, there is a default assumption that an uncompleted event is currently in progress, hence the association between imperfective and present tense.

14.4.2.2 Perfect/prospective

The English **perfect** is a typical example. Consider the difference between the following:

(39) John read the book.
(40) John has read the book.

Both indicate that John's reading of the book occurred in the past. But the first sentence directs our attention into the past, to the specific time when the event occurred; the second sentence, on the other hand, directs our attention towards John's present state, or at least at aspects of it which are attributable to his having read the book at some (indeterminate) time in the past. This is the essence of the perfect: present relevance of past events. Notice the incompatibility between a perfect and a definite past time adverbial:

(41) ?I have done it yesterday.

and (in British English, at least) between the past tense and *now:*

(42) ?I just did it now.

Some linguists distinguish a counterpart to the perfect, but involving the future, called the **prospective.** A gloss of this would be: the present relevance of a future event. Consider the difference between the following:

(43) John will leave tomorrow.
(44) John is leaving/is going to leave tomorrow.

One explanation is that the first sentence can be a pure prediction, and can apply to an event which is not under the control either of John or of the speaker. The second sentence, on the other hand, implies that the event is under the control of one or the other, and that decisions and arrangements are currently complete; in other words, things are currently in a state such that, if all goes according to plan, John will leave tomorrow. This would go some way to explaining why, for instance, the following is somewhat odd:

(45) The sun is going to rise at 7.00 a.m. tomorrow.

14.4.2.3 Miscellaneous aspectual distinctions

A number of miscellaneous aspectual distinctions can be illustrated from English, although there is no regular way of signalling them grammatically.

Punctual!durative

(46) John sat (down) on the chair, (punctual)
(47) John sat there for two hours without speaking, (durative)

This is fairly self-explanatory. The following is ambiguous between the two readings:

(48) John sat on the pin.

Punctual! iterative

(49) John sneezed.

(50) John was sneezing.

The first sentence indicates a single sneeze, the second a series of sneezes with a relatively short time interval between them.

The iterative aspect is to be distinguished from the habitual, where there is also a repetition, but over a longer period, and with (potentially) longer intervals between occurrences, as in:

(51) John switches on the lights at 5.00 p.m.

Inchoativelmediall terminative

Inchoative, medial, and terminative do not have stable morphological or syntactic reflexes in English. Inchoative refers to the initiation of an event or state, as in:

(52) As soon as **I** saw him **I** knew he was guilty.

Medial refers to the 'body' of the event or state, as in:

(53) I knew the answers to all the questions.

Terminative focuses on the ending of a state, process, or action, as in:

(54) We soon exhausted our stocks of food.

14.4.2.4 The aspectual character of verbs

As mentioned above, verbs often encode aspectual information as part of their meaning. For instance, *be born* denotes the beginning of a state (inchoative), *live* the middle part (medial), and *die* the end of a state (terminative). These verbs are sometimes said to have a particular **aspectual character.**

It is instructive to examine the different 'uses' of the English progressive and simple forms of the verb. It will be seen that the forms have a different effect according to the semantics of the verb. This can also be regarded as a variety of aspectual character in verbs.

First, we shall assume that the prototypical meaning of the progressive form is to indicate that a process, activity, or action is, was, or will be in progress at some particular (perhaps implicit) reference point in time. For instance, *It is raining* indicates that the natural process of precipitation is in progress at the time of speaking, that is, it started before the time of speaking and is expected to continue after the time of speaking. *It was raining,* on the other hand, involves an implicit reference point in the past (e.g. *It was raining when we left the house),* but the relation to the reference point is the same as in the previous example.

The effect of combining the progressive form with a verb in English depends on the semantics of the verb. As already mentioned, with verbs denoting processes (non-intentional durative 'happenings'), the progressive has its prototypical value. A subtle difference can be detected between verbs (or

expressions) which denote **activities** (actions which have no natural end-point, such as *swim, walk, dance, breathe,* etc. and for which there is no great difference in meaning between *stop V.-ing* and *finish V.-ing:* compare *I've stopped swimming* and *I've finished swimming),* and those which denote **accomplishments** (actions which have a natural end-point, like *wash up, eat an apple,* etc., and for which there is a marked difference between *stop V.-ing* and *finish V-ing:* compare *I've stopped washing the dishes* and *I've finished washing the dishes).* The difference with the progressive can be felt with the following:

(55) She's washing the dishes.
(56) She's crying.

In the first, there is an implication that unless there are unforeseen interruptions or impediments the action will continue to completion: in the second, there is no such implicit boundary.

With verbal expressions possessing semantic characteristics other than those just discussed, the progressive takes on a different hue. Let us begin with stative verbs, that is, those which denote a state of affairs which remains constant over an appreciable time-scale. Some stative verbs will not accept the progressive at all; this type includes a number of inanimate types like *resemble, contain, overlook,* and so on:

(57) This box contains/*is containing 25 matches.
(58) The flat overlooks/*is overlooking the park.
(59) John resembles/*is resembling Bill.

and also certain mental verbs:

(60) I know/*am knowing him.
(61) I believe/*am believing that to be so.

With a number of stative verbs, a feature of 'provisionality' is added to the message. This can take different forms. For instance, in (62) and (63) the contrast seems to be one of permanence/temporariness:

(62) John lives in London.
(63) John is living in London.

In (64) and (65), the feature appears as tentativeness, openness to correction:

(64) I assume you will do it.
(65) I am assuming you will do it.

In (66) and (67), and (68) and (69), the feature appears as doubt of the evidence of one's senses, admission of the possibility of hallucination:

(66) I hear a noise.
(67) I'm hearing a noise.

(68) I think I see something.
(69) I think I am seeing something.

In the case of punctual verbs, that is, verbs or expressions that denote an instantaneous action, there are two main effects, in each case modifying or extending the meaning of the verb so as to conform with the prototype. The first can be observed in (70):

(70) John is coughing.

Here a series of punctual events is being construed as a unified durative process. The same interpretation is possible for (71):

(71) John is switching on the lights.

However, this interpretation is not available if the direct object is singular:

(72) John is switching the light on.

In this case, the punctual event is extended to include preparatory actions like going towards the switch, and in that way receives a durative reading.

14.4.3 Voice

In this section we shall look only at the three traditional **voices:**

(i) Active: *John opened the door.*
(ii) Passive: ***The****door was opened by John.*
The door was opened.
(iii) Middle: *The door opened.*

To understand the passive, we must first consider the nature of a prototypical transitive clause. In this, one participant, the most 'active', exerts some kind of force on a second, less active participant, resulting in some change, denoted by the verb. In the active voice, the more active participant plays the syntactic role of subject, and the less active participant plays the syntactic role of direct object. There is another difference between the two participants, besides their relative level of activity: the more active, the subject, is thrown into higher relief than the other—and in the basic form of the clause is the 'topic', the entity that the clause 'is about'. The effect of passivization is to promote the less active participant (the logical object), as it were, to the front of the stage by making it the syntactic subject, and to background the logical subject (to such an extent that it becomes an optional adjunct). The effect of the middle voice is to abolish the logical subject altogether, and construe the event as being causeless. (Even in the short passive, although the logical subject is not overtly mentioned, the event is construed as being the result of an action by an 'off-stage' agent.)

Clauses whose semantics depart radically from the prototype may resist passivization:

(73) The box contains Mary's jewellery.
(74) *Mary's jewellery is contained by the box.

(75) John resembles his brother.
(76) * John's brother is resembled by him.

(Notice that although *John resembles Bill* is too far, semantically, from the prototype for passivization to occur, it has not lost all contact with the prototype: there are still two participants, one relatively highlighted, the other relatively less prominent and functioning as a reference point.)

14.4.4 Functional roles

Consider the sentence *John opened the door.* There are two main participants in the event, John and the door. These, however, have different relationships to the act of opening: John is the doer, the agent, and supplies the force needed to open the door; the door is passive, is affected by the action, and undergoes the designated change of state. Consider, now, the sentence *John saw the door.* Again there are two participants, but at least one of these has a third possible relation to the verb. John is no longer a supplier of force resulting in the change of state of the door; in fact, he is now the entity that is affected, in that he has a perceptual experience. However, it would be misleading to say that John's experience was caused by the door, in the same sense that the door's opening was caused by John. Hence we have identified three (possibly four) different possible relationships that the noun phrase in a minimal transitive clause can contract with the verb. As a final example, consider *This key will open the door.* Here the door seems to be in the same relationship with the verb (plays the same functional role) as it does in *John opened the door.* The role of *key,* however, is a new one: the key although it affects the door, does not supply the necessary force, it rather transmits it from another entity (unmentioned). The relationships that have been illustrated are variously called **functional roles, case roles, deep cases, participant roles, thematic roles.**

When a wide range of languages is examined, it appears that the same roles crop up again and again, and it seems that in some sense there is a limited number of possibilities. There are many accounts of functional roles, which differ not only in what roles are recognized, but also in the number recognized. None of the suggestions so far has received general acceptance. A full discussion of this topic is not possible here; what follows is merely illustrative.

It is first necessary to distinguish between **participant roles** and **circumstantial roles,** our discussion being confined to the former.

Consider the following sentences:

(77) John put his bicycle in the garage.
(78) John repaired his bicycle in the garage.

In (77), the phrase 'in the garage' has a much more intimate relation to the

verb than the same phrase in (78): it is part of the 'inner' structure of the clause. In (78), on the other hand, it is external to the clause nucleus. In traditional terms, *in the garage* in (77) is a complement (= fulfils a participant role) of the verb, whereas in (78) it is a clausal adjunct (= fulfils a circumstantial role). How do we tell the difference? Well, as a start, all adjuncts are optional (syntactically—i.e. omitting them does not render the clause ungrammatical), whereas all obligatory elements are complements. On this basis, *in the garage* in (77) is a complement. The major problem with this characterization concerns optional complements. We shall not delve into this matter too deeply. The following can be taken as indications of complement status:

(i) occurrence as subject, direct or indirect object of verb;
(ii) omission leads to 'latency' (i.e. 'missing' element must be recovered from context, as with the direct object of *watch* in *Somebody's watching).*

We shall now concentrate on complements.

As mentioned above, there is no agreement as to the best way of describing participant roles, although a significant number of linguists appear to feel that there is a finite number. It would be impossible in the limited space available to give a thorough discussion of the various suggestions: what we shall do here is to go back to the earliest set of proposals, namely those of Fillmore (1968), and point out some of the difficulties. Fillmore's proposals had an elegant simplicity, but history shows elegant simplicity to be a fragile thing in linguistics. Fillmore's original list (1968:24-5) went as follows:

[i] AGENTIVE (A), the case of the typically animate perceived instigator of the action identified by the verb.

[Mary kicked the cat.]

[ii] INSTRUMENTAL (i), the case of the inanimate force or object causally involved in the state or action identified by the verb.

[John used **the hammer** to break the window.
The hammer broke the window.]

[iii] DATIVE (D), the case of the animate being affected by the state or action identified by the verb.

[Mary heard the nightingale.
The nightingale enchanted **Mary.]**

[iv] FACTITIVE (F), the case of the object or being resulting from the action or state identified by the verb, or understood as part of the meaning of the verb.

[John cooked **a delicious meal.]**

[v] LOCATIVE (L), the case which identifies the location or spatial orientation of the state or action identified by the verb.

[Mary vaulted **the wall.**
John put his finger **on the button.]**

[vi] OBJECTIVE (o), the semantically most neutral case, ... conceivably the concept should be limited to things which are affected by the action or state identified by the verb.

[Mary opened **the door.**
The door opened.]

The following indicates the flavour of some later developments:

(i) **Agentive:** Most modem treatments subdivide the AGENTIVE role. There are various problems. A prototypical agent is animate, supplies the energy for the action, and acts deliberately. First of all, an agent-like cause may not be animate: *The wind rattled the windows.* By Fillmore's definition, *wind* should be INSTRUMENTAL, but this does not seem satisfactory; some linguists suggested a new case, FORCE, which was distinct from AGENTIVE. (Does this apply to *computer* in *The computer is working out the solution!)* Second, there are agent-like entities which do not really supply the energy for the action, although they do supply the will, as in *The sergeant-major marched the recruits round the parade ground.* This has been called the INSTIGATOR, although it is then not clear what role to assign *the recruits* to. Finally, there are cases where the agent-like entity supplies the energy, but not the will, as in *John accidentally knocked the vase on to the floor.* A suggestion for this is EFFECTOR.

(ii) **Instrumental:** Instruments are supposed to be inanimate; what, then, are we to make of *sniffer dogs* in *The police used sniffer dogs to locate the drugs!* (This syntactic frame is often put forward as diagnostic for **INSTRUMENTAL.)**

(iii) **Dative** (sometimes called **Experiencer):** The definition for this role leaves open the possibility that *John* in *Mary threw John out of the window* is EXPERIENCER, but it does not seem significantly different from *Mary threw John's trousers out of the window* (and they co-ordinate without zeugma, sometimes given as a test for same role: *Mary threw John and his trousers out of the window).* One way round this is to stipulate that EXPERIENCER can only occur in connection with a process or action where animacy is crucially involved. This is clearly not the case in the above example, but is in *Mary terrified John,* and *John heard the noise.* A distinction is often made between EXPERIENCER and BENEFACTIVE, the latter being exemplified by *Mary* in *John made Mary a cake.*

(iv) **Factitive:** This is not now usually separated from PATIENT (see below).

(v) **Locative:** Various subdivisions can be made of this role. One is a simple, static location, as in: *The Ighzui inhabit a remote island in the Pacific.* Three dynamic subdivisions are possible (i.e. cases where motion is at least implied. First, we have SOURCE, as in *The lamp emits heat;* second,

PATH, as in *Mary crossed the street;* and finally GOAL, as in *We finally reached the igloo.*

(vi) **Objective: A** frequent division under this heading focuses on whether the affected entity is changed by the process or action, or not. An unchanged inanimate affected is a THEME, as in *John put on his hat;* a changed item is a PATIENT, as in *Mary minced the meat.*

Two points should be made about functional roles. The first is that there are obviously many borderline and intermediate cases—one can go on subdividing until the cows come home. Clearly some criteria are needed. Since we are dealing with grammatical semantics, one criterion is that a proposed subdivision should have grammatical consequences. Again, there are two possibilities: a case role distinction can be recognized if ***any*** language makes the distinction grammatically; or a distinction can only be justified within a particular language if ***that*** language makes the distinction grammatically. It should probably be borne in mind also, that necessary and sufficient definitions of participant roles are likely to be hard to come by, and that the best approach may be to characterize the prototypical cases.

Functional roles provide an approach to the characterization of syntactic functions such as subject and object. Traditionally, the subject is the 'doer' and the object the 'done to' (in the active voice), but it is easy to think of exceptions to this. A more promising approach is to establish a scale of 'activity', and define the subject as the most active participant. Fillmore's **activity hierarchy** went as follows:

AGENTIVE > INSTRUMENTAL > EXPERIENCER > LOCATIVE > OBJECTIVE

In English, a subject is obligatory, so if there is only one noun phrase in a sentence, it automatically becomes subject. The hierarchy explains cases like the following, where the subject has different roles, but is always the most active in the sentence:

John cut the wood with a saw.
This saw won't cut the wood.
Mary opened the door.
The door opened.
Mary saw the incident.
John frightened Mary.

There are many exceptions: for instance, a change of voice from active to passive will obviously change the rules for subject. There is not space to go into details.

14.4.5 Semantics and syntax: a case study

An important question concerning the relation between semantics and syntax

is the extent to which the syntactic properties of words are determined by, or predictable from, their meanings. There is a substantial body of opinion which holds that there is a significant degree of arbitrariness in grammar. That this is so, is suggested by such elementary considerations as the obvious syntactic differences between near synonyms, as in the following:

(79) Let's hide it.
Let's conceal it.

(80) Let's hide.
♦Let's conceal.

(81) We've finished the job.
We've completed the job.

(82) We've finished.
♦We've completed.

Even Langacker, who believes that grammar can only be properly understood in terms of its semantic function (i.e. every construction at every level must be seen as symbolizing some element of conceptual content), none the less denies that grammar can be predicted from meaning. In one sense, this is obvious, otherwise all languages would have essentially the same grammar, differing only in phonetic realization (unless one adopts a strong Whorfian position). However, it leaves open the possibility that, within a particular grammar, formal choices may be dictated by meaning. We shall illustrate this point by referring to a study (reported in Levin and Hovav Rappaport 1992) which takes up this position, and attempts to support it by showing a tight relationship between the meanings of a set of verbs and their complementation patterns.

Levin and Hovav Rappaport's study involves what they initially call 'verbs of removal' (although *remove* does not belong to the class), such as those in:

(83) John cleared the leaves from the lawn.
(84) Mary wiped the offending words from the blackboard.

Both of these also occur in a pattern in which the location (where the things are removed from) is the direct object of the verb:

(85) John cleared the lawn.
(86) Mary wiped the blackboard.

However, the two verbs differ in their ability to occur in a pattern where the locatum (the thing which is removed) is expressed by an ^/-phrase:

(87) John cleared the lawn of leaves.
(88) *Mary wiped the blackboard of offending words.

Wipe can occur in this pattern only if a final state is specified:

(89) Mary wiped the blackboard clean of offending words.

The patterns in which they occur separate these verbs of removal into two distinct classes:

I C/ear-verbs: clear, clean, empty

II IF̊žpe-verbs: buff, brush, file, mop, pluck, rake, rinse, rub, scour, scrape, scratch, shear, shovel, sponge, trim, vacuum, wipe

Remove belongs to a third class which do not allow alternative expression of their arguments:

III *Remove-verbs:* dislodge, draw, evict, pry, remove, steal, uproot, withdraw, wrench

Levin and Hovav Rappaporf s task, then, is to discover the semantic features which determine whether a verb belongs to I, II, or III, above. The following generalizations emerge:

(i) *Clear-verbs:* these verbs all encode the final state of the entity being acted on, but do not encode either the manner in which the final state is achieved, or the instrument which is used. Consistent with this, they are typically derived from adjectives denoting the final state: this is true of the verbs *clear, clean,* and *empty,* which are zero-derived from adjectives.

(ii) *Wipe-verbs:* these verbs all encode either a manner (e.g. *wipe)* or an instrument (e.g. *brush),* but do not entail that a particular state will result (as the authors point out, the fact that a blackboard has been wiped is no guarantee that it is clean). None of these verbs is de-adjectival; those, like *brush,* which encode an instrument, are typically derived from the noun denoting the instrument.

(iii) *Remove-verbs:* these verbs are characterized by the fact that they encode neither a final state nor a way of carrying out the action.

It is clear from the results of this investigation that, at the very least, there is a close relationship between meaning and grammatical properties.

14.4.6 Modality

Modal expressions are those which signal a particular attitude on the part of the speaker to the proposition expressed or the situation described (typically in a statement). So, for instance, in *It's probably the case that imported versions are cheaper,* the words *It's probably the case (that)* indicate the speaker's assessment of the likelihood of the proposition *imported versions are cheaper* being true. Other modals indicate the degree of desirability (or otherwise) of a proposition becoming true: *I think you should ask John about it first.* Here the speaker indicates his assessment of the merit of bringing about the truth of the proposition *you ask John about it first.*

If we take modality to be a semantic phenomenon, it is clear that it is not exclusively grammatical in nature. Indeed, in the first sentence quoted in the previous paragraph, it is expressed by lexical means. In this chapter, however, we are concerned with grammatical meaning. As far as English is concerned, this involves the so-called modal verbs, such as *may, might, should, ought, can,* and so on.

14.4.6.1 Epistemic and deontic modality

Consider sentence (90):

(90) John should be there by now.

This has two fairly distinct interpretations:

(i) John is under an obligation to be there by now.
(ii) It is likely that John is there by now.

Interpretation (i) is said to be a **deontic** reading of the modal *should,* and interpretation (ii) is said to be an **epistemic** reading. Halliday (1985) says that epistemic modality calibrates the area of meaning lying between *Yes* and *No;* whereas deontic modality calibrates the area of meaning between *Do it!* and *Don't do it!*

It is a notable fact that grammatical modal expressions regularly have both epistemic and deontic uses, and this seems to be a universal phenomenon, not confined to English. Various suggested explanations have been put forward for this, either by showing that both are merely special cases of some more general meaning, or by showing that the derivation of one from the other (by metaphor, or whatever), is so 'natural' as to be inevitable; however, none of the proposed solutions so far is wholly convincing.

14.4.6.2 Values of modals

Halliday recognizes three strengths or levels of modality: high, median, and low. In the case of epistemic modality, high means a high probability of the truth of the proposition; in the case of deontic modality, **high** designates a high degree of obligation. High and low values can be distinguished from median values by their behaviour with negatives. It is first necessary to distinguish between the negation of the modal and the negation of the proposition. Take the case of (91):

(91) John must leave tomorrow.

If the modal is negated, the meaning would be that John is not obligated to leave tomorrow; if the proposition is negated, the meaning would be that John is obligated to not leave tomorrow. In English, a straightforward syntactic negation results in the proposition being negated semantically:

(92) John must not leave tomorrow.

In order to express the negation of the modal, a different verb is needed:

(93) John need not (i.e. "not-must") leave tomorrow.

It sometimes happens that whether the modal or the proposition is negated by a syntactic negative depends on whether the modal is functioning epistemically or deontically. This is the case, for example, with *may:*

(94) The papers may not be ready, (epistemic: "it is possible that the papers are not ready"; proposition negated)
(95) You may not leave before you have finished your work, (deontic: "you are not allowed to leave before you have finished your work"; modal negated)

High and low values of modality are distinguished by the fact that there is a marked difference in meaning according to whether the modal or the proposition is negated; for a median value modal, there is relatively little difference of meaning. In the case of high- and low-value modals, negation reverses the value, so that a high-value modal assumes a low value, and vice versa:

(96) You must do it. (high-value modal)
(97) You mustn't do it. (high-value; proposition negated)
(98) You needn't do it. (low-value; modal negated)
(99) You may do it. (low-value modal)
(100) You may not do it. (deontic: high value; modal negated)
(101) It shouldn't be too difficult, (epistemic; modal negated; median value)
(102) It should be not-too-difficult. (epistemic; proposition negated; median value)

Halliday classifies modal verbs as follows:

high: must, ought to, need, have to, is to
median: will, would, shall, should
low: may, might, can, could

14.4.6.3 Modality as deixis

Recently it has been suggested that modality can insightfully be regarded as a form of deixis with a spatial basis, with modals indicating the extent to which the speaker associates with or distances themselves from the proposition. This might have a superficial plausibility, but the arguments are far from compelling. Clearly, modality would have to be seen as a metaphorical extension of space (along the lines of *John and I are very close).* However, modal expressions which contain metaphorically extended spatial terms do not readily spring to mind (modal verbs have no overt connection with space). Moreover, one can just as easily think of modals operating on a scale of something like certainty, on the model of the scales of length, temperature, or whatever, which underlie antonym pairs. This, while perhaps ultimately having some connection with spatial concepts, would indicate a much less direct association

between modality and deixis. (Another argument against a *deictic* analysis of modality (even if a spatial analysis is accepted) is that objective interpretations of modals are arguably not oriented towards the speaker.)

14.5 Adjectives and properties

Not all languages have adjectives (the functions that adjectives perform in English being covered by nouns, verbs, or some combination of these), but in those languages which have them, adjectives prototypically denote atemporal properties, that is to say, properties which are relatively stable over time, or which are construed in such a way that no account needs to be taken of the passage of time. Adjectival properties are also prototypically unidimensional, denoting an easily isolable concept, in contrast to prototypical nouns, which denote rich, highly interconnected complexes of properties.

14.5.1 Modification

The principal function of adjectives is **modification:** the combination of Adj. + Noun prototypically restricts the domain designated by the noun alone to a subpart, and designates a subset of the entities denoted by the noun alone.

There are two main positions for adjectives in English:

a long book	**attributive** position
the book is long	**predicative** position

Most adjectives can occur in both positions (there are exceptions: *The man is afraid!*the afraid man; the main problem!* The problem is main).* One suggestion as to the semantic correlates of this positional difference is that the predicative position attributes a relatively greater time sensitivity to the designated state of affairs. So, for instance, (103) is slightly more normal than (104), because the temperature of water is inherently changeable:

(103) Be careful, that water is hot.
(104) Be careful, that is hot water.

The normalities are reversed in (105) and (106), because softness is a relatively permanent property:

(105) Don't add too much detergent—our water is soft.
(106) Don't add too much detergent—we have soft water.

This proposal would also offer an explanation of the oddness of *an afraid man.*

Generally speaking, we would expect dispositions to be happier in attributive position and labile states to be happier in predicative position:

(107) He is calm now.

(108) ?He is a calm man now.

(109) **?He** is placid now.
(no) He is a placid man now.

In this connection we may contrast *afraid,* which is a labile state, and *timid,* which is a disposition, and has a preference for the attributive position:

(in) John is timid < John is a timid person.

14.5.2 Gradable and non-gradable adjectives

There are two major dichotomies in the classification of adjectives. The first separates **gradable** from **non-gradable** adjectives. This has grammatical consequences, because prototypically, the degree inflections occur only in connection with gradable adjectives; if an adjective is basically non-gradable, then it has to be reinterpreted when inflected for degree (the affix coerces a reinterpretation), as in ASate *was very married* and *Mary is very alive.* These topics are treated in some detail in Chapter 9.

14.5.3 Absolute and syncategorematic adjectives

The second major division among adjectives is between **absolute** and **relative** (or **syncategorematic)** types. A simple test for this distinction is as follows: if Adj. + X (always) entails Adj. + Y, where X is a hyponym of Y, then the adjective is absolute; if there are clear cases where the entailment fails, then the adjective is a relative one. The essence of a relative adjective is that it cannot be interpreted except in connection with the head noun. So, for instance, *a black dog* is *a black animal,* hence *black* is an absolute adjective, but *a small tyrannosaurus* is not *a small animal,* so *small* is a relative adjective.

14.5.4 Order of modifiers

Adjectives have a tendency to occur in a particular order when there are several attached to one noun:

(112) Three excellent thick sturdy old black front doors
(113) *Sturdy thick old front black three excellent doors

There have been many attempts to account for this ordering (which is not identical in all languages, although there are general similarities). One approach describes the order in terms of general concept types:

Quantity > Value > Physical Property > Age > Colour

This covers English pretty well (ignoring certain specifiable exceptions), but it leaves much unexplained. An approach that is similar in principle, but more unified, suggests that adjectives denoting more objective properties, which are less susceptible to the vagaries of personal judgement, come nearest to the

noun, whereas those that are more a matter of personal opinion come furthest away from the noun. This explains why VALUE is further than COLOUR (this seems to be true of many languages), but it does not explain, for instance, why QUANTITY is the farthest, or why *long* comes before *old.* Nor does it explain why the order is as it is, rather than the reverse. Various partial explanations have been put forward, but none is comprehensively convincing.

14.6 Quantification

Quantification is concerned with expressions like

No Albanians came to the party.
Some of my best friends are troglodytes.
All aardvarks can sing the 'Marseillaise'.

The subject noun phrases in the above are **quantified noun phrases;** the sentences express a quantification.

A quantification requires a **quantifier,** (e.g. *no, some, many, all,* etc.), a **restriction** (which indicates the sort of things being quantified, e.g. *Albanians),* and a **scope,** which expresses what is true of the items designated by the quantified noun phrase.

14.6.1 Quantifiers in classical predicate logic

Classical predicate logic recognizes just two quantifiers, (i) the **existential** quantifier (usually symbolized as 3), which in its quantificational properties corresponds to such English expressions as *somebody, a cat, some book,* etc. and (ii) the **universal quantifier** (symbolized as V), which corresponds to expressions like *all men, every aardvark, everybody,* and so on. Some idea of the nature of quantifiers can be gained by a closer examination of these.

Consider the English sentences below:

(114) Everybody saw Mary.
(115) Somebody saw Mary.
(116) Mary saw somebody.
(117) Mary saw everybody.

These would be translated into predicate calculus by means of formulae with roughly the structure of the following:

(i) For all (x), (x) saw Mary.
(ii) For some (x), (x) saw Mary.
(iii) For some (x), Mary saw (x)
(iv) For all (x), Mary saw (x).

Here, (x) is called a **variable,** because it does not have a fixed reference, and the

quantifier is said to **bind** the variable. *Mary saw (*x) is called a **propositional function** and when (x) is given a referential value, it forms/expresses a proposition. For a sentence like *All aardvarks are left-pawed* a more complex representation is required:

For all (x), if (x) is an aardvark then (x) is left-pawed.

And for existential quantification, take *An aardvark sang:*

For some (x), (x) is an aardvark and (x) sang.

Now let us look at sentences with two quantifiers, like:

(118) Every aardvark saw a springbok.

This sentence is ambiguous: either all the aardvarks saw a particular springbok, or every aardvark had a springbok-viewing experience, but not necessarily of the same springbok. This ambiguity can be captured by placing one quantifier within the scope of the other in two different ways. Suppose we start with the existential quantifier in the outer position, with the universal quantifier in its scope. The resultant sentence has a 'formal' translation as follows:

There exists some (x), such that (x) is a springbok and for all (y), if (y) is an aardvark then (y) saw (x).

Reversing the order of the quantifiers yields:

For all (y), if (y) is an aardvark then there exists some (x) such that (x) is a springbok and (y) saw (x).

Quantifiers interact in regular ways with negatives, and similar sorts of ambiguities can arise as with two quantifiers. Take the sentence *Alf the aardvark didn't see a springbok.* The most natural interpretation of this would be:

It is not the case that there existed a (y) such that (y) was a springbok and Alf saw (y).

Here, the existential quantifier is within the scope of the negative operator (translated as *it is not the case that. ..*). But there is another possible interpretation for this type of structure, as in *John did not see a sniper, and was shot as he crossed the road.* Here the negative is inside the scope of the existential operator:

There existed an (x) such that (x) was a sniper and it is not the case that John saw (x).

There is a similar interaction between a negative and a universal quantifier. Consider the sentence *All the aardvarks did not see Pik.* The most natural interpretation of this is once again with the negative having widest scope:

It is not the case that for all (x), if (x) is an aardvark, (x) saw Pik.

It is less natural to read this sentence with the quantifier having the widest scope:

For all (x), if (x) is an aardvark then it is not the case that (x) saw Pik.

A more natural encoding of this meaning is *None of the aardvarks saw Pik.* If we have two quantifiers and a negative, as in *All the aardvarks did not see a springbok,* there are in theory six possible interpretations, although some of them are somewhat unnatural:

For all (x) if (x) is an aardvark, then it is not the case that there exists a (y) such that (y) is a springbok and (x) saw (y).
(No aardvark saw a springbok)

For all (x) if (x) is an aardvark, then there exists a (y) such that (y) is a springbok and it is not the case that (x) saw it.
(For every aardvark there was a springbok that it did not see)

It is not the case that for all (x) if (x) is an aardvark, then there exists a (y) such that (y) is a springbok and (x) saw (y).
(Not all the aardvarks saw any springbok)

It is not the case that there exists a (y) such that (y) is a springbok and for all (x) if (x) is an aardvark then (x) saw (y).
(No springbok was seen by all the aardvarks)

There exists a (y) such that (y) is a springbok and for all (x) if (x) is an aardvark, then it is not the case that (x) saw (y).
(There is a springbok that none of the aardvarks saw)

There exists a (y) such that it is not the case that for all (x) if (x) is an aardvark then (x) saw (y).
(There is a springbok that was not seen by all the aardvarks)

When one quantifier is within the scope of another, the including quantifier is said to have **wider scope** (this applies not only to the 'classical' quantifiers just dealt with, but to *most, many, a few,* etc.). It is possible to arrange quantifiers in order of their preferences for wide scope; this at least partially determines the preferred readings of propositions with more than one quantifier. One suggestion for the order of preference is as follows:

each > every > all > most > many > several > some > a few

The effect of these different degrees of inherent tendency to have wide scope can be seen in the following:

(119) A springbok was seen by many aardvarks.
(120) A springbok was seen by each aardvark.

In the preferred interpretation of (i 19), *many* is within the scope of *a,* and we take it that a single springbok is involved. In (120), however, the scopes are reversed, and we assume a plurality of springboks. This is a consequence of the fact that *each* has the stronger tendency to wide scope, strong enough to override the tendency of a subject to take wide scope; *many,* on the other hand, is overridden by *a* in subject position.

14.6.2 Generalized quantifiers: the 'set' interpretation of quantifiers

The trouble with the classical quantifiers of predicate logic is that, first, there are quantifying expressions that intuitively belong together with *every* and *somela,* but which cannot be expressed in the predicate calculus (for instance *many, few, more than half,* etc.) and second, there are many whose expression is clumsy and counterintuitive (Cann (1993) gives the following as a translation of *A t least two students laughed'.*

There exists an (x) and a (y) such that (x) is a student and (y) is a student and (x) is not the same as (y) and (x) laughed and (y) laughed

This can be adapted for any specific number, but at some cost in plausibility.)

A more fruitful way of looking at quantifiers is to say that they express relations of quantity between sets of elements. These are relations which are not concerned with the identity of any of the elements in the sets that they relate to, but only with their numbers. The relevant sets in a quantified sentence such as *Every aardvark sneezed* are (i) the set of things which satisfy the subject nominal, that is, the set of aardvarks, and (ii) the set of things which satisfy the predicate, that is, the set of sneezers. One way of accounting for the relation between these sets which is expressed by the sentence is to say that the set of aardvarks is a subset of the set of sneezers. A more general way which allows a uniform treatment of a wider range of quantifiers is in terms of cardinality, that is, the number of elements in a set, together with operators such as '≤', **'>',** '<', etc. This gives the following interpretations:

(121) *Every X is Y:* "The number of elements in the set of things that are X but not in the set of things that are Y is zero."

(122) *Some X are Y:* "The number of elements in the set of things that are both X and Y is greater than zero."

(123) *Five X are Y:* "The number of elements in the set of things that are both X and Y is five."

(124) *Most X are Y* "The number of elements in the set of things that are both X and Y is greater than the number of elements in the set of things that are X but not Y."

(125) *Neither X is Y:* "The number of elements in the set of things that are both X and Y is zero, and the number of elements in X is two."

Some of these analyses are straightforward, but some merit further discussion. Take the analysis of *most:* as it stands, it would also serve for *the majority of* and *more than half* Is this an entirely satisfactory account of *most?* Cann (1993) suggests that for at least some speakers *most* requires a greater proportion than *more than half:* that is to say, if out of 100 aardvarks, 51 sneezed and 49 did not, this would not justify the use of *most,* but would satisfy the formula given above (and would justify *more than half).* Cann's solution is to say that the required proportion for *most* is pragmatically determined by reference to context (this should be taken to include the identity of X and Y); he incorporates a contextual proportional factor in the formula. His account of *most* can be expressed verbally as follows:

(126) *Most X are Y:* "The number of elements in the set of things that are both X and Y is greater than the number of elements in the set of things that are X but not Y multiplied by the contextual factor c."

A contextual factor is also needed for *many.* Cann points out that the proportion which would justify the use of *many* need not be as much as *more than half* for instance, *Many civil servants receive knighthoods* may mean no more than that the proportion of knighted civil servants is greater than that of other comparable professions, and may still be quite a small percentage. Cann's analysis of *many* is:

(127) *Many X are Y:* "The number of elements in the set of things that are both X and Y is greater than the number of elements in the set of things that are X multiplied by the contextual factor c."

It should be noted, however, that the *c* which appears in (126) is not the same as that which appears in (127); they should therefore be distinguished as *c* (most) and *c* (many).

14.63 Conservativity

Conservativity appears to be a property of all natural language quantifiers (taking as a defining feature of quantifiers that they are syntactically determiners). Consider the following:

(128) Every aardvark sneezed.
Some aardvarks sneezed.
No aardvark sneezed.

In assessing the truth of these sentences, we are constrained to consider the set of aardvarks, and we do not need to consider anything that is not an aardvark. The quantified noun phrase establishes the universe of discourse. Contrast

these with (129), where the truth cannot be established by looking only at aardvarks, since non-aardvarks must also be considered:

(129) Everything except aardvarks sneezed.

The quantifier phrases in (128) are said to be **conservative;** that in (129) is not conservative. Cann suggests that conservativity can be recognized by paraphrasability, as follows:

(130) Every aardvark sneezed. = Every aardvark is an aardvark that sneezed.
Some aardvarks sneezed. = Some aardvarks are aardvarks that sneezed.
No aardvark sneezed. = No aardvark is an aardvark that sneezed.

Notice that (129) cannot be paraphrased in this way:

(131) Everything except aardvarks sneezed. * Everything except aardvarks is an aardvark that sneezed.

Larson and Segal (1995) point out that it is logically possible to define a determiner *nail* with the meaning "everything except", such that *Nall aardvarks sneezed* would be synonymous with (129); however, no such determiner has been found in any natural language.

14.6.4 Directional entailingness

From sentence (132)

(132) Every dog barked.

we can validly infer *Every spaniel barked,* but not *Every animal barked',* we can also infer *Every dog made a noise,* but not *Every dog barked loudly.* Notice that the valid entailment goes from less specific to more specific for the subject term, but from more specific to less specific for the predicate term; more technically, the subject in (132) is **downward entailing,** and the predicate is **upward entailing.** The directional pattern of entailment is characteristic of the quantifier every, which creates a downward-entailing environment for its subject and an upward-entailing environment for its predicate. The full range of patterns is as follows:

14.6.4.1 Subject upward entailing; predicate upward entailing

(133) If some dogs barked, then some animals barked.
(134) If some animals barked, then some animals made a noise,
(provided *some* is interpreted as "at least one")
(135) *If some dogs barked, then some spaniels barked.
(136) *If some dogs barked, then some dogs barked loudly.

14.6.4.2 Subject and predicate downward entailing

(137) If no dogs barked, then no spaniels barked.
(138) If no dogs barked, then no dogs barked loudly.
(139) *If no dogs barked, then no animals barked.
(140) *If no dogs barked, then no dogs made a noise.

14.6.4.3 Subject downward entailing, predicate upward entailing

(141) If every dog barked, then every spaniel barked.
(142) If every dog barked, then every dog made a noise.
(143) *If every dog barked, then every animal barked.
(144) *If every dog barked, then every dog barked loudly.

14.6.4.4 Subject no entailment, predicate upward entailing

(145) If most dogs barked, then most dogs made a noise,
(provided 'most' is interpreted not to exclude 'all')
(146) * If most dogs barked, then most spaniels barked.
(147) *If most dogs barked, then most animals barked.
(148) *If most dogs barked, then most dogs barked loudly.

14.6.5 Negative polarity items

Directional entailment properties correlate in an interesting way with so-called **negative polarity items (negpols).** These are expressions which are only normal in certain types of environment, typically containing a negative element of some kind. Typical examples are *anyone, anything, ever.*

(149) He never says anything.
He rarely says anything.
I haven't seen anyone.
No one has ever reached the top.
Few people have ever reached the top.

Compare the normality of these with those in (151):

(150) *A man has ever reached the top.
* All men have ever reached the top.
*Some men have ever reached the top.
*Most men have ever reached the top.
*Many men have ever reached the top.

♦He always says anything.
♦He sometimes says anything.
♦He usually says anything.

The correlation with direction of entailment is that negpols are licensed in downward-entailing environments, but not in upward-entailing environments

or environments where there is no entailment. This constraint applies to both the subject and the predicate positions (examples from Larson and Segal):

(151) No [person who has ever visited Boston] has returned to it.
No [person who has visited Boston] has ever returned to it.

♦Some [person who has ever visited B.] has returned to it.
*Some [person who has visited B.] has ever returned to it.

Every [person who has ever visited B.] has returned to it.
♦Every [person who has visited B.] has ever returned to it.

This correlation is interesting, but it does not really constitute an explanation, and there are other unexplained properties of negpols, such as the fact that some occur happily with questions, while others do not (and how questions fit in with the direction of entailment feature):

(152) I didn't say anything.
Did you say anything?

I didn't say a word.
♦Did you say a word?

It won't take long.
Will it take long?
No one with any wit has taken long to do it.
♦No one who has taken long over it has any wit.

Clearly, further research is needed into this topic.

Discussion questions and exercises

1. In what way(s) is the number-related behaviour of the following English nouns unusual?:

cattle oats scissors iron filings

2. Construct a set of sentences parallel to (28)-(36) in this chapter, but with the secondary tense in the subordinate clause, and the reference time in the main clause, as in:

When John had eaten, Bill switched off the lights.

Notice the different distribution of forms.

3. Consider the following verbs in connection with the progressive/simple alternation:

resemble	*die*	tf?/nk(ofNPasNP/adj.)
guess **(v.i.)**	*look (happy)*	*exaggerate*
command	*graduate*	*feel (cold)*
explode		

4. What case roles are represented by the **bold** items in the following?:

(a) **John** watched **the squirrel.**
(b) Mary put the cup **on the table.**
(c) **You** can taste the wine, (two possible answers)
(d) We followed **the river** for three miles.
(e) John drilled **a hole** in the wall, then filled **it** with plaster.
(f) They left **London** yesterday.
(g) **The storm** had ripped the roof off.
(h) Mary bought **John** a tie.

5. The notion of modality is sometimes extended beyond modal verbs proper to expressions like *it is possible that.* Classify the following as 'high-', 'median-' or 'low-' value modals:

it is probable that
it is possible that
it is unlikely that
it is certain that

6. How would you characterize the following verbs in terms of Levin and Hovav Rappaport's three classes?

erase drain extract sweep unload scrub

7. Which of the following are implicitly negative (examine their collocability with negpols)?

hardly	*often*	*seldom*	*occasionally*
mostly	*a few*	*far (from)*	*near*
free (from)	*beware of*	*take care to*	*avoid*

Suggestions for further reading

The most complete currently available account of grammatical semantics is Frawley (1992), which covers all the topics dealt with in this chapter in a fairly accessible way.

For a fuller treatment of individual topics, the following may also be consulted:

- Number: Allan (1986, Vol. 1:120 ff.) and Cruse (1994a).

- Tense and aspect: Dahl (1985).
- Participant roles: Fillmore (1968) and (1977).
- Modality: Palmer (1986), Halliday (1985).
- Quantifiers: Cann (1993), Larson and Segal (1995), chs. 7 and 8.