LINGUISTIC SEMANTICS

An Introduction

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PART 3

Sentence-meaning

CHAPTER 5

Meaningful and meaningless sentences

5.0 INTRODUCTION

In the last three chapters we have been concerned with lexical semantics: i.e., with the meaning of lexemes. We now move on, in Part 3, to a consideration of the meaning of sentences.

The distinction between sentences and utterances was introduced in Chapter 1 (see 1.6). The need for drawing this distinction is reinforced by the discussion of grammaticality, acceptability and meaningfulness in the following section (5.1). But our main concern in this short, and relatively non-technical, chapter is the meaningfulness of sentences. Granted that some sentences are meaningful and others meaningless, what grounds do we have for drawing a theoretical distinction between these two classes of sentences? Is it a sharp distinction? Is there only one kind of meaningfulness?

What may be described as truth-based theories of the meaning of sentences have been particularly influential in modern times, initially in philosophical semantics, later in linguistic semantics. Two of these were mentioned in Chapter 1: the verificationist theory and the truth-conditional theory (1.7). According to the former, sentences are meaningful if (and only if) they have a determinate truth-value. In formulating the verificationist theory of meaning (or meaningfulness) in this way, I am temporarily neglecting to draw a distinction (as many verificationists did) not only between sentences and utterances, but also between propositions and propositional content, on the one hand, and between truth-values and truth-conditions, on the other. The reasons for drawing these distinctions (which

were tacitly drawn in the slightly different formulation of the verificationist theory that was given in Chapter 1) will be explained below.

As we shall see, the verificationist theory, as such, in the form in which it was originally put forward (in the context of logical positivism), has been abandoned by most, if not all, philosophers of language. I should make it clear, therefore, that my principal aim in this chapter is not to give an account of the verificationist theory of meaning for its own sake, but rather for its historical significance in preparing the way for the truth-conditional theory of meaning, which was also mentioned in Chapter 1 and which is central in all modern versions of formal semantics. In my view, it is much easier to understand the truth-conditional theory of meaning and to see both its strengths and its weaknesses if one knows something about its predecessor, the verificationist theory, and the philosophical context in which verificationism arose. That there is a connexion between meaning and truth (as there is a connexion between truth and reality) is almost self-evident and has long been taken for granted by philosophers. In this chapter, we take our first steps towards seeing how this intuitive connexion between meaning and truth has been explicated and exploited in modern linguistic semantics.

5.1 GRAMMATICALITY, ACCEPTABILITY AND MEANINGFULNESS

As was noted in an earlier chapter, some utterances, actual or potential, are both grammatical and meaningful; others are ungrammatical and meaningless; and yet others, though fully grammatical and perhaps also meaningful, are, for various reasons, unacceptable (1.6).

To say that an utterance (more precisely, an utterance-type) is unacceptable is to imply that it is unutterable (more precisely, that one of its tokens is unutterable) in all normal contexts other than those involving metalinguistic reference to them.

Many such utterances are unacceptable for socio-cultural reasons. For example, there might be a taboo, in a certain

English-speaking society, upon the use of the verb 'die', rather than some euphemism such as 'pass away', in respect of members of the speaker's or hearer's immediate family. Thus, the fully grammatical and meaningful utterance

(1) *His father died last night*

might be fully acceptable, but not the equally grammatical and (in one sense of 'meaningful') equally meaningful utterance

(2) *My father died last night.*

Or again, in some cultures, it might be unacceptable for a social inferior to address a social superior with a second-person pronoun (meaning "you"), whereas it would be perfectly acceptable for a superior to address an inferior or an equal with the pronoun in question: this is the case (though the sociolinguistic conditions are often more complex than I have indicated here) in many cultures. It follows, that the same utterance with, arguably, the same meaning would be acceptable in some contexts but not in others. There are many such culture-dependent dimensions of acceptability. Some of them, as we shall see later, are encoded in the grammar and the vocabulary of particular languages. For this reason and others, one must be sceptical about the validity of the general principle, which is often taken for granted by semanticists, that whatever can be said in one language can be said in another. At the very least one must be sensitive to the different senses in which one can interpret the phrase 'can be said' (or 'can be uttered'). I will come back to this point in Part 4.

Somewhat different are those dimensions of acceptability which have to do with rationality and logical coherence. For example,

(3) *I believe that it happened because it is impossible*

might be regarded as unacceptable from this point of view. Indeed, if uttered, (3) might well provoke the response:

(4) *That doesn't make sense*

(though it is paradoxical, rather than being devoid of meaning or contradictory). What makes (3) unacceptable, in most

contexts, is the fact that the speaker appears to be calling attention to his or her own irrationality; and this is an odd thing to do in most normal circumstances. However, even such utterances may be fully acceptable in certain contexts. In any event, one should not too readily concede, as some semanticists would, either that the sentence in question is uninterpretable or meaningless or, alternatively, that the proposition it expresses is necessarily false.

More generally (if I may now invoke the distinction between sentences and utterances), one should not take too restrictive a view of the meaningfulness of uncontextualized (or decontextualized) sentences: the semantic acceptability, or interpretability, of sentences is not something that can be decided independently of the context in which they might or might not be uttered.

5.2 THE MEANINGFULNESS OF SENTENCES

Sentences are, by definition, grammatically well-formed. There is no such thing, therefore, as an ungrammatical sentence. Sentences however may be either meaningful (semantically well-formed) or meaningless (semantically ill-formed). Utterances, in contrast with sentences, may be either grammatical or ungrammatical. Many of the utterances which are produced in normal everyday circumstances are ungrammatical in various respects. Some of these are interpretable without difficulty in the context in which they occur. Indeed, they might well be regarded by most of those who are competent in the language in question as fully acceptable. As we saw in Chapter 1, grammaticality must not be identified with acceptability; and, as we saw in the preceding section of this chapter, acceptability must not be identified with meaningfulness. But what do we mean by 'meaningfulness'?

In the preceding section we were careful to relate the notion of acceptability to utterances. At this point we will restrict our attention to what would generally be regarded as sentences and we will continue to operate with the assumption that the sentences of a language are readily identifiable as such by those who are competent in it, and more especially by its native

speakers. As we shall see in due course, this assumption must be qualified. The distinction between grammatical and semantic well-formedness is not as sharp as, for the moment, we are taking it to be. Nevertheless, to say that the distinction between grammatical and semantic well-formedness – and consequently between grammar and semantics – is not clear-cut in all instances is not to say that it is never clear-cut at all.

There are many utterances whose unacceptability is quite definitely a matter of grammar, rather than of semantics. For example,

(5) *I want that he come*

is definitely ungrammatical in Standard English in contrast with

(6) *I want him to come.*

If (5) were produced by a foreigner, it would probably be construed, and therefore understood, as an incorrect version of (6). There is nothing in what appears to be the intended meaning of (5) which makes it ungrammatical. And many languages, including French, would translate (6) into something which is grammatically comparable with (5).

If someone, having uttered (5), not only refused the proffered correction, but insisted that it meant something different from the corrected version, we should simply have to tell them that, as far as Standard English is concerned, they are wrong. We can classify their utterance, unhesitatingly, as ungrammatical.

There are other, actual or potential, utterances which we can classify, no less readily, as grammatical, but meaningless. Among them, we can list, with their authors, such famous examples as

(7) *Colourless green ideas sleep furiously* (Noam Chomsky)
(8) *Quadruplicity drinks procrastination* (Bertrand Russell)
(9) *Thursday is in bed with Friday* (Gilbert Ryle).

Of course, none of these is uninterpretable, if it is appropriately contextualized and the meaning of one or more of its component expressions is extended beyond its normal, or literal, lexical meaning by means of such traditionally recognized rhetorical

principles as **metaphor**, **metonymy** or **synecdoche**. The fact that this can be done – and indeed has been done on several occasions to considerable effect – merely proves the point that is being made here. As far as (9) is concerned, it is of course readily and immediately interpreted, both literally and metaphorically, if 'Thursday' and 'Friday' are construed as referring to persons (as in G. K. Chesterton's *The Man Who Was Thursday* and Daniel Defoe's *Robinson Crusoe*). Indeed, a moment's reflection will show that there is a euphemistic interpretation which is half-way between the fully literal and the definitely metaphorical. In order to assign an interpretation to (7)–(9), one does not identify, and tacitly correct, some general rule or principle which governs the grammatical structure of English, as we did in the case of (5); one tries to make sense of what, at first sight, does not of itself make sense on a literal, face-value, interpretation of the expressions which it contains.

We shall need to look later at the question of literal interpretation (see Chapter 9). All that needs to be said here is that (7)–(9) are grammatically well-formed and that, despite their grammaticality, they are literally meaningless. Any generative grammar of English will therefore generate, or admit as grammatically well-formed, not of course the utterances (7)–(9), but the sentences which correspond to them and from which (as will be explained in Chapter 8) they can be derived:

(7a) 'Colourless green ideas sleep furiously'
(8a) 'Quadruplicity drinks procrastination'
(9a) 'Thursday is in bed with Friday'.

The reader is reminded at this point that here, as throughout this book, utterances (in the sense of utterance-inscriptions or stretches of text) are represented in italics, whereas sentences, like other expressions, are represented by means of their citation-form enclosed in single quotation-marks.

To be contrasted with (7a)–(9a) are

(7b) **Green ideas sleeps furiously*,
(8b) **Drinks quadruplicity procrastination*,

(9b) **Thursday am on bed when Friday*.

In (7b)–(9b) the asterisk indicates grammatical ill-formedness. (7b) breaks the grammatical rule of agreement between the subject and the verb in English; (8b) is ungrammatical (in present-day English), not only as a declarative sentence, but also as an interrogative sentence, because it breaks the rules of word-order; and (9b), like (7b), breaks the rule of subject–predicate agreement and, additionally, uses a count noun without a determiner (**on bed*, which, in contrast with *in bed*, is not a grammatical idiom) and uses a conjunction in a position which syntactically requires a preposition (*when*, unlike *since*, cannot fulfil both functions).

It might seem pointless, at this stage, to distinguish notationally, as I have done, between sentences and utterances, but the reasons for doing so will be made clear in Part 3. As we shall see, sentences are expressions which may have several forms, including context-dependent elliptical forms.

It is also worth emphasizing that a distinction is being drawn here, implicitly, between ungrammatical strings of forms, such as (7b)–(9b), on the one hand, and non-grammatical gibberish, on the other, such as

(10) *On when am Thursday furiously bed*,

which cannot be said to violate any specific grammatical rules of English. This distinction is not generally drawn in generative grammar, because generative grammars, as formalized originally by Chomsky, partition strings of forms into two complementary subsets: A, the set of all grammatically well-formed strings (which are then identified with the sentences of the language in question), and B, its complement, the set of strings which by virtue of not being grammatical are defined to be ungrammatical. Strings of recognizably English word-forms, such as (10), which are neither grammatical nor ungrammatical, are not only not grammatical: they are, as it were, not even trying to be grammatical, and the question whether they are grammatically well-formed or ill-formed does not arise. More to the point, in the present connexion, they do not make sense and cannot be made

to make sense by any kind of adjustment or correction. They are perhaps meaningless or nonsensical in the everyday use of the words 'meaningless' and 'nonsensical', but they are perhaps not rightly described as semantically ill-formed. The expressions 'well-formed' and 'ill-formed' first came into linguistics as part of the terminology of generative grammar: as they are commonly employed, they imply conformity to a set, or system, of precisely formulated rules or principles. As we shall see later, so-called formal semantics takes the view that, as there are rules (or principles) of grammatical well-formedness, so also there are rules (or principles) of semantic well-formedness. Whether this is or is not the case is a question that we can postpone until later. Here I am concerned to emphasize, first, that meaningfulness, or semantic well-formedness (if we use that term and, for the present at least, accept what it implies), is readily distinguishable, in clear cases, from grammaticality, and, second, that not every utterance which is judged to be unacceptable on the grounds that it does not make sense is properly regarded as semantically ill-formed.

But if the intuitive notion of making sense is not a reliable guide, what are the criteria which lead us to decide that an utterance, actual or potential, is semantically well-formed or ill-formed? We shall address this question in the following section.

5.3 CORRIGIBILITY AND TRANSLATABILITY

As we have seen, semantic well-formedness must be distinguished from grammatical well-formedness (grammaticality): both of them are included within, or overlap with, acceptability, as semantic ill-formedness and grammatical ill-formedness are included within, or overlap with, unacceptability. But – to repeat the question that was posed at the end of the preceding section – what are the criteria other than the intuitive notion of making sense which lead us to decide that an utterance is or is not semantically well-formed?

One of the criteria that was invoked earlier in connexion with grammaticality is what we may now label the criterion of **corrigibility** (5.2). Whereas

(5) *I want that he come*

can be corrected – by some speakers to

(6) *I want him to come*

and by others perhaps to

(6a) *I want for him to come*

– without any change in what is assumed to be the intended meaning, Chomsky's classic example,

(7) *Colourless green ideas sleep furiously*

cannot. In those instances in which the distinction between grammatical and semantic unacceptability can be most clearly drawn, the former are corrigible and the latter are not.

Other kinds of unacceptability, some of which at first sight seem to be a matter of meaning, also fall within the scope of the notion of corrigibility. For example,

(2) *My father died last night*

might be corrected to, say,

(2a) *My father passed away last night*

in a language-community (of the kind referred to in section 5.1) in which the use of 'die' is prohibited with expressions referring to members of one's own family. But the unacceptability of (2) in such circumstances, is not such that we would say that it does not make sense. Its unacceptability is a matter of social, rather than descriptive, meaning. (And there are independent reasons for saying that, though corrigible, it is fully grammatical.)

In other instances, as we shall see later, the situation is less clear-cut. But, interestingly enough, the criterion of corrigibility and incorrigibility is still relevant in that it shows the pre-theoretically indeterminate cases to be genuinely indeterminate.

Another criterion that is sometimes mentioned by linguists is **translatability**. This rests on the view that semantic, but not grammatical, distinctions can be matched across languages. However, as we shall see later, it is not clear that what is

semantically unacceptable in some languages is semantically unacceptable in all languages. The criterion of translatability can supplement, but it does not supplant, our main criterion, that of corrigibility.

We turn now to a discussion of a famous and influential philosophical criterion of meaningfulness: verifiability.

5.4 VERIFIABILITY AND VERIFICATIONISM

The verificationist theory of meaning – verificationism, for short – was mentioned in Chapter 1. As its name suggests, it has to do with truth. It was originally associated with the philosophical movement known as logical positivism, initiated by members of the Vienna Circle in the period immediately preceding the Second World War. Although logical positivism, and with it verificationism, is all but dead, it has been of enormous importance in the development of modern philosophical semantics. On the one hand, many of its proponents – notably Rudolf Carnap and Hans Reichenbach – were active in the construction of systems for the analysis of language which have led, more or less directly, to the methods of modern formal semantics. On the other, the very excesses and defects of logical positivism forced its opponents, including Wittgenstein in his later work and the so-called ordinary-language philosophers, to make explicit some of their own assumptions about meaning. As Ryle (1951: 250) has said of verificationism: "It has helped to reveal the important fact that we talk sense in lots of different ways".

We shall not pursue Ryle's point at this stage. Instead, I will take one version of the famous **verifiability principle** and, in the next few sections, use this to introduce the notion of truth-conditions and other notions that will be of use to us later. The principle may be stated, initially and for our purposes, as follows: "A sentence is factually significant to a given person if, and only if, he knows how to verify the proposition which it purports to express" (Ayer, 1946: 35). This formulation by A. J. Ayer, it will be noted, does not say that the meaning of sentences (or alternatively of propositions) is their method of verification. It

simply provides a criterion of one particular kind of meaning – factual significance; it does not define meaning as such.

Even so, it raises a number of problems. The logical positivists wanted to say that all verification is ultimately a matter of observation. Yet, as Karl Popper has pointed out, universal statements of the kind that scientists tend to make cannot, in principle, be verified, though they may be falsified, by means of observation. For example, the statement that all swans are white can be falsified, by observing just a single instance of a black swan, but it can never be proved to be true on the basis of empirical investigation. Popper's point that falsifiability, rather than verifiability, is the hallmark of scientific hypotheses is now widely accepted (though it has its critics and requires to be formulated more carefully than it has been here).

5.5 PROPOSITIONS AND PROPOSITIONAL CONTENT

Ayer's formulation of the verifiability criterion draws upon (though it does not explain) the distinction between sentences and **propositions**. The nature of propositions is philosophically controversial. But those philosophers who accept that propositions differ, on the one hand, from sentences and, on the other, from statements, questions, commands, etc., will usually say that propositions

(i) are either true or false;
(ii) may be known, believed or doubted;
(iii) may be asserted, denied or queried;
(iv) are held constant under translation from one language to another.

There are difficulties, as we shall see later, about reconciling all four of these different criteria: (ii) and (iii) seem to be in conflict as far as some natural languages are concerned; and (iv) makes dubious assumptions about intertranslatability.

However, granted that propositions are defined to be the bearers of a determinate and unchanging truth-value, it is quite clear that they must be distinguished from sentences. For the same sentence can be used on one occasion to say what is true

and on another to say what is false. And it is worth noting, in this connexion, that even sentences such as

(11) 'Napoleon was defeated at Waterloo in 1815'

can be used to assert a variety of true and false propositions. There are certain natural languages in which personal names and place-names are in one-to-one correspondence with their bearers. But neither English nor French is among them. In English the relation between a proper name and the set of entities or places which each bear that name is completely arbitrary. (The situation in French is slightly different, in that in France there are certain legal restrictions relating to the choice and assignment of personal names.) If 'Napoleon' happens to be the name of my dog and I am referring to my dog when I utter the above sentence, the proposition that I have asserted is presumably false.

Nor should it be thought that I have gratuitously or facetiously introduced the qualification 'presumably' here. I have done so in order to remind readers of the very important point that here, as always, whenever one says that something is or is not true, one is making certain background assumptions that others may not share. For example, I have tacitly ruled out the possibility that Napoleon Bonaparte may have been reincarnated as my dog. And there are indefinitely many such ontological assumptions – often loosely and inaccurately referred to as world-knowledge – which have a bearing upon the interpretation of sentences such as (11) on particular occasions of utterance. There is nothing in the structure of English which commits us to the denial of unfashionable or eccentric ontological assumptions.

But to return to the main theme. Philosophers and linguists frequently make the point that sentences containing definite descriptions (for example, 'the wooden door'), or, more obviously, personal pronouns ('I', 'you', etc.), demonstrative pronouns ('this', 'that') or demonstrative adverbs of place and time ('here', 'there', 'now', 'then') can be used to assert, deny or query indefinitely many true or false propositions. All too often they fail to add that this is also the case for sentences

containing proper names and dates. The vast majority of sentences in the most familiar natural languages can be used, on particular occasions of utterance, to assert, to query or to deny indefinitely many propositions, each of which has a constant truth-value which is independent of that of each of the others that may be expressed by uttering the same sentence.

But what exactly is the relationship between sentences and propositions? This is a difficult question; and the answer that one will give to it depends in part upon one's theory of meaning. It suffices for present purposes to note that certain assumptions must be made, whether tacitly or explicitly, by anyone who says of sentences that they express propositions. Ayer, it will be noted, is more circumspect, in the quotation given above. He talks of sentences as **purporting** to express propositions; and it is easy to see why. The purport of a document is the meaning that it conveys by virtue of its appearance, or face-value, and standard assumptions about the interpretation of the author's intentions. Sentences of whatever kind may be uttered, in various circumstances, without there being any question of the assertion or denial of a proposition. For instance, if I am asked to provide someone with an example of an English sentence in the past tense, I might comply with their request by uttering (11). It is quite clear that, in the circumstances envisaged, the sentence that I have uttered is not to be construed as referring to or saying anything about anyone (or anything). Indeed, in one sense of the verb 'say' I have not said anything. For this and other reasons, we cannot say that sentences as such express propositions. What we can do, however, is to interpret the phrase, 'purport to express a proposition' in terms of the notion of characteristic use, as explained in Chapter 1. And this is what will be done throughout the next three chapters. We shall assume that all declarative sentences belong to the class of sentences whose members are used, characteristically, to make statements (that is, to assert or deny particular propositions) and that they have this potential for use encoded in their grammatical structure as part of their purport or **face-value**; that all interrogative sentences have encoded in their grammatical structure their potential for querying particular propositions; and so on.

Under this interpretation of the notion of purport, or face-value, we can temporarily and provisionally exclude from consideration not only a variety of metalinguistic uses of sentences and expressions, but also what will be identified in Part 4 as their **performative** and **indirect** uses.

Sentence-meaning is intrinsically connected with utterance-meaning, but can be distinguished from it by virtue of the distinction between the characteristic use of a sentence (which need not be its most frequent or psychologically most salient use) and its use on particular occasions. I have emphasized the notion of the **use** of sentences at this point because the so-called use theory of meaning, associated with Wittgenstein, Austin, and others, developed out of and in reaction to verificationism. What I want to do in this book is to throw a bridge between a restricted version of the meaning-as-use theory and the truth-conditional theory of descriptive meaning, which also developed historically out of verificationism. It is essential to the fulfilment of this purpose that what is said here about the purport, or face-value, of a sentence and what is said in Part 4 about the intrinsic connexion between sentence-meaning and utterance-meaning should be properly understood.

It is also important that a distinction should be drawn between the propositions expressed by a sentence on particular occasions of utterance and its propositional content. I will come to this presently. Strictly speaking, as we shall see, it is not propositions that sentences purport to express, but propositional content. Provided that this is understood, together with the point made earlier about the purported, or face-value, use of sentences, no confusion will arise if, occasionally and for brevity's sake, we say, as most authors do, that sentences express propositions.

5.6 NON-FACTUAL SIGNIFICANCE AND EMOTIVISM

There is one final point that may be made in connexion with Ayer's statement: "A sentence is factually significant to a given person if, and only if, he knows how to verify the proposition that it purports to express." This has to do with factual

significance. It was by means of the verifiability principle that the logical positivists wanted to proscribe as meaningless, or nonsensical, sentences which purport to express metaphysical and theological propositions such as, let us say:

(12) 'Everything must have a cause'

or

(13) 'God is good'.

But it was soon realized that the principle of verifiability also ruled out (or, at least, did not obviously allow as meaningful) what many of them held to be the philosophically more respectable sentences which purport to express propositions of ethics and aesthetics, such as:

(14) 'Cannibalism is wrong'

or

(15) 'Monet was a better painter than Manet'.

One way round this problem was to say that, although such sentences as (14) and (15) are not factually significant, they have another kind of meaning: an emotive, or expressive, meaning.

Emotivism – the thesis that in making what purport to be factual statements in ethics and aesthetics one is not saying anything that is true or false, but giving vent to one's feelings – has now, like logical positivism itself, been abandoned by most of those who once professed it. In its day, it had the beneficial effect of obliging philosophers to look more closely at the logical status of different kinds of both meaningful and meaningless utterances. It is this that Ryle had in mind when he said, in the quotation given earlier, that the verification principle helped philosophers to see that there are different ways in which an utterance can be significant, or meaningful, and different ways in which it can be nonsensical. One important product of this insight into the diversity of meaning, as we shall see in Part 4, was Austin's theory of speech acts.

5.7 TRUTH-CONDITIONS

The truth-conditional theory of meaning, like verificationism, one of its historical antecedents, comes in several slightly different versions. What they have in common is their acceptance of the following thesis: to give an account of the meaning of a sentence is to specify the conditions under which it would be true or false of the situation, or state of the world, that it purports to describe. Alternatively, it is said that to know the meaning of a sentence is to know the conditions under which it (or the statement made by uttering it) would be true or false. Neither of these formulations is very precise as it stands, and they are not necessarily equivalent. For example, neither of them actually identifies the meaning of a sentence with its truth-conditions; and the second leaves open the question of what precisely is meant by knowing the truth-conditions of a sentence. We shall return to such questions in the following chapter.

For the present it suffices to draw readers' attention to the difference between the **truth-value** of a proposition and the **truth-conditions** of a sentence. To take a simple example:

(16) 'John Smith is unmarried'

purports to express a set of propositions, each of which has a particular truth-value according to whether whoever is being referred to by 'John Smith', on particular occasions of utterance, is unmarried (at the time of the utterance). We do not need to know who (or what) is being referred to on all or any of the occasions of the utterance of the sentence 'John Smith is unmarried' or whether the person being referred to (on the assumption that it is a person) is unmarried in order to know what **conditions** the world must satisfy for the proposition "John Smith is unmarried" to be true. In cases like this at least, we know how we might verify (or falsify) empirically any one of the propositions that a sentence purports to express.

Also, independently of any empirical investigation relating to a given John Smith's marital status, we can argue, on the basis of our knowledge of English, whether

(17) 'John Smith is not married'

or even

(18) 'John Smith is a bachelor'

has the same truth-conditions as (16). If (and only if) they have the same truth-conditions, we will say that they have the same **propositional content**. And a moment's reflection will tell us that (18) differs truth-conditionally from both of the others. Not every unmarried individual is a bachelor. For example, unmarried women are not bachelors (and, to reiterate a point made earlier, there is nothing in the structure of English that prevents a woman from bearing the name 'John Smith': we have only to think of the well-known women novelists George Eliot and George Sand). Or again, a child with the name 'John Smith' – or a racehorse, or a yacht, or indeed any entity whatsoever that is not only not married, but also not marriageable, and can be appropriately referred to with the name 'John Smith' – will fulfil the truth-conditions of (17), but not of (18). The situation with respect to (16) and (17) is less clear-cut. It is arguable (though not all native speakers will take this view) that an individual cannot be unmarried unless he or she (or it) could in principle have been married: i.e., is (or has been) marriageable. Those who take this view might say that sentences such as

(19) 'That racehorse is unmarried'

and

(20) 'That square-rigged schooner is unmarried'

are meaningless: that they do not make sense. Others might say that (19) and (20), though odd, are tautologous (and therefore meaningful) because each of the propositions that they could be used to express is analytic (and therefore true: see 5.8). Others, again, might wish to draw a potentially relevant distinction between (19) and (20); they might argue that the former is less obviously, or less definitely, **categorially incongruous** (and therefore less obviously meaningless) than the latter, in that it is

quite easy to conceive of a culture in which racehorses (but not ships, on the assumption that they are indeed, by natural necessity, inanimate and incapable of mating and reproduction) are brought within the scope of the same laws as human beings with respect to cohabitation, the legitimacy of their offspring, etc.

As we saw earlier (and it is a point that will be emphasized throughout this book), if we are seriously concerned about both the theoretical and the empirical foundations of linguistic semantics, we must not dismiss as facetious or irrelevant the deliberate manipulation of a particular society's normal ontological assumptions when it comes to the testing of native speakers' (including one's own) intuitive judgements of meaningfulness or semantic equivalence. In this section we are concerned with truth-conditional equivalence as an important, if not the sole, component of the semantic equivalence of sentences. The principle of truth-conditional equivalence holds independently of the facts of the matter in particular instances:

(21) Sentences have the same propositional content if and only if they have the same truth-conditions.

Readers are now invited to put to the test their understanding of the principle of truth-conditional equivalence, as formulated in (21), by trying to falsify the statement that (16a) and (17a) have the same propositional content:

(16a) 'That man is unmarried'

and

(17a) 'That man is not married'.

(These two sentences differ from (16) and (17), it will be noted, in that I have substituted the phrase 'that man' for the proper name 'John Smith'.) Are there any circumstances – in the actual world as we know it – under which it can be said truly (and properly) of the same fully adult (and therefore, let us assume, marriageable) male person, x, that x is both not married and not unmarried? Are there circumstances in which x could be truly and properly said to be both married and unmarried?

In this chapter, I have deliberately emphasized the historical connexion between verificationism and truth-conditional semantics. Most authors nowadays would not have done this on the grounds that verificationism as a philosophical doctrine is all but obsolete. But all the points made above about verificationism are relevant, in my view, to a proper understanding of truth-conditional semantics; and we shall draw upon them later. They could have been made in respect of truth-conditional semantics without mentioning logical positivism and verifiability. But there is much in present-day formal semantics which derives from its positivist origins.

In any case, it is important to realize that when it comes to the construction of a truth-conditional theory of meaning for natural languages, verifiability (or falsifiability) continues to present problems, not just of practice, but also of principle. It will not do to dismiss these problems on the grounds that verificationism itself has failed. As we have seen several times already, it is unreasonable to expect that competent speakers of a language should always be able to decide whether two expressions are necessarily true of the same classes of entities or not. If the truth-conditional theory of semantics is so formulated that it rules out what seems to be a genuine indeterminacy in the semantic structure of natural languages, it may be rejected without more ado. But, as we shall see in due course, it need not be formulated in this way.

5.8 TAUTOLOGIES AND CONTRADICTIONS

Two kinds of propositions that are of particular concern to logicians and semanticists are **tautologies** (in a technical sense of 'tautology') and **contradictions**. The former, as traditionally defined, are propositions which are necessarily true by virtue of their **logical form**. An example would be

(22) "Either it is raining or it is not raining".

Contradictions, on the other hand, are propositions that are necessarily false by virtue of their logical form. For example:

(23) "It is raining and it is not raining".

What is meant by 'logical form' in this context varies somewhat according to which system of logic we are operating with. But the above propositions would be shown to be tautologous and contradictory, respectively, in standard propositional logic by the definition of **negation** ("not"), **conjunction** ("both ... and"), and **disjunction** ("either ... or ...").

It will be noted that I am using double quotation-marks at this point, because we are not concerned with English sentences as such, but rather with their propositional content or with the propositions which they purport to express. (This use of double quotation-marks has been established in earlier chapters and is consistent with the general convention whereby expressions are distinguished notationally from their meanings.) It is important to emphasize once again that propositions, not sentences, are the bearers of truth and falsity.

Obviously, in construing "It is raining and it is not raining" as contradictory we have to make certain assumptions about the time and place being referred to: in particular, we must assume that we are not referring to different times and/or different places in the two constituent simpler propositions. "It is raining in Manchester and it is not raining in Timbuktu" is not contradictory. One might think that nothing but pedantry is involved in making points like this explicit. But, as we shall see later, there are important theoretical reasons for keeping such seemingly trivial points in mind.

Provided that we do keep the point that has just been made in mind and draw the distinction between sentences and propositions when it needs to be drawn, we can extend the application of the terms 'tautology' and 'contradiction' to sentences in a natural way. We can say of the sentences

(24) 'Either it is raining or it is not (raining)'

and

(25) 'It is raining and it is not (raining)'

that, taken at face-value, they are tautologous and contradictory, respectively. (By taking them at face-value, I mean interpreting them in terms of their purported propositional content and on the assumption that they are being used characteristically: see 5.5.) One of the principal tasks of semantic theory is to show how and why competent speakers of a language will recognize that some sentences are tautologous and others contradictory (unless there are good reasons in context for construing them otherwise than at their face value).

Logical truths, or tautologies, are a subclass of **analytic** truths: that is, propositions whose truth is determined wholly by their meaning (cf. Chapter 4). However, linguists commonly extend the terms 'tautology' and 'contradiction' to cover, not only those propositions (and sentences) whose truth or falsity is determined by logical form as this is traditionally conceived, but all kinds of analytically true or false propositions (and sentences). Thus, they would say that

(26) 'This bachelor is unmarried'

is a tautologous sentence, and

(27) 'This bachelor is married'

is a contradictory sentence, in that the first purports to express a tautology and the second a contradiction (on the assumption that 'bachelor' is taken in the relevant sense). We shall follow this practice.

Tautologies and, especially, contradictions are sometimes classified as being semantically anomalous. Taken at face-value, they are uninformative: they cannot be used to tell someone facts which they did not previously know or could not deduce themselves on the basis of their knowledge of the language and the ability to draw valid inferences from what they already know. And yet, whatever 'semantically anomalous' or 'meaningless' means in relation to tautologies and contradictions, it cannot mean "devoid of sense" (if 'sense' means "propositional content"). For tautologies and contradictions, as we have just seen, are by definition necessarily true and necessarily false respectively; and this implies that contradictory

sentences, no less than tautologous sentences, must have determinable truth-conditions. The former are false and the latter true, as Leibniz put it, **in all possible worlds** (4.4). We can argue on both theoretical and empirical grounds about the range of data that is, or should be, covered by the terms 'tautology' and 'contradiction' (that is to say, about the coverage of the term 'analytic'). But we canot without inconsistency abandon the principle that analytically true and analytically false sentences are meaningful in the sense of having a truth-conditionally explicable propositional content.

CHAPTER 6

Sentence-meaning and propositional content

6.0 INTRODUCTION

This chapter is pivotal in the structure of the book. It is also one of the longest, and there is a distinct change of gear. We shall be making full use of logical notions and discussing in greater detail than we have done so far the basic concepts of modern formal, truth-conditional, semantics, which, as we saw in the preceding chapter, were first developed within logic and the philosophy of language and were subsequently extended to linguistics.

There is nothing new or revolutionary about the influence of logic on linguistics (and vice versa). Grammatical theory and logic have been closely associated for centuries. Indeed, much of the terminology of traditional grammar – 'subject', 'predicate', 'mood', etc. – is also part of the logician's stock in trade. But does this use of the same terminology reflect any more than a purely historical, and accidental, association between the two disciplines? Does the grammatical structure of a sentence correspond directly to the logical form of the proposition it expresses? More generally, is there nothing more to the meaning of a sentence than its propositional content? These are the principal questions that we shall be addressing in the present chapter.

Our general conclusion will be that there are certain aspects of sentence-meaning that cannot be adequately represented by standard propositional logic. In coming to this conclusion, however, we shall also see that our understanding of the way meaning is encoded in sentences has been greatly increased in recent years by the attempt to describe precisely the interaction

between the logical form of propositions and the grammatical structure of sentences (and clauses).

Some parts of this chapter may seem somewhat technical to those who are not acquainted with modern formal logic. But none of the concepts that we shall be invoking is inherently difficult to understand. And it is only by looking at some of the points where propositional logic fails to give a full account of sentence-meaning that we can begin to appreciate both the achievements and the limitations of modern truth-conditional semantics.

6.1 THEMATIC MEANING

Sentences have the same propositional content if and only if they have the same truth-conditions. This is the principle which was established in the preceding chapter; and we shall stick to it throughout. We shall also continue to identify the propositional content of a sentence with its sense and, for present purposes, with its descriptive meaning.

One part of the meaning of sentences – as sentences are commonly defined – that is definitely not part of their propositional content is **thematic meaning**. For example, the following sentences, which differ in thematic meaning, all have the same truth-conditions, and therefore the same propositional content:

(1) 'I have not read this book',
(2) 'This book I have not read',
(3) 'It is this book (that) I have not read',
(4) 'This book has not been read by me'.

So too do the following:

(5) 'A man is standing under the apple-tree',
(6) 'There is a man standing under the apple-tree'.

This kind of meaning is called thematic because it is determined by the way speakers present what they are talking about (the **theme** of their utterance) in relation to particular contextual presuppositions. (This is the only sense in which the terms 'theme' and 'thematic' are employed in this book. Regrettably, there are other, less traditional, conflicting senses now current

in the literature, which can lead to confusion.) Frequently, but not always, what the speaker presents as thematic is also **given** elsewhere in the context and can be taken for granted as being known to the addressees or readily identifiable by them.

Actually, it is by no means clear that (1)–(4), on the one hand, or (5)–(6), on the other, are different sentences. An alternative view would be that some or all of the following,

(1a) *I have not read this book*,
(2a) *This book I have not read*,
(3a) *It is this book (that) I have not read*,
(4a) *This book has not been read by me*,

are different forms of the same sentence, whose citation-form – the stylistically and contextually unmarked, or neutral, form – is (1a). That (2a) and (4a), if not (2a) and (1a), are traditionally regarded as forms of different sentences is perhaps no more than a consequence of the fact that Greek and Latin, much more clearly than English, had inflectionally distinct active and passive forms of the verb. As for (3a), this too would be traditionally regarded as a form of a distinct sentence, because, superficially at least, it is composed of two clauses. Similarly for

(5a) *A man is standing under the apple-tree*,

by comparison with

(6a) *There is a man standing under the apple-tree*:

(6a) is composed, at least superficially, of two clauses and is therefore composite, rather than simple. The distinction between simple and composite sentences is something we shall look at in the following section.

For our purposes, the most important point to be noted here is that the question whether (1a)–(4a) are forms of the same sentence or of two or more different sentences is not a matter of fact to be settled by observation or intuition, but a matter of theoretical decision. There are perhaps good reasons for saying that (1a) and (2a) are forms of different sentences (although a traditionally minded grammarian might take the contrary view): word-order plays a crucial structural role in the grammar

of English. There are other languages, however, in which it does not. Much current syntactic theory, for reasons that we need not go into here, is typologically biased in that it makes it axiomatic that no two utterances that differ at all in word-order (more precisely, in the sequential order of their constituent forms, simple or composite) can be forms of the same sentence. This axiom is often built into the formalization of generative grammars (as it was in Chomsky's original formalization of transformational-generative grammar) by defining the sentence as a string of forms. From time to time, in this chapter and elsewhere in the present book, this point will be of importance. Obviously, if one took the view that (1a)–(4a) are all forms of the same sentence, whose citation-form is (1a), one would say that thematic meaning (in this case at least) is not a part of sentence-meaning. This view is not to be rejected out of hand.

It might be argued, then, that the difference between, say, (1a) and (2a) has nothing to do with the grammatical or semantic structure of the sentence of which they are alternative forms, but rather with the utterance of the same sentence in one contextually determined word-order or another. Issues of this kind will occupy us in Part 4, when we look more closely at what is involved in the utterance of a sentence. For the moment, it suffices to note that the kind of question with which we have been concerned in this section is usually begged, rather than properly addressed, in current works in linguistic semantics. Thematic meaning is primarily, if not wholly, a matter of utterance-meaning. Just how much, if any, is also to be regarded as a part of sentence-meaning is debatable. But it cannot be properly debated unless and until those involved in the debate say exactly what their criteria are for sentence-identity.

It should also be noted that, as we have seen earlier (1.3), it is somewhat unrealistic to discuss what we are now calling thematic meaning without mentioning stress and intonation. Much the same communicative effect can be achieved by putting heavy stress on *this book* in (1a) as can be achieved by uttering (2a). Moreover, when (2a) is uttered, it will not only have a non-neutral word-order, in contrast with (1a), but also a non-neutral intonation-contour. There is no general consensus

among linguists as to how much of this thematically significant variation in the prosodic structure of utterances is to be accounted for in terms of sentence-structure.

One point, however, is clear. It is part of one's linguistic competence to be able to control and interpret variations of word-order and grammatical structure of the kind that are exemplified in the sentences cited above. It is also part of one's linguistic competence to be able to control and interpret differences of stress and intonation that are functionally comparable with such variations of word-order and grammatical structure. We cannot, therefore, hold simultaneously to the following two principles:

(i) linguistic competence is restricted to the knowledge of sentence-structure;
(ii) all aspects of sentence-meaning are truth-conditional.

If we want to maintain (i), we must accept a much broader conception of sentence-structure than is traditional and, in doing so, abandon (ii). Alternatively, if we wish to defend (ii), we must either accept a much narrower conception of sentence-structure than is traditional or define thematic meaning to be something other than meaning. The view taken in this book is that there is no good reason to subscribe to either of the two principles.

6.2 SIMPLE AND COMPOSITE SENTENCES

A **simple** sentence, in traditional grammar, is a sentence that contains only one clause. What I am calling **composite** sentences – there is no generally accepted term for non-simple sentences – fall into two classes: **compound** and **complex**. The former may be analysed, at their highest level of structure, into two or more co-ordinate clauses; the latter into a main clause (which may be simple or composite) and at least one subordinate clause. Although these traditional distinctions are not without their problems, we can use them satisfactorily enough in our general discussion of the propositional content of sentences.

Roughly comparable with the distinction between simple and what I will call composite sentences is the distinction drawn in logic between simple and composite propositions. (What I am calling composite propositions are usually referred to as complex, and occasionally as compound. However, it seems preferable in the present context to standardize the grammatical and the logical terminology as far as possible. 'Composite' has the further advantage that it is transparently related both to 'compositional' and to 'component'.) But no distinction can be drawn (in standard first-order propositional logic) among different kinds of composite propositions that matches, in any significant way, the grammatical distinction between compound and complex sentences. For example,

(7) 'If he passed his driving test, I am a Dutchman'

is complex, whereas

(8) 'Either he did not pass his driving test or I am a Dutchman'

is compound.

The propositions expressed by the above two sentences are normally formalized in the propositional calculus by means of **implication** and **disjunction**, respectively:

(9) "*p* implies *q*",

on the one hand, and

(10) "either not-*p* or *q*",

on the other. At first sight, these two composite propositions (9) and (10) look as if they might differ semantically, but, as they are standardly interpreted by logicians, they do not. They have exactly the same truth-conditions. Granted that "*p* implies *q*" and "either not-*p* or *q*" correctly formalize the range of propositions that can be asserted by uttering our sample complex and compound sentences, (7) and (8), it follows that the sentences in question must have the same propositional content. And yet one might hesitate to say that, as sentences, they have the same meaning.

Even more striking are such examples as the following:

(11) 'He was poor and he was honest'
(12) 'He was poor but he was honest'
(13) 'Although he was poor, he was honest'.

Most people would probably say that all three sentences differ in meaning, but that the second, which is compound, is closer in meaning to the third, a complex sentence, than it is to the first, which is another compound sentence. Once again, however, the composite propositions expressed by these sentences are normally held to be semantically equivalent. If there is any difference of sentence-meaning in (11)–(13), then (on the standard view of propositional content), it is not a matter of propositional content. (The question why logicians normally treat the composite propositions expressed by (11)–(13) as equivalent will be taken up in section 6.3.)

There is much more that would need to be said in a fuller discussion of the relation between the grammatical structure of composite sentences and the logical form of composite propositions. For example, one would need to consider more generally the relevance to the propositional content of sentences of the traditional grammatical distinction between co-ordination and subordination (upon which the more particular distinction between compound and complex sentences is based). Rightly or wrongly, standard analyses of the logical form of the composite propositions expressed by uttering natural-language sentences take no account of this. Similarly, one would need to consider whether, and if so how, the traditional classification of subordinate clauses as nominal, adjectival, adverbial, etc., should be reflected in the formalization of the propositional content of complex sentences. This too is something that is not taken into account, except partially and indirectly, in standard formal-semantic analyses of natural-language sentences.

What is commonly referred to in the literature of linguistic formal semantics as the **rule-to-rule hypothesis** rests on the assumption that, generally speaking, there is congruence between grammatical structure and logical form (see 7.2). If this assumption is valid, it is to be anticipated that further developments in the application of the notions of formal semantics to

the analysis of the propositional content of the sentences of natural languages will exploit some of these traditional notions about the grammatical structure of composite sentences. Some of them appear to be relevant, at least intuitively, to the semantic analysis of sentences. However, there is as yet no consensus among linguists whether, and if so how, they should be represented formally in purely syntactic terms.

As we shall see, in connexion with the principle of compositionality in Chapter 7, formal semantics always presupposes and operates in conjunction with a particular syntactic model. We shall be looking at two historically important approaches to the formalization of sentence-meaning which sought to give effect to this principle in quite different ways. One of them, the Katz–Fodor theory, originated in linguistics and used the Chomskyan model of transformational-generative grammar (in its so-called standard version); the other, Montague semantics, originated in formal logic and used a very different, less powerful, but logically (and in certain respects semantically) more elegant and more perspicuous, model of syntactic analysis (categorial grammar). In the last twenty-five years or so, these two different models of syntactic analysis have been further refined and modified, and other models have been developed which seek to combine the theoretical and descriptive strengths of both (without, ideally, the weaknesses of either). These developments have been motivated by both empirical and theoretical considerations. Not only has a much wider range of relevant data been investigated, but there has also been a conscious attempt by linguists, as there was not in an earlier period, to get the best fit – to achieve the highest degree of congruence – between grammatical and semantic structure in their descriptions of natural languages.

Throughout this book I have deliberately adopted the conceptual framework and, as far as possible, the terminology of traditional grammar. Students who are familiar with modern syntactic theory should have no difficulty in making the necessary terminological adjustments and, if they have some knowledge of the more recent developments to which I have just been referring, they will see the force of the comments about syntactic and semantic congruence. Students who do not have this familiarity with modern syntactic theory, however, are in no way disadvantaged. Everything that follows in Chapter 6 is intended to be comprehensible (and has at times been deliberately simplified for the purpose) on the basis of a fairly non-technical knowledge of traditional grammatical concepts. One or two of the relevant concepts drawn from modern generative grammar will be introduced and explained in Chapter 7, where something more will also be said about compositionality, grammatical and semantic congruence, and the rule-to-rule hypothesis.

In this section, we have been considering the relation between the grammatical structure of composite (i.e., compound and complex) sentences and the logical form of composite propositions. In doing so, we have adopted the traditional view of the distinction between clauses and sentences, according to which a composite sentence is composed of more than one clause and a simple sentence is composed of, and may be identified with, a single clause. We have also tacitly taken the view, for which there is some support both in traditional grammar and modern linguistic theory, that sentences are more basic than clauses, in that (i) there is no distinction to be drawn between clauses and sentences as far as simple sentences are concerned and (ii) the clauses of composite sentences can be derived from simple sentences by **embedding** them (or some transform of them) in complex sentences or **conjoining** them (or some transform of them) in compound sentences. (The terms 'embedding', 'conjoining' and 'transform' are drawn from the terminology of Chomskyan transformational-generative grammar, which will be referred to again in Chapter 7, but the concepts with which they are associated are traditional enough and have their place in many different models of grammatical structure.) According to an alternative view of the relation between sentences and clauses (as we shall see in section 6.6), it is the clause, rather than the sentence, that is the more basic structural unit and the one that corresponds most closely to the proposition. Everything that has been said in this section and in the following sections could be reformulated in terms of this alternative view; and, from time to time, I will remind readers that this is so by using

the phrase 'sentence (or clause)' in place of 'sentence' and, when we come to section 6.6, 'sentence-type (or clause-type)' in place of 'sentence-type'.

In conclusion, it may also be useful to make explicit the fact that, in this section and throughout this book, the term 'logical form' is being used with reference solely to the structure of propositions (and propositional content): the term 'form', in this context, is in fact synonymous with 'structure'. The reason for making this point is that the term 'logical form' is used in certain modern theories of syntax for an underlying level of grammatical structure (roughly comparable with what was called the deep structure of sentences in the so-called standard model of transformational grammar: see 7.3). The two senses of the term are of course connected; but they must not be confused.

6.3 TRUTH-FUNCTIONALITY (I): CONJUNCTION AND DISJUNCTION

As we saw in the preceding section, under standard logical assumptions the composite propositions expressed by sentences such as (11)–(12) are held to be semantically equivalent. This is because the operations whereby composite propositions are formed out of simple propositions are, by definition, **truth-functional**.

What this means is that the truth-value of a composite proposition is fully determined by – is a **function** of (in the specialized mathematical sense of 'function' explained in Chapter 4) – the truth-values of its component propositions and the specified effect of each operation. The four operations that are of concern to us are conjunction, disjunction, negation and implication.

Conjunction (&) creates a composite proposition (p & q: "p-and-q"), which is true if, and only if, both p and q are true. **Disjunction** ($\vee$), mentioned earlier, creates a composite proposition ($p \vee q$: "either-p-or-q") which is true, if, and only if, either p is true or q is true (or both are true). **Negation** ($\sim$) creates a composite proposition ($\sim p$) out of a simple proposition (p); and $\sim p$ is defined to be true when p is false and false when p is true.

Implication ($\rightarrow$) creates a composite proposition ($p \rightarrow q$: "p-implies-q") which is true if, and only if: (i) both p and q are true, (ii) both p and q are false, or (iii) p is false and q is true.

The question which we now have to address is whether the operations associated with the formation of composite sentences in natural languages are similarly truth-functional. In this section we shall restrict our attention to compound sentences formed by means of the operation of conjunctive and disjunctive co-ordination. Sentences which are commonly held to exemplify implication and negation will be dealt with in subsequent sections.

At first sight, the logical definition of conjunction and its application to the semantic analysis of compound sentences in natural languages might seem to be straightforward enough. We have already noted, however, that there seems to be a difference of meaning between such sentences as (11) and (12) – a difference which can be associated with the English forms *and* and *but* (and with grammatically and semantically comparable forms in other languages). Let us now look more closely at what I will call clausal *and*-co-ordination: the co-ordination of clauses by means of *and*. This is the most neutral kind of conjunctive co-ordination in English; and its closest equivalent in the propositional calculus is undoubtedly logical conjunction (&). Even *and*-co-ordination, however, is problematical from the point of view of truth-functionality.

Very often there is felt to be some kind of temporal or causal link between the situations described by the component propositions, such that the ordering of the clauses expressing these propositions is semantically significant. For example

(14) 'John arrived late and missed the train'

and

(15) 'John missed the train and arrived late'

would normally be used in different circumstances. To make the point briefly, but loosely: *and* here appears to mean "and then" or "and therefore". Obviously, if *and* does have this meaning, it is not equivalent to the connective for propositional conjunction, &. For p & q has the same truth-values as q & p.

But does *and* – more precisely, the co-ordination of clauses in sequence by means of *and* – actually have the meaning "and then" or "and therefore"? An alternative view is that "then" or "therefore" is not part of the propositional content, but something that is merely implied (in a broad sense of 'implied') by our general tendency to adhere to the communicative norms of relevance and orderliness. Those who hold this view would argue that, in normal circumstances and in default of contextual information to the contrary, we can reasonably infer from the utterance of the sentence 'John arrived late and missed the train' that John's late arrival was the cause of his missing the train even though there is nothing in the actual meaning of the sentence that gives us this information – because we can assume that the speaker is not misleading us by deliberately and gratuitously flouting the ground-rules, or maxims, of normal communicative behaviour.

It is, of course, possible to think of circumstances in which (14) and (15) could be uttered to assert two otherwise unconnected facts. But these circumstances must be rather special and will generally be clear from the context of utterance. Let us grant, therefore, that in what we may think of as more normal or more usual contexts of utterance anyone uttering either (14) or (15) would be implying, if not actually expressing, the fact that there was some kind of causal connexion between John's late arrival and his missing the train.

This argument has been used by adherents of truth-conditional semantics. We shall come back to this in Chapter 9 in our discussion of Grice's notion of **conversational implicature**. At this point, however, it is worth noting that, however persuasive the arguments might be in the case of the English form *and*, they cannot be assumed to hold for all natural languages. It so happens that English has compound, as well as complex, sentences and what can be plausibly seen as a neutral co-ordinating conjunction. Many familiar European languages are like English in this respect, but not all languages are.

The arguments in favour of a truth-functional analysis of composite sentences in English are rather less persuasive when they are used in support of the thesis that sentences containing *but* or

although have the same meaning as sentences containing *and*, as in (12) and (13) mentioned earlier. If we concede the truth-functionality of what I have called the most neutral kind of conjunctive co-ordination involving the use of *and*, we must also allow that speakers may utter sentences such as (11) in several prosodically different forms which also differ in meaning. For example, they may superimpose upon their utterance of what is in itself a grammatically and lexically neutral compound sentence such as (11) a prosodic contour (comprising stress and intonation) which indicates their own feelings about the propositions expressed and the connexion between them. That is to say, it is possible to say (11a) *He was poor and he was honest*, (11a) being one of the forms – an utterance-inscription – which results from the utterance of (11), in such a way that, in asserting the conjunction of the two propositions, p & q, speakers simultaneously reveal their surprise that both p & q should be true. In such circumstances, they might equally well have uttered, not a form of (11), but of (12) or even of (13), each with the appropriate prosodic contour. There would be no difference in the composite proposition which they assert, and no readily identifiable difference in the degree or nature of the feeling that they indicate. Nevertheless, the two sentences differ in meaning, since *but*, unlike *and*, is never a purely neutral marker of the conjunction of propositional content.

Similar problems arise, in certain languages, in connexion with disjunction. For example, in Latin there are two ways of translating English *either-or* sentences. One can use the particles ... *vel* ... *vel* ... or alternatively the particles ...*aut* ...*aut* ... . It has been suggested, at times, that the difference between these two alternatives is that the *vel*-construction is used for **inclusive** disjunction and the *aut*-construction for **exclusive** disjunction.

An inclusive disjunction, $p \vee q$, is true, not only if either p or q is true and the other is false, but also if both p and q are true. An exclusive disjunction, on the other hand, is true only if either p is true and q false or q is true and p false: it excludes the possibility of both p and q being true. For example, the following regulation might, in principle, be interpreted either inclusively or exclusively:

(16) *Students who do not arrive in time or have not completed all their assignments will be refused admission to the examination.*

If it is interpreted inclusively (which is clearly the most likely interpretation in a case like this), this would mean that students who fail to fulfil both conditions, in addition to students who fail to fulfil only one of the conditions, will be refused admission; if it were interpreted exclusively, this would mean that students failing to fulfil only one of the conditions would be refused admission, but not necessarily students who fail to fulfil both conditions. In other cases, an exclusive interpretation is more likely: e.g.,

(17) *For the main course you may have meat or fish.*

Usually, when logicians use the term 'disjunction', without qualification, they mean inclusive disjunction.

To return, then, to the Latin example. In fact, it does not seem to be the case, except perhaps in the specialized usage of logicians, that *vel* is used for inclusive and *aut* for exclusive disjunction. What is true, however, is that the *aut*-construction is stronger or more expressive than the *vel*-construction, in much the same way that *but*-conjunction is stronger and more expressive than *and*-conjunction in English. It is difficult to be more precise than this without attributing to *aut*, in contrast with *vel*, several distinct meanings.

Perhaps the best way of explaining what is meant by 'stronger and more expressive' in this context is to say that the nearest equivalent to the *aut*-construction in (spoken) English is (*either*) ... *or* ... with heavy stress on the disjunctive particles. Much the same effect is achieved in French by adding *bien* to the otherwise neutral disjunctive particles (*ou*) ... *ou* ..., and in Russian similarly by adding *zhe*. In some contexts, stronger or more expressive disjunction will indeed be understood to be exclusive in the logician's sense; in others, however, it will indicate that, in the speaker's opinion, the alternatives p and q are the only propositions worth considering and will dramatize, or emphasize, the necessity of opting for one or the other. The distinction between inclusive and exclusive disjunction can be accounted for truth-functionally; the distinction between neutral and stronger, or more expressive, disjunction cannot.

6.4 TRUTH-FUNCTIONALITY (2): IMPLICATION

Implication (more precisely, what logicians call **material implication**) is usually rendered into English by means of a conditional sentence: for example,

(18) 'If Ann has passed her driving test, her parents have bought her a Porsche'.

As was mentioned in section 6.2, the composite proposition $p \rightarrow q$ ("p-implies-q") is true, by definition, not only when both p and q have the same truth-value (i.e., when both are true or both are false), but also when p is false and q is true. (It follows that $p \rightarrow q$ is false only when p is true and q is false.) So the proposition expressed by (18) – if it has the logical form of "p implies q" – is true not only (i) if Ann has passed her driving test and her parents have bought her a Porsche (p & q), but also (ii) if she has not passed her driving test and/but her parents have bought her a Porsche ($\sim p$ & q), and (iii) Ann has not passed her driving test and her parents have not bought her a Porsche ($\sim$p & $\sim$p). Most people find (ii), if not (iii), paradoxical. Indeed, the fact that any false proposition (materially) implies every true proposition is commonly referred to as one of the **paradoxes of implication**.

A second point is that (in standard propositional logic) the truth-value of "p implies q", like that of "p and q", is totally independent of any causal connexion between the situations described by each of the component propositions. For example, the proposition expressed by

(19) 'If Lady Godiva had blue eyes, Ann's parents have bought her a Porsche'

would be true (independently of the colour of Lady Godiva's eyes) if the parents of the person referred to by 'Ann' and 'she' (in the form *her*), on some occasion of the utterance of the sentence, have indeed bought her a Porsche. Once again, most

people find this paradoxical. More generally, they find it paradoxical that the truth-functionality of an implication is unaffected by the absence of any kind of causal connexion between the situations referred to in the two component propositions, *p* and *q*. Of course, it is always possible to devise a more or less plausible connexion for any two clauses in any conditional sentence and thereby eliminate the apparent paradox; and the full importance of this fact will emerge in our treatment of the notion of **relevance** in Chapter 9. For example, the Porsche might have been a prize for knowing or discovering the colour of Lady Godiva's eyes. But what if we do not seek to eliminate the so-called paradoxes of implication in this way?

One of the conditional sentences cited earlier, which is here repeated,

(7) 'If he passed his driving test, I am a Dutchman',

is interesting (but highly untypical) from this point of view. As it would normally be used (by non-Dutchmen), it depends for its effect upon the known falsity of *q* ("I am a Dutchman") and the presumed absence of any causal link between the situations described by *p* (in this case "He passed his driving test") and *q*. Under these circumstances, we might well be prepared to say that the composite proposition ($p \rightarrow q$) expressed by the sentence as a whole is equivalent to the one expressed by 'Either he did not pass his driving test or I am a Dutchman' ($\sim p \vee q$), and that it is true if both *p* and *q* are false. But this is surely because the utterance of this sentence is rhetorically equivalent to the denial of *q* in a context in which the denial of *p* is non-informative. In other words, the speaker can trade on the hearer's knowledge that the speaker is not a Dutchman and the hearer's consequential ability to infer the falsity of *p* ("He passed his driving test") from the truth of the presumably informative composite proposition "*p* implies *q*". The speaker can be all the more certain that the hearer will draw the correct inference in a case like this because the proposition "I am a Dutchman" has been conventionalized in some English-speaking societies for this very purpose. However, any sufficiently preposterous or self-evidently false proposition will serve the same rhetorical purpose ("If he has got a degree in linguistics, I am the Queen of Sheba", etc.). We do indeed make rhetorical, or as many would say these days pragmatic, use of at least a subclass of conditional sentences in the way that I have just illustrated.

In this section, we have been dealing with what logicians call material implication. There are other kinds of implication recognized in current linguistic semantics (and pragmatics), two of which may be mentioned here: **entailment** and **implicature**. The former, sometimes called strict implication, was introduced in section 4.4 in association with the notion of possible worlds: as we saw there, a proposition *p* entails a proposition *q* if, when *p* is true, *q* also is necessarily (and not just contingently) true (i.e., it is true in all possible worlds). The notion of entailment plays a major role in formal semantics: it is by no means restricted to the purpose for which it was introduced earlier (for the definition of sense-relations between lexemes). Implicature, by contrast, is a looser kind of implication, closer to what is often meant by 'implication' in everyday, non-technical, usage: a proposition *p* is said to **implicate** (rather than to imply) a proposition *q* if the truth of *q* can be reasonably inferred from *p* in the context in which *p* is asserted or is otherwise known or assumed to be true. The important point to note for the moment is that implicature is context-dependent and therefore, in terms of the theoretical framework adopted in this book, is a matter of utterance-meaning. It will be dealt with in Part 4.

6.5 TRUTH-FUNCTIONALITY (3): NEGATION

As we saw in section 6.2, negation (symbolized by '$\sim$') is regarded by logicians as an operation which forms a composite proposition ($\sim p$) out of a simple proposition (p). As far as standard, two-valued, propositional logic is concerned, the truth-functional definition of negation is straightforward: whenever *p* is true, $\sim p$ is false and whenever *p* is false, $\sim p$ is true. It is further allowed that negation should be **recursive**, so that the negation of $\sim p$, yields $\sim\sim p$, which is equivalent to p (two negatives make a positive), the negation of $\sim\sim p$ yields $\sim\sim\sim p$, which is

equivalent to $\sim p$, and so on. How does the standard logical account of negation relate to the meaning and use of negative sentences in natural languages? More particularly, how much of the meaning of negative constructions is part of the propositional content of sentences?

There are various ways in which negative sentences are constructed in natural languages. Only rarely, however, is there any reason to say that a negative sentence is grammatically composite by contrast with the corresponding positive, or affirmative, sentence. Generally speaking, corresponding sentences of opposite **polarity** have the same clause-structure, and what we can identify most easily with propositional negation applies within clauses and does not extend to whole sentences. Indeed, in many languages (including Finnish and Irish) the negative polarity of a clause (like its mood or its tense) is marked not by means of a separate particle like the English *not*, but by special forms of the verb, or predicate. Hence the traditional maxim: negation of the predicate is equivalent to negation of the proposition.

But there is one kind of predicate-negation which is clearly not equivalent to the negation of the whole proposition. This may be exemplified by

(20) 'John is unfriendly',

which, unlike

(21) 'John is not friendly',

expresses a proposition that is not just the **contradictory** of the proposition expressed by

(22) 'John is friendly',

but its **contrary**. "John is unfriendly" is not simply the negation of "John is friendly": it implies "John is hostile". (In standard logical terminology, one proposition is the contradictory of another if it is impossible for both of them to be true and both false. One proposition is the contrary of another if both cannot be true, though they may both be false.) It is quite possible for John to be neither friendly nor unfriendly.

In fact, 'John is not friendly' is often used in everyday conversation as if it had the same sense as 'John is unfriendly'. (We are not concerned, in this context, with spoken utterances of (21) in which the forms *not* and *friendly* are, as it were, hyphenated prosodically. In such utterances, *not friendly* is obviously to be interpreted as the form *unfriendly* would be.) There are three ways of handling this fact. The first, which is excluded by the formulation I have just used, is to say that there are two distinct sentences represented in written English by 'John is not friendly' and that they are distinguished, at least optionally, in spoken English by means of rhythm and intonation. But rhythm and the fine differences of intonation that are involved in cases such as this are universally excluded by linguists from what they consider to be part of the prosodic structure of sentences. The second way is to say that there is one sentence, and that it is structurally ambiguous. But there are no other, independently motivated, reasons for adopting this view. The third way is to draw upon the distinction between sentence-meaning and utterance-meaning and to say that 'John is not friendly' is a single unambiguous sentence which can be uttered in a particular way, and perhaps also in identifiable contexts, with more or less the same communicative effect as the utterance of 'John is unfriendly'. It is the third of the three analyses that is adopted here.

It is also possible to have negated nominal expressions occurring as clause-constituents. For example,

(23) 'Non-students pay the full entrance-fee'

expresses a proposition which differs from, and does not entail (though it may, in context, implicate) the proposition expressed by

(24) 'Students do not pay the full entrance-fee'.

Nominal negation of this kind ('non-students'), like predicative negation ('do not pay'), has an effect on the propositional content of the clause in which it occurs and is in principle truth-functional; but it cannot be readily formalized in standard propositional logic.

To be contrasted with nominal negation of the kind exemplified by 'non-students' above is the use of negative indefinite pronouns such as 'no-one' or 'nothing' or the semantically comparable nominals introduced with the adjectival 'no' (e.g., 'no man': cf. French 'aucun homme', German 'kein Mensch', etc.). It is obvious, upon reflection, that

(25) 'No-one telephoned'

expresses a proposition which contradicts the proposition expressed by

(26) 'Someone telephoned',

whereas

(27) 'Someone did not telephone',

which looks as if it is the negative sentence that most directly corresponds to (26), can be conjoined with (27) to express the non-contradictory composite proposition,

(28) "Someone telephoned and someone did not telephone".

Most logicians and linguists have taken the view, until recently at least, that the propositions expressed by (25), (26) and (27) differ in logical form from the propositions expressed by, say,

(29) 'John telephoned'

and

(29a) 'John did not telephone'.

Standard logical analyses of the propositional content of (25), (26) and (27) all make use of the **existential quantifier** with or without negation, as the case may be, and handle the semantic difference between (25) and (27) in terms of the relative order of the quantifier and the negation operator. The most notable difference between the negative sentences (25) and (29a), from this point of view, is that the latter (when it is used to make a statement) is associated with a particular kind of **existential presupposition**: that is, it conveys the speaker's presupposition that there exists some entity that may be

appropriately referred to with the expression 'John'. There is no existential presupposition associated with the use of 'nobody', 'nothing', etc. The standard analysis of (25) correctly accounts for its difference, in this respect, from (29a). But it does so at the price of discounting their apparent grammatical parallelism.

Consideration of sentences such as those listed above within a more comprehensive discussion of negation in English and other languages raises further problems. How are positive sentences containing 'some' (or 'someone', 'somewhere', etc.) related grammatically and semantically to corresponding negative sentences containing 'any' (or 'anyone', 'anywhere', etc.)? (What is the relation, for example, between 'He saw someone' and 'He did not see anyone'?) And how are they related to corresponding negative sentences containing 'some'? (Does 'He saw no-one' mean exactly the same as 'He did not see anyone'?) Problems like this, involving the complex interaction of negation, the use of determiners, quantifiers and indefinite pronouns (and adjectives), etc., have been extensively treated by linguists in recent years. In some cases, the facts themselves are in dispute, especially when it comes to alleged differences of meaning which cannot be accounted for truth-functionally. But it is very difficult to handle even the undisputed cases of propositional negation in a theoretically unified framework within which grammatical structure and logical form can be put into correspondence simply and systematically.

Negation is an operation that applies to a single expression. But the expression in question can be simple or composite. In $\sim p$, the expression to which the operator applies – the expression that is in its **scope** – is simple, whereas in $\sim(p \,\&\, q)$ it is composite. Everything within the matching left and right brackets that immediately follow the negation-operator is in its scope: in default of such brackets the negation-operator is taken to apply to the smallest expression on its right. There is therefore a significant difference between $\sim(p \,\&\, q)$ and $\sim p \,\&\, q$: between, say,

(30) "Mary was not (both) well-and-cheerful"

and

(31) "Mary was (both) not-well and cheerful"

(if I may informally indicate the difference by means of hyphens).

It is easy to see that there are other such differences of scope in respect of propositional negation in natural languages. For example, the English sentences

(32) 'John did not kiss Mary because she was his sister'

can be construed in two ways: as

(33) "It was because she was his sister that John did not kiss Mary"

or, alternatively, as

(34) "It was not because she was his sister that John kissed Mary".

Under interpretation (33), the sentence in question is taken to be one in which negation applies only to the propositional content of the main clause ("John kissed Mary"); under interpretation (34), it is a sentence in which negation applies either to the content of the subordinate clause ("because she was his sister") or (and this is perhaps the preferred analysis) to the composite proposition "John kissed Mary because she was his sister". Of course, the difference between (33) and (34) is not correctly formalized in terms of the truth-functional difference between $\sim p \ \& \ q$ and $\sim(p \ \& \ q)$. As we have seen, the propositional calculus cannot draw the distinction between conjunction and causal subordination. Nevertheless, it is intuitively clear that the difference between (33) and (34) is, in principle, formalizable in terms of the scope of propositional negation. There are many such examples.

The scope of negation is also relevant in modal logic, which extends the propositional calculus by means of the logical operators of necessity ($\mathcal{N}$) and possibility (M). The proposition

(35) "It is not necessary that p" ($\sim \mathcal{N}p$).

differs truth-functionally from

(36) "It is necessary that not $\sim p$" ($\mathcal{N} \sim p$).

For example,

(37) "The sky is not necessarily blue"

differs in truth-value from

(38) "Necessarily, the sky is not blue".

As we shall see in Part 4, at least some of what can be identified as modality in natural languages can be ascribed to the propositional content of sentences. In such cases, there is some degree of correspondence between the scope of negation and grammatical structure. For example, the utterance

(39) *He may not come*

can be construed, syntactically, in two ways (and thus put into correspondence with two different sentences), according to whether the negative particle *not* has **narrower** or **wider scope** than the modal verb 'may':

(40) "It is possible that he will not come" ($M \sim p$),

in contrast with

(41) "It is not possible/allowed that he will come" ($\sim Mp$).

What cannot be formalized, even in modal logic, is the difference between the assertion of a negative proposition ("I say that it is not raining") and the denial of a positive proposition ("I deny that it is raining"); or again, the difference between the assertion of a positive proposition ("I say that it is raining") and the denial of a negative proposition ("I deny that it is not raining"). Here, too, we have differences that can be accounted for in terms of the scope of negation. Moreover, they are differences that are reflected, at least partly, in the syntactic and prosodic structure of sentences in many languages. But assertion and denial are not, and cannot be, constituents of propositions or propositional content; they are different kinds of communicative acts. In so far as the difference between assertion and denial, and between other kinds of communicative acts, is

systematically encoded in what was earlier referred to as the face-value of sentences, it is yet another part of the meaning of sentences that is not part of their propositional content.

6.6 SENTENCE-TYPE, CLAUSE-TYPE AND MOOD

It is by now common enough for linguists to draw a terminological distinction between declarative sentences and statements, between interrogative sentences and questions, between imperative sentences and commands, between optative sentences and wishes, between exclamative sentences and exclamations. It is far less common for them to point out that, in traditional usage, there is a crucial difference between 'declarative', 'interrogative' and 'exclamative', on the one hand, and 'imperative' or 'optative', on the other. The former set of terms subclassify sentences according to what is often called **sentence-type**. (This is a quite different sense of the term 'type' from the sense in which 'type' is opposed to 'token'. As we shall see in Part 4, within the conceptual and terminological framework adopted in this book, the type/token distinction does not apply to sentences, since, unlike utterances, they are not forms.) The terms 'imperative' and 'optative', however, go traditionally with 'indicative', 'subjunctive', 'dubitative', 'evidential', etc., and subclassify sentences (or clauses) according to **mood**. Some terms, notably 'conditional', are used traditionally both of sentence-type and mood: this point, in respect of the term 'conditional', will be picked up presently, since conditional propositions have long been of particular concern in logical semantics.

At this point, I should remind the reader that, although we are operating throughout this book with two fundamental distinctions, the distinction between lexical meaning (or word-meaning) and sentence-meaning, on the one hand, and the distinction between sentence-meaning and utterance-meaning, on the other, it is arguable that it is clauses, rather than sentences, that correspond most closely to propositions and also that they are more basic grammatically (cf. 6.2). In what follows, I will, for simplicity, use the terms 'sentence' and 'sentence-type', where some grammarians might prefer to use 'clause' and

'clause-type'. My principal reason for continuing to operate, primarily, with 'sentence' and 'sentence-type' is that these are the terms that are most commonly used in formal semantics (where, furthermore, a clear distinction is not always drawn between sentences and propositions). Nothing of substance is affected by this purely terminological decision, since everything that is said in Parts 3 and 4 of this book could be reformulated without difficulty in terms of clause and clause-types. (When it comes to the detailed integration of semantics and syntax within a particular theoretical framework, the selection of sentences or clauses as basic, and in what sense of 'basic', does of course make a difference. But at the level of generality at which we are operating in this introductory work this is something we need not be concerned with.) In order to make explicit the possibility of adopting an alternative view, I have included 'clause-type' in the section heading, and I have occasionally added the terms 'clause' and 'clause-type' in brackets.

There is a connexion between sentence-type (or clause-type) and mood. But type and mood are partly independent dimensions of the grammatical structure of sentences (and clauses), and it is important not to confuse them. In particular, it is important not to confuse or to conflate 'declarative' with 'indicative', as philosophers and even linguists do at times. A sentence cannot be simultaneously interrogative and declarative; but in many languages it can be both interrogative and indicative (as these terms are traditionally understood): i.e., it can be interrogative in sentence-type and contain, as its sole or principal clause, one that is indicative in mood. But it can also be, in some languages if not in English, both interrogative and subjunctive. For example, the Latin sentence

(42) 'Quid faceret?',

which is in the imperfect subjunctive, differs grammatically and semantically from .....

(43) 'Quid faciebat?',

which is in the imperfect indicative. Both (42) and (43) can be translated into English according to context in various ways: e.g., as

(42a) 'What was he/she to do?'

or

(43a) 'What was he/she doing?'.

It is important to realize that the semantic difference between (42) and (43) in Latin is exactly parallel with the difference between

(42b) 'Quid faciam?' ('What am I do to?')

and

(43b) 'Quid facio?' ('What am I doing?'),

in which the verbs are in the present tense subjunctive and indicative, respectively, and the subject is in the first person. Sentences such as (42) and (42b) can also be analysed as having the same propositional content as (43) and (43b) respectively, but as combining with this a non-propositional – truth-conditionally unanalysable – expressive, and more particularly **subjective**, component of meaning (see 10.6). The English translations of (42) and (42b) which I have given above are potentially misleading in that they do not grammaticalize this subjective component of utterances by means of the category of mood in a one-clause sentence, and they encourage the semanticist to look for a non-subjective analysis involving the embedding of the propositional content of one clause within that of another. Modern English, in most dialects, makes very little use of the distinction between the indicative and the subjunctive even in subordinate clauses.

Just as, in some languages, a sentence can be both interrogative and non-indicative, so too there are languages in which a sentence can be declarative without being indicative. Indeed, there are languages (notably, members of the American-Indian Siouan family) in which there are various kinds of non-indicative declarative sentences, but no indicative

sentences at all. Speakers of such languages, when they use a sentence to make a statement cannot but encode in the verbal component of their utterance, by the choice of one grammatical mood rather than another, some subjective qualification of their commitment to the truth of the proposition they express or some other indication of what may be referred to later as its **epistemic status**. (What is meant by 'epistemic' and 'subjective qualification' will be explained in sections 8.4 and 10.5.) In so far as the sentences in question are members of a class (a sentence-type) which is associated, characteristically, with making statements, they are declarative. But none of the subclasses is indicative (in mood), because none of the moods in these languages is associated with the neutral (objective or non-subjective) expression of propositional content (in the making of statements, the asking of questions, or whatever). The indicative, in those languages which have such a mood, is traditionally regarded as the mood of factuality. Obviously, one can not only assert or deny, but also query, presuppose, or even simply consider (in soliloquy or thought), the factuality of a proposition.

An indicative sentence (or clause) is by definition a sentence (or clause) in the indicative mood, as an imperative, subjunctive or optative sentence (or clause) is a sentence (or clause) in the imperative, subjunctive or optative mood, in those languages which have any or all of these moods. Mood, as a grammatical category of the sentence (or clause), is frequently encoded inflectionally, throughout the languages of the world (as it is in Latin and Greek and the other Indo-European languages), in the grammatically distinct – more precisely, morphosyntactically distinct – forms of the verb in the sentence (or clause) of which the verb is the head. It is for this reason that mood is often defined, in traditional grammars, as a category of the verb. But this association of mood with verbal inflection is, in principle, contingent. As we shall see later, mood is best defined as that category which results (in those languages which have it) from the grammaticalization of **subjective modality** and other kinds of expressive meaning, including some part of what is nowadays commonly referred to as illocutionary force (8.3). Much of this, in English, is encoded in the modal verbs, which

have taken over many of the functions of the Old English subjunctive as part of a process which has been going on for centuries and has made Modern English, in this respect as in others, morphologically more analytic (or periphrastic) and less synthetic (or inflecting). A similar long-term process has been taking place in other Germanic languages and in the Romance languages, though most of these still have a somewhat richer system of verbal inflections than Modern English. One of the consequences of this, as we shall see, is that it is much easier to objectify and propositionalize the inherently expressive and subjective, non-propositional, components of the meaning of utterances in English than it is in many other languages.

The point that I have been making here about the need to distinguish sentence-type from mood is of more than purely terminological interest. As we shall see in Part 4, this distinction can be seen as supporting a tripartite analysis of the logical structure of both sentences and utterances in preference to the bipartite, or even unitary, analysis favoured by many logicians and formal semanticists. Terminology is, in any case, especially important in this area of semantics, since it helps us to keep apart, not only sentence-type and mood (which are frequently confused even by linguists), but also form and function.

As was mentioned earlier, some terms, such as 'conditional', are traditionally used to label one of the moods in certain languages (e.g., in French or Italian), as well as being used more generally to label sentences (typically complex, but in some cases compound or paratactic) which are used, characteristically, to express composite propositions, or implications (see 6.4). Whenever one employs such terms, one must be careful not to confuse either the formal with the functional or the narrower with the broader formal category. To take the French or Italian so-called conditional mood, for example: on the one hand, it does not occur in all conditional sentences, but only in that subclass of conditional sentences which are used characteristically to express counterfactual conditional propositions (and it occurs in the main clause, rather than the subordinate, conditional, clause); and, on the other, it has other functions in addition to its use in conditional sentences. One of these uses, which

is of particular interest in the context of a discussion of the need to distinguish form from function and sentence-type (or clause-type) from mood, is in declarative sentences to express a particular kind of subjective epistemic modality, comparable with that expressed by what is called the **evidential** mood in the many languages throughout the world that have such a mood (e.g., in addition to the Siouan family referred to above, Turkish and Bulgarian).

Much the same point that I have made about the term 'conditional' can also be made about 'subjunctive' and 'optative', which are sometimes used in philosophical and logical semantics, in contrast with 'indicative', with reference to function rather than form or to sentence-type rather than mood. Having made this point, in the remaining sections of this chapter I will let the term 'declarative sentence' (abbreviated as 'declarative') stand for 'indicative declarative sentence'. This is how it is usually interpreted in recent work in linguistic semantics. The important thing to remember is that in many languages there are also various kinds of non-indicative declarative sentences.

We must now return briefly to the question of prosodic structure. In this section (and throughout this book), we have opted for the view that the classification of sentences (and clauses) by type is wholly a matter of their grammatical structure, in both the written and the spoken language. It has already been noted, however, that, in normal conversation, spoken utterances, in all languages, are **punctuated** and **modulated** – i.e., invested with various kinds of subjective, non-propositional, meaning – by superimposing upon the string of forms of which they are composed a particular prosodic contour (see 1.3). In speech, the grammatical structure and the prosodic structure of utterances are generally complementary and mutually supportive, but, as we shall see presently, they may also be in apparent conflict. For example, a declarative sentence may be uttered **ironically** to express a proposition that contradicts the proposition which, taken at face-value, it purports to express (e.g., *That's a clever thing to do!*); an interrogative sentence may be uttered to make, indirectly, a statement of the kind that is traditionally (and somewhat misleadingly) referred to as a *rhetorical question*

(e.g., *Who could possibly think that such negotiations would bring lasting peace to the region!*).

We shall look at some of these apparent conflicts between sentence-meaning and utterance-meaning in Part 4. The point being made here is the more general one, that in speech the prosodic (and paralinguistic) structure of the utterance would normally resolve the apparent conflict or contradiction. The fact that we have excluded prosodic structure from sentence-structure (and that we have therefore drawn a distinction between sentence-meaning and utterance-meaning, for both the written and the spoken language, where it has been drawn) is well motivated from a methodological point of view. It does not follow that in drawing the distinction in this way and at this point, we are providing a realistic analysis of the production and interpretation of utterances.

Having established the distinction between sentence-types (and clause-types) and mood and having noted that not all declarative sentences (or clauses) are in the indicative mood (in all languages that have such a mood), we shall now move on to consider the relation between interrogatives and declaratives.

6.7 THE MEANING OF INTERROGATIVE AND DECLARATIVE SENTENCES

It is generally recognized that sentences other than declaratives present problems for truth-conditional theories of sentence-meaning. In this section, we shall be concerned with one class of non-declaratives, namely interrogatives, and shall be comparing them semantically with declaratives. In the following section we shall look at two other classes of non-declarative sentences, drawing upon the points made here and introducing others. The general conclusion towards which we are proceeding is that not even declarative sentences are fully analysable semantically in terms of a standard truth-conditional theory of meaning.

In English, as in many other languages, there are two grammatically distinct subclasses of interrogative sentences, which can be put into correspondence (by means of the notion of characteristic use and face-value meaning) with two subclasses

of questions: yes-no **questions** and what I will call **x-questions**. We shall restrict our attention initially to what may be referred to, derivatively, as *yes–no* interrogatives, such as

(44) 'Is the door open?'.

This is systematically related, in terms of its grammatical and lexical structure, to the declarative sentence

(45) 'The door is open'.

And the systematic grammatical and lexical relation between the two would seem to reflect a no less systematic semantic relation. But what is the nature of this semantic relation? Intuitively, it would seem that they share much, if not all, of their propositional content, but differ with respect to the totality of their sentence-meaning.

There are several ways of assigning truth-conditions to (44), such that both the similarity and difference between its meaning and that of (45) are systematically accounted for. One is to say that it has the same meaning as

(46) 'I ask whether the door is open'.

But this is readily shown to be unsatisfactory. First of all, it seems clear that the meaning of (44) is independent of its being used to ask a question. For example, there is nothing illogical or contradictory about the utterance

(47) *Is the door open? – that is a question which I refuse to ask.*

And yet there should be if (44) and (46) have the same meaning.

Secondly, if we adopt this approach, we are presumably committed to the view that the meaning of the grammatically complex sentence (46) is simpler than the meaning of the grammatically simple sentence (44). This is in itself counter-intuitive; and it is in conflict with the principle of compositionality (which was mentioned in Chapter 4 and will be discussed with reference to sentence-meaning in section 7.2). But, to make matters worse, we also have to reckon with the fact that the subordinate clause which operates as the complement, or direct object, of the verb 'ask' in (46), is generally regarded as

being grammatically comparable with the *that*-clause which operates as the complement of the verb 'say' in

(48) 'I say that the door is open',

the former, *whether the door is open*, being related to, and perhaps derived from, (44) in exactly the same way as the latter, *that the door is open*, is related to (45). But it is generally agreed that the truth-conditions of (48) are clearly different from the truth conditions of (45). And there is no good reason to challenge this consensus, especially as (i) English is, in this respect, by no means untypical of languages which grammaticalize the distinction between so-called **direct-discourse** and **indirect-discourse** constructions and (ii) there are many languages which do not have indirect-discourse constructions but few, if any, that do not have direct-discourse constructions. It is clearly unsatisfactory to treat indirect-discourse constructions as more basic and grammatically simpler than direct-discourse constructions.

A third, and conclusive, reason for rejecting the view that (44) and (46) – and (45) and (48) – are truth-conditionally equivalent is that acceptance of this view presupposes that we have a satisfactory and independently motivated truth-conditional analysis of (46) – and of (48). But, as we shall see in Chapter 8, it is only when (46) and (48) are given a special performative interpretation (and have a particular aspectual meaning) that they can be said to be semantically equivalent to (44) and (45), respectively. The performative analysis of sentences (in contrast with the performative analysis of some or all kinds of utterances), though favoured by several of the so-called generative semanticists in the early 1970s, has now been universally rejected on both grammatical and semantic grounds. Another way of accounting for the meaning of interrogative sentences such as (44) within the framework of truth-conditional semantics is by identifying it, semantically, with the set of declaratives, including 'The door is open', that may be used correctly or acceptably to answer it when it is uttered to ask a question. This approach to the semantic analysis of interrogatives has been adopted, and developed with great subtlety, in much recent work in formal semantics. All

that needs to be said about it here is that, whatever its advantages from a purely logical point of view, it is hardly the approach that would be chosen by someone working in linguistic semantics who was not determined, for metatheoretical reasons, to force the whole of sentence-meaning into a truth-conditional straitjacket.

Much more attractive is the view taken by Gottlob Frege, the German scholar whose seminal work on the philosophy of language in the late nineteenth century has been of central importance in the formalization of semantics. According to Frege, and his present-day followers, the meaning of 'Is the door open?' is composed of both a propositional and a non-propositional component. The propositional component, "The door is open", it shares with 'The door is open'; the non-propositional component is that part of its meaning by virtue of which it is used, characteristically, for questions rather than statements. But 'The door is open' also has a non-propositional component, namely that part of its meaning which makes it appropriate for uttering statements. Frege's formulation was slightly different from the one that I have just given, partly because he did not distinguish between sentences and utterances – or indeed, at times, between sentences, clauses and propositions ('Satz' in German covers all three). But my formulation preserves the substance of Frege's and adjusts it, terminologically and conceptually, to the broader notion of meaning adopted in this book.

Frege's view, which does not require us to assign truth-conditions to non-declaratives, saves the appearances. For the appearances, across a large sample of the world's languages, certainly suggest that the meaning of corresponding open declaratives and interrogatives of the kind exemplified by 'The door is open' and 'Is the door open?' respectively can be factorized into two parts. Generally speaking, in languages in which there is a clearly identifiable distinction between declaratives and interrogatives, the latter differ from the former in one of three ways: by a difference of word-order, by the occurrence of a special interrogative particle, or by morphological variation in the verb. It is sometimes said

that there is another way of distinguishing declaratives and interrogatives: by means of intonation.

On the view taken here and made explicit above, however, this kind of intonational difference, which in many languages distinguishes questions from statements, should be attributed, not to the structure of sentences, but to the process and products of utterance. This means that there are languages (e.g., Italian, Spanish, Modern Greek – to name but a few of the more familiar European languages) in which there is no difference, at the sentence-level, between declaratives and *yes–no* interrogatives. The difference between statements and *yes–no* questions is normally marked prosodically in speech and by punctuation in writing.

Sentences that are grammatically neutral with respect to the distinction between declaratives and interrogatives (but can be used appropriately in the utterance of either statements or questions) are the only sentences whose meaning may be exhausted by their propositional content. (Whether even such sentences, in Italian, Spanish, Modern Greek, etc., can be said to be wholly devoid of non-propositional meaning depends on the way the grammatical categories of tense and mood are handled semantically: see 10.3, 10.5.) Sentences whose grammatical structure marks them as either declarative or interrogative have as the non-propositional component of their meaning an indication of their potential for use, characteristically, with one communicative function rather than another: that of making statements, on the one hand, or of asking questions, on the other. And in many languages the grammatical structure of such sentences is often readily analysable into a propositional and a non-propositional part. As we shall see in Chapter 7, several versions of transformational grammar, including the earliest version developed by Chomsky (1957) and subsequently adopted (with modifications) by Katz and Postal (1964), have exploited this fact.

So far we have discussed only neutral, or unmarked, *yes–no* interrogatives: i.e., interrogatives which do not encode, grammatically or lexically, the speaker's presuppositions or expectations with respect to the addressee's response. Non-neutral, or marked, interrogatives differ from neutral interrogatives in that they do encode such information. For example, so-called

tag-interrogatives – more precisely, reversed-polarity tag-interrogatives – in English, such as

(49) 'The door is open, isn't it?'

and

(50) 'The door isn't open, is it?'

encode the speaker's expectation that the question will be answered in the affirmative or the negative, respectively: i.e., that, when these sentences are used with their characteristic function of presenting a proposition to an addressee and asking him or her to assign a truth-value to the proposition presented, by using these marked, non-neutral, constructions speakers (a) indicate (whether sincerely or not) what they themselves consider the truth-value to be and (b) in the tag explicitly seek the addressee's agreement or confirmation. Thus (49) would be used, characteristically, to present the proposition "The door is open" as one to which the speaker is disposed to assign the value true and (50) would be used, characteristically, to present the same proposition ("The door is open") as one to which the speaker is disposed to assign the value false or, alternatively, to present the corresponding negative proposition ("The door is not open") as one to which he or she is disposed to assign the value true. Many languages (including Latin) have distinct marked, or non-neutral, *yes–no* interrogatives, which are semantically, if not grammatically, comparable with (49) and (50).

Let us now turn to *x*-interrogatives. In English these contain one of a set of interrogative forms, adjectives, pronouns or adverbs, including *who/whom*, *what*, *which*, *when*, *where* and *how*. (Since all of these, except *how*, in their written form begin with *wh-*, the sentences that contain them are often referred to as ***wh*-sentences**. And the terms '*wh*-sentence' and '*wh*-question' are often extended to the description of languages other than English.)

The reason for calling such sentences *x*-interrogatives is almost self-evident. Looked at from the point of view of their logical structure, they can be thought of as sentences which contain a restricted variable (*x*) in their propositional component,

for which, when such sentences are used to ask a question, the addressee is invited to supply a value falling within the range of the variable. For example, 'who' in the form *who* or *whom* restricts the value of x to persons (of which the prototypical exemplars are human beings). Thus

(51) 'Who has been eating my porridge?',

when used to ask a question, solicits from the addressee an answer which will identify the person who has been eating the speaker's porridge, by supplying as the value of x an appropriate referring expression, such as 'Goldilocks', or 'the little bear from next door', or 'the person who left these footprints on the path', or 'whoever it was who saw us going out this morning'. As always, reference is context-dependent: it is determined, first of all, by the speaker's general ontological beliefs and assumptions and, then, by his or her more specific background beliefs and assumptions relevant to the particular context of utterance and often acquired in the course of the particular conversation to which the utterance contributes and of which it constitutes a part. So too, and for the same reasons, is the range of the restricted variable in the propositional content of x-questions.

But what is the propositional content of (51)? It is intuitively clear that the x-interrogative (51) is closely related semantically to

(52) 'Someone has been eating my porridge',

which differs from (51) formally in that it has the indefinite pronoun 'someone', rather than the interrogative pronoun 'who' in subject position. Looked at from a logical point of view, 'someone' can be thought of as a **free** (or unbound) restricted variable whose range is the same as that of the interrogative pronoun 'who'. To say that it is a restricted variable, as we have noted above, is to say that it does not range over all the entities in the universe of discourse, but over a (proper) subset of these: in the present case, entities that are (more precisely, are assumed or presumed to be) persons – entities that belong to the class $\{x: x$ is a person$\}$. To say that a variable is free is to say that it is not bound – its reference is not fixed within its range – either by a

logical operator (such as the universal or existential quantifier) or otherwise. In standard systems of logic, formulae which contain free variables are not regarded as propositions, but as propositional functions: they are converted into propositions either by **binding** the variables they contain or by substituting for them constants, whose reference is fixed (within any given universe of discourse).

The logical distinction between bound and free variables and its correlates in natural languages have been of immense importance recently, not only in logical and linguistic semantics, but also in grammatical theory. This is why it has been explained here, where its applicability is especially easy to appreciate. We shall be exploiting it later, as we shall also be exploiting the difference between propositions and propositional functions in our discussion of reference (10.1).

But we have still not established the nature of the semantic relation between (51) and (52). It is obviously not the same as that which holds between (44) and (45), since (52) has its own *yes–no* interrogative. In fact, it has two:

(53a) 'Has someone been eating my porridge?'
(53b) 'Has anyone been eating my porridge?'.

What difference there is, semantically, between (53a) and (53b) is difficult to determine: the *some/any* distinction which exists in English is notoriously controversial and will not be dealt with in this book. In any case, it is not directly relevant to the point at issue. For present purposes, let us simply agree that (53b) is the normal *yes–no* interrogative which corresponds with (52) – when (52) is also being used normally – in the same way that (44) corresponds with (45). It follows that (53b) has the same propositional content as (52). But so too, apparently, has (51).

The difference between (53b) and (51) – more generally, between *yes–no* interrogatives and x-interrogatives – has to do with the **scope** of the interrogativity that is encoded in them and with what are commonly referred to as the **presuppositions** of the questions that the two subclasses of interrogatives are (characteristically) used for. In (53b), as in (44), the whole of the propositional content is within the scope of the

interrogativity; and, if either of these sentences is used to ask a question (unless there is some contextual, or in speech prosodic, limitation of scope), it will be the proposition expressed by the corresponding declarative (uttered as a straightforward, unqualified, statement) that is queried. And in uttering (53b) or (44), in these circumstances, the speaker gives no indication of his or her presuppositions as to the truth or falsity of the proposition expressed. In (51), in contrast, it is only part of the propositional content that is within the scope of the interrogativity. In uttering (51) to ask a question, in normal circumstances, the speaker takes for granted, or presupposes, the truth of the proposition that would be expressed by the utterance of (52) in the same context and, by using the pronoun 'who' in what might be referred to as the *x*-position, focuses upon the identity of the person referred to by 'someone'.

Many different kinds of presupposition have been recognized by logicians and linguists; and it is not clear how they relate to one another and to different kinds of implication. We shall return to this question in Part 4. What has been said here about presupposition (and scope) is relatively informal and theory-neutral. It also applies to the full range of *x*-interrogatives that is found in English (and in other languages), not only pronominal, but also adjectival and adverbial.

At this point, it is important to note that formally and to some extent functionally there are overlaps and parallels in many languages, not only between *x*-interrogatives and declaratives containing indefinite pronouns, adjectives and adverbs, but also between *x*-interrogatives and declaratives containing demonstrative and relative pronouns, adjectives and adverbs. It must also be added that in many, if not most, of the languages of the world, it is impossible to identify all of these as grammatically and semantically distinct constructions. We must be careful, therefore, not to assume that every natural language grammaticalizes differences and equivalences of sentence-meaning in exactly the same way.

In this section we have concentrated upon the meaning of interrogative sentences in relation to that of declarative sentences. We have seen that, not only interrogatives (as one sub-

class of non-declaratives), but also declaratives, grammaticalize a non-propositional component of meaning, which expresses their characteristic use (as does that of interrogatives and other non-declaratives) and combines this with their propositional content and, in certain languages more obviously than in English, with yet another component of sentence-meaning expressed by mood. We have also noted that, although it is presumably possible to make statements and to ask questions in all languages (though not necessarily statements and questions that are purely neutral, or unmarked, in terms of modality), there are languages which do not grammaticalize the distinction between declaratives and interrogatives.

Interrogativity has been dealt with here as a property of sentences which is distinct from, but may combine with, mood (indicative, subjunctive, etc.) in those languages that have such a grammatical category. This is certainly the way it should be dealt with in the grammatical and semantic analysis of the Indo-European languages and many other languages throughout the world. In other languages, however, interrogativity may well be grammaticalized in one of the moods. Whether, and to what degree, this is the case is difficult to establish.

One reason for this difficulty is that it is hard to draw a functional distinction (unless the language itself clearly grammaticalizes or lexicalizes the distinction) between asking a question and expressing doubt. There are several American-Indian languages (including Menomini, Serrano and Hidatsa) which have what is traditionally called a **dubitative** mood; and the use of the term 'dubitative' implies that grammarians describing these languages have decided that the characteristic, if not the sole, function of the mood so labelled is that of expressing the speaker's doubt. But if speakers express doubt as to the truth of a particular proposition, in conversation rather than in soliloquy, they may well be understood in context (and expect to be understood) to be inviting the addressee to resolve their doubt for them: i.e., to be asking (and not merely posing) a question.

Conversely, of course, a sentence whose characteristic function is deemed to be that of asking questions – and which is for that reason said to be interrogative (either in sentence-type or

in mood) – may also be used for the expression of doubt without the intention of soliciting from the addressee the resolution of that doubt (or any other kind of response). English lexicalizes the expression of doubt in the verb 'wonder' (in one of its senses), which is commonly used either (a) as a verb of report with an indirect-discourse complement or (b) parenthetically with a first-person subject in a clause which is adjoined (paratactically rather than syntactically) to an interrogative sentence. These two possibilities are exemplified by

(54) '*x* wondered whether the door was open'
(55) 'Is the door open, I wonder?',

respectively. An utterance of (55) by *x* might be subsequently reported to *y* by uttering (54) as a statement. But so too might be an utterance of the interrogative sentence 'Is the door open?' without the parenthetical clause 'I wonder', if *y* had reason to believe, in context (and this might be made clear prosodically or paralinguistically), that *x* was simply expressing doubt and not asking a question.

To be compared with both (54) and (55) is the declarative

(56) 'I wonder whether the door is open'.

This is syntactically parallel with (54) and can of course be used to make a statement. Much more frequently, however, such sentences are used, like (55), either directly to express doubt or indirectly to ask a question. According to whether an utterance of (56) is interpreted in one way or the other, it will be reported with (54) or

(57) '*x* asked whether the door was open'.

Similarly, if *y* has reason to believe that *x*, in uttering (55), is indirectly asking a question rather than simply expressing doubt, it will be appropriate for *y* to report this by saying (57).

The upshot of this discussion – which could be extended by introducing into it direct-discourse constructions for comparison with both (55) and (56) – is that interrogativity and dubitativity are closely related and, in default of any information, in the context of utterance, as to whether the speaker expects a response or not, may be ultimately indistinguishable. It is not surprising, therefore, to discover, first, that some languages do not grammaticalize the difference between them and, second, that, when they are grammaticalized, grammarians will argue as to whether it is interrogativity or dubitativity that is characteristically expressed by the utterance of sentences of a particular type or in a particular mood. It is perhaps only when semantic distinctions are lexicalized, rather than grammaticalized, that what is expressed is explicit enough for such arguments to be settled empirically. This point, as we shall see, applies in the analysis of imperatives and other non-declaratives, as well as in the analysis of interrogative and dubitative sentences (or indeed of non-indicative declaratives).

6.8 OTHER KINDS OF NON-DECLARATIVES: IMPERATIVES, EXCLAMATIVES, VOLITIVES, ETC.

In this section we shall be concerned primarily with imperative and exclamative sentences (and clauses), which are the other principal classes of non-declaratives, in addition to interrogatives, that are distinguished grammatically in English. We shall also look briefly at volitives and at one or two other classes of non-declaratives which are found in other languages.

Imperative and exclamative sentences are different from declaratives and interrogatives, and from one another, in several respects. But the same general point can be made about them as was made, in the preceding section, about declaratives and interrogatives: in addition to their propositional content, they also encode and grammaticalize (in those languages in which the relevant distinctions are indeed grammaticalized) some kind of non-propositional component of sentence-meaning. As declarative sentences grammaticalize their characteristic use for making statements and interrogative sentences grammaticalize their characteristic use for asking (or posing) questions, so imperative sentences grammaticalize their characteristic use for issuing commands, requests, entreaties, etc., and exclamative sentences their characteristic use for uttering what are

traditionally called exclamations. Let us begin with exclamative sentences.

In English, and many other languages, there is a structural similarity between exclamative sentences and dependent interrogative clauses. For example,

(58) 'How tall he is'

has the same structure, at least superficially, as the subordinate clause in

(59) 'I wonder how tall he is'.

Functionally, however, there is a clear difference between exclamatives of the kind exemplified by 'How tall he is' and interrogatives. In fact, exclamatives of this kind are best seen, semantically, as a subclass of expressive declaratives, in which the non-propositional part of what distinguishes the meaning of 'How tall he is' from the meaning of

(60) 'He is very tall'

is grammaticalized, rather than being expressed, in utterance, by a particular prosodic contour. It is because it is grammaticalized and is correlated with systematic restrictions on polarity, the use of modal verbs, etc., that 'How tall he is' is rightly regarded by grammarians as an exemplar of a distinct sentence-type. It is, of course, important not to confuse exclamatives with exclamations. Sentences of all types may be uttered with that particular expressive modulation which is conveyed in the spoken language by stress and intonation, and in the written languages by means of the exclamation-mark. Exclamation is something very different from making statements, issuing commands and requests, and asking (or posing) questions. Let us now turn to imperatives.

Imperative sentences (and clauses), it will be recalled, are sentences (and clauses) in the imperative mood, which in many languages is in contrast with other moods, such as indicative, subjunctive, optative or dubitative (6.6). English, as we have also noted, has a relatively poor system of moods by comparison with many, and perhaps most, of the world's languages.

Imperative sentences, in English and other languages, cannot be put into correspondence with declarative (indicative) sentences as readily as can interrogative (indicative) sentences of the kind that were discussed in the preceding section, such as (44) and (45), which are here repeated and renumbered as (61) and (62), respectively.

(61) 'Is the door open?'
(62) 'The door is open'.

The reason for this is that mood is not independent of **tense** and **aspect**. Whereas (61) obviously has the same propositional content as (62) it is not obvious that

(63) 'Open the door!'

has the same propositional content as the declarative sentence

(64) 'You open the door',

if (a) tense is held to be a part of the propositional content of a sentence and (b) what is traditionally regarded as the tense of (64) is given its most usual interpretation.

As far as condition (b) is concerned, it should be noted that, as the term 'tense' is traditionally used in the description of English, the grammatical category of tense is not clearly distinguished from that of aspect. As we shall see later, in many languages aspect is more important than tense (as tense is nowadays defined by linguists) and, in contrast with tense, what it expresses is definitely part of the propositional content of sentences (10.4). The major aspectual distinction grammaticalized in English is **progressive** (e.g. '*x* is/was opening the door') versus **non-progressive** (e.g., '*x* opens/opened the door'). For present purposes, aspect is important in that 'open' belongs to a particular **aspectual class** of verbs – the majority in English – which do not normally occur in the simple (non-progressive) present tense with straightforward present-time reference. Moreover, from a semantic point of view it might be argued that the time-reference of a request or command made by uttering (63) is made implicitly, rather than explicitly, in the act of requesting or commanding; that (unless it is made explicit

by means of a temporal adverb or adverbial) its reference is to the future, immediate or less immediate as the case may be; and that the sentence itself is tenseless. In support of this view is the fact that in many languages in which tense is encoded inflectionally the imperative is clearly unmarked for tense. As to the inherently future reference of commands and requests (in normal circumstances), it is to be noted that, even if their temporal reference is made explicit by means of the word 'now' or the phrase 'at this very moment', it must be to a point or period of time that is later, if only infinitesimally, than the time of utterance. From this point of view it is interesting to consider a structurally ambiguous utterance such as

(65) *I am telling you to open the door now,*

in contrast with the non-ambiguous utterances,

(66) *I am now telling you to open the door*

and

(67) *I am now telling you to open the door now.*

Two points may be made in relation to this example. First, (65) can have the meaning of either (66) or (67). Second, in (67) the reference of 'now' differs according to whether it locates the act of telling or the anticipated act of opening the door in time.

There is the further point that the grammatical categories of mood and tense are undoubtedly interdependent in all languages that have both. And mood, whose function is usually if not always non-propositional, is far more common throughout the languages of the world than tense. Only a minority of the world's languages have tense as a grammatical category; and many of the functions of tense in those languages that have it are quite definitely non-propositional. I will come back to this point in Part 4.

Condition (a) is even more important, and more controversial. From the point of view of classical logic, propositions are eternally true or false, and therefore of their very nature tenseless. It is when propositions are treated as objects of mental acts or attitudes, on the one hand, or of such communicative acts as

assertion and denial, on the other, that one is tempted to introduce tense into propositions themselves, anchoring them to the moment at which the mental or communicative act is performed. We shall not be able to deal with the problem of reconciling these two different views of propositions in the present book. It should be noted, however, that it is a problem that is all too often ignored in general treatments of tense, not only by linguists, but also by logicians. Since natural languages differ considerably as to how they grammaticalize and lexicalize indirect discourse, it is possible that different analyses are appropriate for different kinds of languages.

In fact, standard tense-logic, so called, is demonstrably inadequate for the analysis of tense as it actually operates in those natural languages that have it. But richer and more powerful systems of tense-logic are now being developed by formal semanticists; and it may well be that these will prove to be more suitable for the semantic analysis of tense in natural languages than currently available systems are. Whether they can successfully integrate the propositional (and purely temporal) and the non-propositional (modal and subjective) functions of tense is as yet uncertain.

But let us now return to imperative sentences without considering any further the question of tense. Imperative sentences constitute a subclass of sentences that are used, characteristically, to issue what are nowadays commonly called **directives** (commands, requests, prohibitions, etc.). For example, (63) might be used by *x* to order or request *y* (or in the appropriate context to grant *y* permission) to perform a particular action. The effect of *y*'s compliance with this order or request would be to bring about a state of affairs, or situation, in which the door, having been closed, is now open: i.e., to bring about a change in the world, in consequence of which the truth-conditions, not just of (62), but, more specifically, of

(68) '*y* has opened the door'

and the truth-conditionally equivalent passive sentence

(69) 'The door has been opened by *y*,

are satisfied. It follows that, although imperative sentences, as such, may not have truth-conditions, they can be put into systematic correspondence with declarative sentences that do. This being so, it is clearly possible in principle to bring imperative sentences within the scope of truth-conditional semantics; and various attempts have been made to do this. The question remains, however, as to what exactly is the propositional content of an imperative sentence.

If we adopt the methodological principle of saving the appearances for those languages in which there is a systematic and morphologically transparent relation between imperative and indicative sentences, we can say that, not only the imperative, but also the indicative, operates semantically upon the propositional content. This means that we can then say of (63) that it does indeed have the same propositional content as the declarative sentence (64) – but only when (64) is used to refer to a point rather than a period of time. Such uses of present-tense, non-progressive, sentences with verbs of the same aspectual class as 'open', though unusual in making straightforward descriptive statements, are quite normal in English, in the appropriate contexts, as we shall see when we look at so-called performative utterances in Part 4.

What has just been said about tense holds true of many natural-language phenomena. It is not difficult to demonstrate the inadequacy of current treatments of natural languages within the framework of standard propositional logic. Much of this chapter has been devoted to just that task. But my purpose throughout has been constructive. We learn more from a demonstrably inadequate, but precisely formulated, theory than we do from one that is so vaguely expressed that we do not even see its inadequacy. Let us bear this point in mind as we move on to consider some of the recent work in formal semantics.

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