# 7

# Reference, sense and denotation

## 7.1. *Introductory*

In the first chapter of this book it was pointed out that the word 'meaning' had a number of distinguishable, but perhaps related, senses. Subsequently we drew a broad distinction between three kinds of meaning signalled by language: descriptive, social and expressive (2.4). In chapter 3 we saw that languages may be unique among natural semiotic systems in their capacity to transmit descriptive, as well as social and expressive, information. In this, as in the previous chapter, we shall be concerned solely with descriptive meaning.

Distinctions of the kind we shall be discussing have been drawn by many philosophers, but they have been drawn in a variety of ways. It is now customary, as we shall see, to draw a twofold distinction between what we will call sense* and reference*. Other terms used for the same, or at least a similar, contrast are: 'meaning' and 'reference' (where 'meaning' is given a narrower interpretation than it bears as an everyday pre-theoretical term); 'connotation' and 'denotation'; 'intension' and 'extension'.

No attempt will be made to compare systematically the usage of different authors. But it may be helpful to point out one or two of the terminological pitfalls for the benefit of readers who are not already familiar with the various senses in which the terms mentioned above are employed in the literature. (The term 'reference', as we shall define it below, has to do with the relationship which holds between an expression and what that expression stands for on particular occasions of its utterance.) What is meant by saying that an expression stands for something else we have already discussed in connexion with the notion of signification (4.1); and we shall come back to it in the next section. It should be pointed out here, however, that many authors use 'reference', and perhaps more particularly 'referential', in a way which, unless one is aware that there are two rather different senses involved, can lead to confusion.

As we have seen, Ogden and Richards (1923) employed the term 'referent' for any object or state-of-affairs in the external world that is identified by means of a word or expression (they did not, however, distinguish between forms, lexemes and expressions), and 'reference' for the concept which mediates between the word or expression and the referent. This notion of reference is consistent with the philosophical notion of reference which we shall be discussing in the next section, except that philosophers generally use the term 'reference', not for the postulated mediating concept, but for the relationship which holds between the expression and the referent. Ogden and Richards, however, went on to distinguish the reference of words and expressions from what they called their emotive* meaning – their capacity to produce a certain emotional effect upon the hearer or listener. Two words, they said, might have the same referential meaning, but differ in emotive meaning: e.g. 'horse' and 'steed'. This distinction between referential and emotive meaning (or between cognitive* and affective* meaning, to use the terms preferred by other authors) is quite different, it should be noted, from the distinction drawn by philosophers between reference and sense. The opposition between a more central, or stylistically neutral, component of meaning and a more peripheral, or subjective, component of meaning is a commonplace of discussions of synonymy; and it is not infrequently conflated with the distinction we have drawn between descriptive and social or expressive meaning (cf. 2.4). The reader should be aware that the terms 'reference' or 'referential meaning' are now fairly well established in the literature of linguistic semantics and stylistics in the sense of 'cognitive meaning' or 'descriptive meaning'. But 'reference' is now widely employed, not only by philosophers, but also by linguists, in the sense which we will give to it in the following section.

The term 'connotation' can also lead to confusion. As used by philosophers, it is generally opposed to 'denotation'; but the way in which the two terms are contrasted is by no means constant throughout the philosophical literature. It was J. S. Mill (1843) who introduced the terminological opposition itself, and a short quotation will show what kind of distinction he had in mind: "The word 'white' denotes all white things, as snow, paper, the foam of the sea, and so forth, and implies, or as it was termed by the schoolmen, connotes, the attribute whiteness". According to Mill, an expression denoted a class of individuals of which it was the name (so that denotation was subsumed under naming); but, if it was what Mill called a concrete general term, like 'white' or 'man', in addition to denoting the class or one of its members, it also implied the property or properties by virtue of which individuals were recognized as members of the class in question. The reader will see here the connexion between 'denotation' and the extension* of a term, on the one hand, and 'connotation' and the intension* of a term, on the other (cf. 6.3). In more recent philosophical writing Mill's terms 'denotation' and 'connotation' are often used for the somewhat different distinction of reference and sense, which derives from Frege (1892).

The reason why Mill chose the term 'connote' is clear enough. As he says himself, it is intended to suggest that what he calls the signification of the attributes of a subject is something additional to the signification, or denotation, of all the subjects which possess these attributes. Somewhat similar is the notion which underlies the non-philosophical use of the term 'connotation' according to which we might say, for example, that a particular word has a pleasant or desirable connotation. In this usage, the connotation of a word is thought of as a emotive or affective component additional to its central meaning. The reader should be on his guard whenever he meets the term 'connotation' in semantics. If it is explicitly contrasted with 'denotation', it will normally have its philosophical sense; but authors do not always make it clear in which of the two senses it is to be taken.

A further terminological difficulty derives from the failure, on the part of many writers, to distinguish clearly between sentences and utterances and from the looseness with which terms like 'word' and 'expression' are commonly employed. It is perhaps for this reason that, although a twofold distinction between sense and reference is common enough (in whatever terms it is drawn), the quite different distinction which we shall make between reference and denotation is only rarely to be met with in the literature. As we shall see, reference (as it will be defined below) is an utterance-dependent notion. Furthermore, unlike sense and denotation, it is not generally applicable in English to single word-forms; and it is never applicable to lexemes. This clearly distinguishes reference from what Mill meant by 'denotation'; for, as we have seen, this was a relation, not between expressions and what they stood for on particular occasions of their utterance, but between lexemes and the whole class of individuals named by these lexemes.

## 7.2. *Reference*

When we make a simple descriptive statement, it is frequently, if not always, appropriate to maintain that what we are doing involves saying, or asserting*, something about somebody or something; and we do this characteristically, though not necessarily (cf. 1.6) by uttering a declarative sentence. We can of course make statements which would not normally be construed as asserting something of a particular individual or class of individuals. For example, the sentence 'It is raining', when uttered to make a descriptive statement, does not assert of some entity that it has a certain property or that it is engaged in some process or activity. We might wish to say, it is true, that it is being used to make a descriptive statement about the weather, but not that it is ascribing* to the weather, conceived as an individual, some particular property or characteristic. Let us confine our attention, then, to utterances of which it is reasonable to say, without straining normal usage, that they are intended to tell us something about some particular entity (or entities) or group (or groups) of entities.

When a sentence like 'Napoleon is a Corsican' is uttered to make a statement, we will say that the speaker refers* to a certain individual (Napoleon) by means of the referring expression*. If the reference is successful, the referring expression will correctly identify for the hearer the individual in question: the referent*. It should be noted that, according to this conception of the relation of reference, it is the speaker who refers (by using some appropriate expression): he invests the expression with reference by the act of referring. It is terminologically convenient, however, to be able to say that an expression refers to its referent (when the expression is used on some particular occasion and satisfies the relevant conditions); and we will follow this practice.[1] It should be clearly understood, however, that, according to the view of reference adopted here, when we ask "What does the expression '*x*' refer to?", we are asking the same question as we would when we ask "What is the speaker referring to by means of '*x*' (in uttering such-and-such a sentence)?". There are other ways of defining the notion of reference such that it would make sense to distinguish between these two questions and allow for the possibility that an expression may have reference independently of the speaker's use of the expression to refer to some entity.

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[1] There are many authors for whom this sense of the term 'refer' is not derivative, but primary. For background and a philosophical justification of the point of view taken here: cf. Linsky (1967). Most of the references cited in note 1 to chapter 6 are relevant. So too is Linsky (1971), Quine (1966).

In the case of sentences which contain only one referring expression, the expression we use in order to refer to what we are talking about is typically the subject of the sentence, and this is combined with a predicative expression* (which is typically the grammatical predicate).[2] For example, '(be) a Corsican' is a predicative expression in 'Napoleon was a Corsican'. But sentences may contain two or more referring expressions. For example, if the sentence 'Alfred killed Bill' is uttered, with its characteristic force of making a statement, both 'Alfred' and 'Bill' would be referring expressions, their referents being the individuals identifiable by name as Alfred and Bill. Whether we maintain that, in making this statement, we are asserting something of Alfred (namely, that he killed Bill) or that we are asserting something of both Alfred and Bill (namely, that they were interconnected in a particular way in an event of killing) is a question that we may leave on one side. It is the former of these interpretations that was generally adopted in traditional logic; it is the latter that is perhaps more naturally reflected in the predicate calculus notation, $K(a, b)$.

(i) Singular definite reference. Among referring expressions we can distinguish those that refer to individuals from those that refer to classes of individuals: we will call these singular* and general* expressions, respectively. We can also distinguish those which refer to some specific individual (or class of individuals) from those which (granted that they do have reference) do not refer to a specific individual or class; and these we will call definite* and indefinite* expressions, respectively. There are problems attaching to the interpretation of general referring expressions. Sometimes we refer to a class of individuals distributively* in order to ascribe a certain property to each of its members; on other occasions we do so collectively* in order to ascribe a property to, or assert something of, the class as a whole; and there are various ways in which we can predicate an expression of a class, as distinct from its members. Indefinite reference is even more complex, and it is philosophically more controversial. We shall be concerned initially with singular definite reference. This is relatively uncontroversial and may be taken as basic.

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[2] To say that a sentence contains a referring expression is to say that it contains an expression which, on some occasion of the utterance of the sentence, may be used to refer.

From a grammatical point of view, we may recognize three main kinds of singular definite referring expressions in English: (a) definite noun phrases, (b) proper names and (c) personal pronouns.

Definite noun phrases were classified by Russell (1905) as definite descriptions*. The term 'definite description' derives from the view that we can identify a referent, not only by naming it, but also by providing the hearer or reader with a description of it, sufficiently detailed, in the particular context of utterance, to distinguish it from all other individuals in the universe of discourse. For example, 'the tall man over there', in a given context of utterance, could be used as a definite description uniquely identifying some referent. We are deliberately using the term 'definite description', it should be noted, in a rather wider sense than the sense in which it was introduced by Russell: and we are binding it, in principle, to the context of utterance. Russell assimilated personal and demonstrative pronouns to the class of names; and his view of definite descriptions was restricted by his rather idiosyncratic distinction of naming and describing. But the term 'definite description' is now quite widely employed without commitment to Russell's theory.

Although the three kinds of singular definite expressions listed in the previous paragraph are fairly sharply distinguished from one another grammatically in English and each of them is associated with a characteristically distinct means of identifying the person or object that the speaker is referring to on a particular occasion of utterance, there are borderline cases; and in the historical development of English expressions have frequently moved from one category into another. Many place names and family names originated as definite descriptions or titles; and proper names can be regularly converted into descriptive lexemes and used as such in referring or predicative expressions. In other languages, there are even instances of honorific titles, which themselves may have been used earlier as definite descriptions, developing into personal pronouns: an example is the Spanish word 'Usted'. The fact that movement from one category to another may take place in the course of the historical development of a language suggests that the functional distinction between the three kinds of singular definite referring expressions is not absolutely clear-cut.

The grammatical differences between the kinds of expressions used for each of the three ways of identifying a singular definite referent are not as striking in all language as they are in English. Nonetheless, it may be true that (due allowance being made for borderline cases) all languages provide systematically for these three kinds of singular definite reference. Assuming that this is so, as a matter of empirical fact, it is a question of some theoretical interest to speculate whether any of the three kinds of referring expressions is more basic or essential than the others. Many philosophers have taken reference by naming to be essential to language and have even tried to subsume the whole of reference under naming (cf. 7.5). But this is surely misguided. There are times when we do not know the name of a person or place and can yet refer to this person or place quite naturally and satisfactorily by means of a definite description; and if language is to be used, as it is, for making reference to an indefinitely large range of individuals, it must provide the means for identifying these individuals other than by naming them. It is easier, in fact, to conceive of a language without proper names than it is to conceive of a language operating without some systematic means of referring by definite description. Undoubtedly, however, the combination of naming with description makes of language a more efficient and more flexible semiotic system. Whether personal pronouns are, in principle, dispensable is a question of a different order; and it may be postponed until we have introduced the notion of deixis* (15.2). We will take no further account of pronominal reference in this section.

It has been emphasized that reference is an utterance-dependent notion; and that, whenever we talk of an expression in a given sentence as having reference, we are assuming that the sentence in question has been, or could be, uttered with a particular communicative force in some appropriate context of use. In other words, whenever we say that an expression in a particular sentence refers to a certain entity or group of entities, the term 'sentence' is being employed in the sense of 'text-sentence', rather than 'system-sentence' (14.6).

It is a condition of successful reference that the speaker should select a referring expression – typically a proper name, a definite noun-phrase or a pronoun – which, when it is employed in accordance with the rules of the language-system, will enable the hearer, in the context in which the utterance is made, to pick out the actual referent from the class of potential referents. If the expression is a definite noun-phrase operating as a definite description, its descriptive content will be more or less detailed according to the circumstances; and the manner of description will often depend upon the speaker's assumption that the hearer is in possession of quite specific information about the referent. For example, in some circumstances it might be necessary for the speaker to incorporate within the noun phrase an adjective or relative clause, whose function it is to specify one particular member of a class of individuals. The clause 'who was here yesterday' might be sufficient for this purpose if it were incorporated in the noun phrase 'the man who was here yesterday': and its employment by the speaker within this definite description of the referent would be dependent upon his assumption that the hearer knew that a man had been at the place referred to by 'here' on the previous day. If they had already been talking about the person in question 'the man' (or the pronoun 'he') might well be sufficiently specific.

In many cases the use of a common noun preceded by the definite article will suffice without further description, even though the referent has not been previously mentioned, because the speaker can fairly assume, in the given situation or universe of discourse, that the hearer will know which of the potential referents satisfying* the description he is referring to. For example, if I say to my wife or children, *The cat has not been in all day*, in a context in which there has been no previous mention of any cat, I can be sure that the reference will be successful. If an Englishman uses referentially the expression 'the queen' and an American the expression 'the president', in a context in which no queen or president has already been referred to, they will normally expect to be understood as referring to the queen of England and to the president of the United States respectively. Expressions of this latter kind come very close to acquiring, in the appropriate context, the status of uniquely referring titles (like 'the Pope'); and uniquely referring titles have a tendency, as Strawson (1950) puts it, to grow capital letters and to be treated orthographically in written English as proper names. In general, titles constitute a class of expressions which "shades off into definite descriptions at one end and proper names at the other" (Searle, 1969: 81).

(ii) Reference, truth and existence. The condition that the referent must satisfy* the description has commonly been interpreted by philosophers to imply that the description must be true of the referent. If a distinction is drawn between correct reference and successful reference, one can perhaps maintain the general principle that we can refer correctly to an individual by means of a definite description only if the description is true of the individual in question. But successful reference does not depend upon the truth of the description contained in the referring expression. The speaker (and perhaps also the hearer) may mistakenly believe that some person is the postman, when he is in fact the professor of linguistics, and incorrectly, though successfully, refer to him by means of the expression 'the postman'. It is not even necessary that the speaker should believe that the description is true of the referent. He may be ironically employing a description he knows to be false or diplomatically accepting as correct a false description which his hearer believes to be true of the referent; and there are yet other possibilities. 'Satisfaction', in the sense in which it is employed by philosophers, is a technical term which presupposes or implies truth. It is arguable, however, that the more basic and more general notion governing the use of definite descriptions is that the hearer can be assumed capable of identifying the referent on the basis of the properties ascribed to it, whether correctly or not, in the description.

A classic philosophical example may be introduced at this point. The following sentence,

(1) The present King of France is bald,

was analysed by Russell (1905) as asserting that there is one, and only one, individual who currently occupies the throne of France and that this individual is bald. Russell's analysis of this sentence, or more precisely of the proposition expressed by this sentence (which we will assume is being uttered to make a statement) depends upon his theory of descriptions and his notion of logically proper names. We need not go into the details. It is sufficient to say that, according to Russell, the proposition expressed by the sentence is, not a single simple proposition, but a conjunction of three propositions: (a) that there exists a king of France; (b) that there is no more than one king of France; and (c) that there is nothing which has the property of being king of France and which does not also have the property of being bald. All three propositions are said to be asserted. Since the first of the conjuncts – the existential proposition (a) – is false, the conjunction of which it is a component is false (by virtue of the truth-functional definition of conjunction in the propositional calculus: 6.2).

Russell's analysis has been challenged by a number of scholars, notably by Strawson (1950). Strawson did not deny that Russell's sentence was meaningful. Nor did he deny that, for the sentence to be true (i.e. for it to be possible for anyone uttering the sentence to make a true assertion), the three component propositions listed above as conjuncts must each be true. What he disputed was Russell's claim that the sentence was false if the component existential proposition (a) was false. For, in Strawson's view, this proposition (as well as the uniqueness proposition listed as (b) above) is not asserted, but presupposed*, by the use of the definite description 'the (present) King of France'. If the proposition (or any one of the propositions) presupposed by the use of a definite description is in fact false, then the definite description, according to Strawson, fails to refer; and the sentence of which it is a constituent expression cannot be used to make an assertion. The sentence is meaningful; but the question whether it is true or false simply does not arise.

Strawson's criticism of Russell has engendered a considerable amount of philosophical controversy; and his notion of presupposition* has been developed and extended in different ways by linguists and logicians (cf. 14.3). Here it may simply be mentioned that Strawson himself has more recently expressed the view that the issue is not as clear-cut as he previously maintained it to be; that his own analysis and Russell's "are tailored...to emphasise different kinds of interest in statement; and each has its own merits" (Strawson, 1964). Many philosophers avoid commitment on the question and say that existential propositions are either presupposed or implied by the use of a referring expression; and we can leave it at that.

There is, however, another point. Both Russell and Strawson can be criticized for saying that the truth of the component existential and uniqueness propositions which are presupposed or implied by (the use of) a definite description with a referential function is a necessary condition for making a true assertion about a referent. Now, it is indeed the case that the speaker is (normally) committed to a belief in the existence of a referent by his use of a definite description; but, as we have seen, this does not necessarily imply that the description is true of the referent or even held to be true by the speaker. Existence is a tricky concept in any case, and we must allow for various kinds of existence pertaining to fictional and abstract referents (or, alternatively, show how these apparently diverse kinds of existence relate to the physical existence of spatiotemporally continuous and discrete objects). Furthermore, if we are to give a comprehensive account of the way in which referring expressions are used in everyday discourse, we must admit the possibility that the speaker can, on occasion, talk about things of whose existence (in any sense of 'existence') he is uncertain. The most that can be said perhaps is that the speaker, in using a singular definite referring expression commits himself, at least temporarily and provisionally, to the existence of a referent satisfying his descripton and invites the hearer to do the same.

As for the condition of uniqueness, which is commonly said to be necessary for successful reference by means of a singular definite referring expression: it is clearly not the case that this must hold in any absolute way. When I say *The cat has not been in all day*, I am by no means committed to the belief that there is only one individual that I can refer to by means of the expression 'the cat'. What I assume, presumably, is that I will be understood to be referring to a definite individual and that the description I offer will be sufficiently specific, in the given context, to identify uniquely for the hearer the referent I have in mind. It is in this rather restricted, context-dependent, sense that the condition of uniqueness is to be interpreted in linguistic semantics. Furthermore, it is not only definite descriptions whose uniqueness of reference is relative to context. Most proper names are such that they may be borne by several individuals; and their context-dependent uniqueness of reference, like that of 'the Pope', is in principle no different from that of the majority of definite descriptions.

Philosophers have naturally enough given a lot of attention to discussing the conditions under which we can be said to be committed to a belief in the truth of the existential propositions that are presupposed or implied by the referring expressions we employ in making statements. But philosophers are professionally concerned with the explication of the notions of truth, knowledge, belief and existence. The fundamental problem for the linguist, as far as reference is concerned, is to elucidate and to describe the way in which we use language to draw attention to what we are talking about. In many situations, it may be unclear, and of little consequence, whether a speaker is implicitly committed, by the words he utters, to a belief in the truth of particular existential propositions; and it is rarely the case that a speaker uses a referring expression for the purpose of ontological commitment. Philosophy and linguistics undoubtedly converge in the study of reference, and each can benefit from their joint discussion of the notions involved. But their primary concerns remain distinct; and it is only to be expected that what the one discipline considers to be crucial the other will regard as being of secondary importance, and conversely.

What has just been said is admittedly a somewhat personal assessment of the relationship between the linguistic and the philosophical treatment of reference; and it would no doubt be disputed by those linguists and philosophers who take the notion of truth to be central to the whole of semantics. It should be pointed out, however, that there is at least one group of scholars whose conception of the centrality of truth is such that there is no real conflict between their approach to the formalization of the conditions of appropriate reference in terms of truth and the notion of successful reference outlined above. If the notion of truth is relativized to that of truth-under-an-interpretation, as it is in model-theoretical* semantics, a definite description like 'the postman' may be satisfied in some possible world that is not the actual world (cf. 6.5). But model-theoretical semantics is itself controversial.

(iii) Non-referring definite noun-phrases. It should not be supposed that the sole function of definite noun phrases in English is to refer to specific individuals (or classes of individuals). A definite noun-phrase may occur as the complement of the verb 'to be' and it may then have a predicative, rather than a referential, function. This point may be illustrated by means of the following sentence:

(2) Giscard d'Estaing is the President of France.

As it stands, (2) can be understood in various ways. In particular, it might be understood to express a proposition that is comparable with such propositions as the following: that Giscard d'Estaing comes from the Auvergne, that he likes playing tennis, and so on. Under this interpretation of (2), the phrase 'the President of France' is not being used to refer to an individual; it is being used with predicative function to say something about the individual that is referred to by means of the subject-expression, 'Giscard d'Estaing'.

There is, however, another interpretation of (2), it must be added, according to which both 'Giscard d'Estaing' and 'the President of France' function as referring expressions and the copula asserts an identity between the two referents. It so happens that in English, as in many, but not all, languages, the predicative and the equative copula are identical: the verb 'to be' is used in both cases. There are nonetheless important differences between predicative and equative* sentences containing the verb 'to be' in English: if (2) is taken as an equative sentence the two referring expressions are interchangeable (as are the two terms in an equation like $3^2 = 9$) and the definite article is an obligatory component of 'the President of France'; if (2) is taken as a predicative sentence the two noun-phrases are not interchanageable and the article is optional in the predicative noun-phrase (cf. 12.2).

Donnellan (1966) has pointed out that a definite noun-phrase may also be employed non-referentially as the subject of a sentence. One of his examples is

(3) Smith's murderer is insane.

There is of course one interpretation of this sentence under which 'Smith's murderer', which is a definite noun-phrase even though it does not contain the definite article (at least in surface structure*: cf. 10.5), is understood to refer to some specific individual. But there is another interpretation which can be brought out more clearly by paraphrasing (3) as

(4) Whoever killed Smith is insane.

In particular circumstances even 'whoever killed Smith' might be construed as a referring expression (though not of course as an expression with singular definite reference). Normally, however, we might expect (4) to be uttered in situations where the speaker is not simply asserting of some individual (who might have been referred to in all sorts of other ways which make no mention of the crime) that he is insane, but where the fact of having committed the murder is being put forward as grounds for the assertion that is made. If (3) is also construed in this way, then the expression 'Smith's murderer', according to Donnellan (1966) is being used attributively; and "in the attributive use, the attribute of being the so-and-so is all important, while it is not in the referential use".

It is important to realize that sentences, which like (2) and (3), are ambiguous in various ways in the written medium, are not necessarily ambiguous in the spoken language. Linguists have recently given considerable attention to determining the role of such prosodic* features as stress and intonation with respect to presupposition* and what Austin (1962) called illocutionary force* (cf. 16.1). It is still an open question whether these prosodic features, and especially stress, should be regarded as grammatically determined properties of system-sentences. According to an alternative view, they might be described as features which are superimposed upon sentences by the speaker (when the sentences in question are uttered as spoken text-sentences) in actual contexts of use. Whether they are to be treated by the linguist in the one way or the other is perhaps more a matter of methodology than of fact. However they are described, they are undoubtedly relevant to the interpretation of spoken utterances. If it is true that "in general, whether or not a definite description is used referentially or attributively is a function of the speaker's intentions in a particular case" (Donnellan, 1966), it must also be recognized that the speaker's intentions are often reflected in the prosodic features of his utterances. This fact should be borne in mind whenever sentences are discussed under the assumption that they have been, or might be, uttered by a speaker in some particular context.

(iv) Distributive and collective general reference. So far we have dealt only with definite reference, and we have been mainly concerned with singular referring expressions. There is no need for us to go into the problems of general reference. The distinction between distributive* and collective* reference should, however, be illustrated. The following sentence is ambiguous from this point of view:

(5) Those books cost £5.

If 'those books' is to be construed as meaning "each of those books", it is being used distributively; if it means "that set of books", it is being used collectively. In a case like (5) it is legitimate to talk of ambiguity, rather than indeterminacy, since the two interpretations are so sharply distinguishable. In other cases, however, and very commonly in everyday English, it is perhaps indeterminacy, rather than ambiguity, that is involved. It should also be noted that there are different kinds of collective reference. For example, as (5) is ambiguous according to whether the subject-expression has distributive or collective reference, so is

(6) The students have the right to smoke in lectures.

The distributive interpretation, according to which each student has the right to decide for himself whether to smoke or not, is straightforward enough. But the collective interpretation might well involve reference to the students as an institutionalized body; and the rights and properties of such bodies do not derive from the rights and properties of the individuals of which, in some sense, they are composed. At the same time, even if it is clear that it is as a collectivity that the students have the right to smoke (if they so decide by majority vote or whatever), it is as individuals that they will exercise this right. This means that in the proposition expressed by (6), under the collective interpretation, 'the students' has to be given a distributive interpretation as well, in so far as it is taken as the underlying subject of 'smoke'.

(v) Specific and non-specific indefinite reference. Once we move on to consider expressions whose reference (if they are indeed rightly regarded as referring expressions) is in one way or another indefinite, we strike against a host of additional complexities; and no attempt will be made here to do more than mention one or two of the more important points.

Let us begin by establishing a terminological distinction, for English, between non-definite* and indefinite* noun-phrases. A non-definite noun-phrase is any noun-phrase which is not a definite noun-phrase; an indefinite noun-phrase is either an indefinite pronoun or a noun-phrase introduced by the indefinite article (e.g. 'a man', and also phrases like 'such a man'). All indefinite noun-phrases are non-definite, but the converse is not true.

Consider now the following sentence (which we will assume is uttered to make a statement):

(7) Every evening at six o'clock a heron flies over the chalet.

It contains an indefinite noun-phrase, 'a heron', which under one interpretation of the sentence can be understood to refer to a specific, though unidentified, individual; and this interpretation would be supported if the sentence were immediately followed, in the same context, by

(8) It nests in the grounds of the chateau.

The pronoun 'it' in (8) has the same reference as – is *co-referential** with – 'a heron' in (7).[3] We will say that the indefinite noun-phrase, under this interpretation of (7), is being used with indefinite, but specific*, reference. But (7) can also be interpreted in such a way that the speaker is not taken to be referring to some specific individual. Under the first interpretation, the indefinite noun-phrase is paraphrasable by means of the expression 'a particular heron'; under the second, it can be paraphrased, though perhaps not very idiomatically or precisely, with the expression 'some heron or other'. Under the latter interpretation, we will say that the indefinite noun-phrase is being used non-specifically*. We will not say, however, that it has non-specific reference, because it is far from clear that it is correctly regarded as a *referring* expression. Very often, of course, we cannot tell whether an indefinite noun-phrase is being used with specific reference or not; and the speaker himself might be hard put to decide. It is a characteristic feature of the grammar of English that common nouns in the singular (except when they are used as mass nouns) must be introduced with an article (whether definite or indefinite), a demonstrative adjective, or some other determiner* (cf. 11.4). Not all languages that have what might be described as a definite or indefinite article are like English in this respect.

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[3] For a convenient summary of the way linguists have defined the notion of co-reference and of some of the problems that this has generated: cf. Fauconnier (1974).

Whether an indefinite noun-phrase in English is being used with specific reference or not, the speaker can go on to say something more about the referent and, in doing so, he can subsequently refer to it by means of a demonstrative or personal pronoun or a definite noun-phrase. Any information that the speaker gives the hearer about the referent when it is first referred to by means of an indefinite noun-phrase is available for both participants in the conversation to use in subsequent references. For example, if X says to Y

(9) A friend has just sent me a lovely Valentine card,

he can refer subsequently to the same individual by means of the expression 'my friend', regardless of whether he had a specific person in mind originally or not. And Y can refer to the same person by means of the expression 'your friend'. The point is that, once any information at all has been supplied about an indefinite referent, it can then be treated by the participants as an individual that is known to them both and identifiable within the universe-of-discourse by means of a definite referring expression. It is not a necessary condition of successful reference that the speaker or hearer should be able to identify the individual being referred to in any sense of 'identification' other than this.

In English, the indefinite pronouns 'someone' and 'something' can also be used specifically or non-specifically. Hence, the alleged ambiguity of such sentences as

(10) Everyone loves someone,

much discussed by logicians in connexion with the scope* of the universal and existential quantifiers (cf. 6.3). Under certain grammatically determined conditions, notably in interrogative and negative sentences, 'anyone' and 'anything' occur, rather than 'someone' and 'something', in the non-specific use of indefinite pronouns. But the conditions are complex; and there is currently considerable controversy among linguists as to whether the alternation of 'someone'/'something' with 'anyone'/'anything' is purely a matter of grammatical structure (cf. 11.4). The question is complicated further by the necessity of taking into account the operation of stress in spoken English; the indefinite pronouns may be stressed or unstressed whether they are used specifically or non-specifically; and stress, here as elsewhere, has a variety of functions. Like the indefinite pronouns, noun-phrases introduced by 'some' (which alternates with 'any' in its non-specific use) may also be employed specifically or non-specifically. The following sentence is therefore subject to the same alleged ambiguity as (10) above:

(11) Every boy loves some girl.

We will not go into the question of quantification (in the logical sense of this term) and indefinite reference.

One class of sentences containing indefinite noun-phrases which has also been much discussed recently is exemplified by

(12) John wants to marry a girl with green eyes.

The expression 'a girl with green eyes' in (12) can be construed as being used specifically or non-specifically. If it is taken as a referring expression (i.e. as having specific indefinite reference), then it presupposes, or implies, the existence of some individual who satisfies the description, in much the same way as would the definite noun-phrase 'the girl with the green eyes' used as a referring expression in the same context. There is no presupposition or implication of uniqueness, however; and the indefinite noun-phrase does not identify the referent for the hearer in the same way as a definite noun-phrase used referentially. If the indefinite noun-phrase 'a girl with green eyes' is construed as non-specific, there is no presupposition or implication of existence at all; and this is characteristic of descriptive noun-phrases (whether definite or non-definite) which occur after verbs denoting what Russell (1940), Quine (1960), and others have called propositional attitudes* (i.e. verbs denoting belief, doubt, intention, etc.).

It has been suggested that the two interpretations of (12) can be distinguished, logically, in terms of a difference in the scope of the underlying existential quantifier:

(12a) "$(\exists x)$ ($x$ is a girl with green eyes and John wants to marry $x$)"
(12b) "John wants $(\exists x)$ ($x$ be a girl with green eyes and John marry $x$)".

But this analysis, which rests upon a too ready application of the predicate-calculus theory of quantification, is surely unsatisfactory as a representation of the ambiguity of (12). (12b) suggests that the person referred to by means of 'John' wants two things, that there should exist some individual having certain properties and that he should marry this individual. Now, it is clearly a condition of being able to marry a certain individual that this individual should exist. But it surely goes against all our intuitions about the meaning of (12) to say that, when it is uttered to make a statement, it is being used to assert that John wants someone with certain properties to exist. Apart from anything else, John, like most of us at one time or another, may be subject to irrational and contradictory desires: he might resolutely maintain that he wants to marry someone that he does not want to exist.[4] In which case (12b) would be false. Nor is the distinction of assertion and presupposition of much help in this case. Neither the speaker nor John need be convinced of the present or future existence of girls with green eyes. Donnellan's (1966) distinction between the referential and attributive use of descriptive noun-phrases seems to be more to the point, although Donnellan himself introduced the distinction solely in connexion with definite noun-phrases. But the most striking difference between the two interpretations of (12) appears to reside in the contrast between the specific and non-specific use of the indefinite noun-phrase.[5]

One further point should be noted about indefinite noun-phrases used non-specifically. As we have already seen, they may establish in the universe-of-discourse entities that may be subsequently referred to by means of definite noun-phrases and they may serve as antecedents with respect to personal pronouns. For example, in the following sentence,

(13) John wants to marry a girl with green eyes and take her back to Ireland with him,

'a girl with green eyes' may be construed as either specific or non-specific, and under either interpretation the pronoun 'she' (in the form *her*) is a referring expression. The fact that, under certain circumstances, a pronoun can have an antecedent used non-referentially is troublesome for any straightforward theory of pronominalization which is based on the notion of co-referentiality. Two expressions cannot have the same reference, if one of them is not a referring expression at all. The pronoun in the second clause of (13) can perhaps be said to refer to "that unique though hypothetical entity which would be crucially involved in actualizing the possible world characterized in the first part of the sentence" (cf. Partee, 1972: 426), but it cannot be said to be co-referential with this hypothetical entity, since this is not an expression, but a referent; and the indefinite noun-phrase in the first clause, being non-specific, does not refer to the hypothetical entity that it establishes in the universe of discourse. If the notion of co-reference is to be salvaged in cases like this, some other referring expression must, therefore, be introduced into the deep structure* or semantic representation* of the sentence (cf. 10.5).

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[4] It might be argued that, if John wants to marry a girl with green eyes, having no specific girl in mind, he must nonetheless want it to be the case that there is a girl with green eyes such that he marries her and that this is what is expressed by (12b). I do not find this argument at all persuasive.

[5] In saying this, I am aware that what precisely is meant by 'specific' and 'non-specific' here is a little obscure. For some discussion of the distinction and of its semantic and syntactic implications: cf. Dahl (1970), Jackendoff (1972).

(vi) Referential opacity. Mention should now be made of what Quine has called referential opacity*. According to Quine (1960: 141ff) constructions, or contexts, are opaque* (as opposed to transparent*) when they fail to preserve extensionality (i.e. truth-functionality: cf. 6.2) under the substitution of co-referential singular expressions (and under certain other substitutions which do not concern us here).

The co-referential expressions in question, it should be noted, may be either definite or non-definite. Consider first the following sentence, uttered by X to inform Y of some fact:

(14) Mr Smith is looking for the Dean.

Now (14) is open to two interpretations according to whether 'the Dean' is construed referentially or attributively (in Donnellan's sense); and, under either of these interpretations, Mr Smith may or may not know who is the Dean. If 'the Dean' is referential, it gives the speaker's description, not necessarily Mr Smith's description, of the referent. Let us now suppose that Professor Brown is the Dean and that X and Y know this, although Mr Smith thinks that Professor Green is the Dean. Mr Smith may have previously informed X that he was looking for Professor Brown; in which case the proposition expressed by (14) is true, provided that 'the Dean' is construed as a purely referential expression. It is not true, however, if it is taken attributively. For Mr Smith is not looking for the person, whoever it is, who is the Dean. He is looking for a particular individual who might have been referred to by X in all sorts of referentially equivalent ways. But suppose now that Mr Smith had told X who he was looking for by means of the following sentence:

(15) I am looking for the Dean.

He might intend 'the Dean' to be understood referentially (as referring to Professor Green) or attributively. (And it may be observed in passing that the referential use, in situations like this, does not sharply exclude the attributive. For Mr Smith may be looking for Professor Brown as Dean. This is commonly the case when titles are used as definite descriptions.) If X takes 'the Dean' in (15) as referential and then utters (14), intending 'the Dean' to be understood as referring to Professor Brown, then the statement he makes by uttering (14) is false, as would be the statement made by uttering

(16) Mr Smith is looking for Professor Brown,

in which he has substituted the (for him) co-referential expression 'Professor Brown'.

We will not go through all the possibilities of misunderstanding that can result by virtue of the occurrence of definite and indefinite expressions in opaque contexts. Logicians have discussed the question primarily in relation to extensionality and the scope of quantifiers in the logical structure of distinct underlying propositions; and some linguists have analysed the deep structure of sentences like (14) in similar terms.[6] There is, however, a more general point to be emphasized, which the philosophical discussion of reference in opaque contexts has made explicit, but which holds independently of any particular formalization of the structure of language. When we report the statements made by others or describe their beliefs or intentions, we do not necessarily employ the same referring expressions as they have employed or would employ. We are free to select our own referring expressions; and the possibilities of misunderstanding and misreporting which arise when we utter sentences like (14) derive from this fact. (They are compounded by, but do not depend solely upon, the possibility of misconstruing an attributive expression as referential, or conversely.) The fact that the speaker is free to select his own referring expressions in the utterance of what are traditionally described as sentences of indirect discourse (or reported speech) should be borne in mind in any discussion of the relationship between the grammatical structure of such sentences and their meaning on particular occasions of their utterance.

(vii) Generic reference. Another problem that has been attracting the attention of both logicians and linguists recently is that of so-called generic* reference. What is meant by 'generic' (not to be confused with

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[6] For discussion and references to the recent linguistic and philosophical literature: cf. Dik (1968), Partee (1972, 1975).

'general') may be seen by considering such sets of sentences as the following

(17) The lion is a friendly beast
(18) A lion is a friendly beast
(19) Lions are friendly beasts.

Each of these sentences may be used to assert a generic proposition: i.e. a proposition which says something, not about this or that group of lions or about any particular individual lion, but about the class of lions as such.

Generic propositions, it is important to realize, are, not only tenseless, but timeless (cf. 15.4). At first sight, this statement is immediately refuted by pointing to the possibility of uttering such sentences as

(20) The dinosaur was a friendly beast,

in order to assert what is, intuitively at least, a generic proposition. But the past tense that occurs in (20) is not part of the proposition that is expressed when (20) is used to assert a generic proposition. In such circumstances, it is inappropriate to ask when it was that dinosaurs were friendly: the past tense is employed because the speaker believes that dinosaurs are extinct, not because he thinks that they have changed their properties. Generic propositions being timeless are not only tenseless, but also aspectless* (cf. 15.6). Once again, there are certain apparent exceptions to this statement; but we need not go into them here. It will be obvious from what has been said so far, therefore, that there is a difference between general reference (which was distinguished from singular reference earlier in this section) and generic reference. General referring expressions, whether distributive or collective, can occur freely in sentences that express time-bound propositions of various kinds.

The status of generic propositions is philosophically controversial: so too is the correlated notion of generic, as distinct from general, reference. The proposition expressed by (17)–(19) under the intended interpretation of them (and let us, for the moment, assume that all three sentences express the same generic proposition), would normally be formalized within the framework of the predicate-calculus (cf. 6.3) as

(21) $(x)\ (Lx \rightarrow Fx)$

"For all values of *x*, if *x* is a lion, then *x* is friendly". It has often been pointed out, however, that formulae like (21), involving universal quantification, do not seem to capture the meaning of generic propositions. From one point of view (21) is too strong and from another point of view it is too weak. It is too strong, in that it is falsifiable by the discovery of but a single unfriendly lion; and this is surely not what is intended by anyone uttering (17)–(19). It is too weak, in that it would represent the proposition expressed by (17)–(19) as true if it just happened to be the case, as a matter of contingent fact, that all the extant lions were friendly; and, once again, it seems clear that this is not what is intended. There is a difference between the truth-conditions of (17)–(19), under the intended interpretation, and the truth-conditions of

(22) All lions (as it happens) are friendly beasts.

One might very reasonably take the proposition expressed by (22) to be true, whilst refusing to subscribe to the truth of the proposition expressed by (17)–(19). Indeed, one might believe that every lion that has ever existed was of a friendly disposition and that every lion that will exist in the future will be equally friendly, without being thereby committed to the truth of the proposition expressed by (17)–(19). In short, universal quantification seems to be irrelevant to the formalization of the meaning of (17)–(19).

So far, we have tacitly assumed that there is only one kind of generic proposition. It is arguable, however, that there are several different kinds; and that they merge into one another in such a way that it is impossible to distinguish the one from the other in particular instances. There is one class of generic propositions – let us call them essential* propositions – which are to be interpreted as saying that such-and-such a property is a necessary attribute of the members of the class to which reference is made. If (17)–(19) are construed this way their truth-conditions are such that the proposition that they express would be held to be true if and only if being a friendly beast is an essential attribute of lions. Needless to say, the recognition of propositions of this kind raises all sorts of epistemological and metaphysical problems. Whatever might be the philosophical status of essentialism, however, there can be no doubt that the distinction between what is essential and what is contingent is of considerable importance in the semantic analysis of English and other languages. It is intimately bound up with the notion of analyticity* (cf. 6.5).

Essential propositions are perhaps the most easily definable subclass of generic propositions. Not all generic propositions, however, are essential propositions. Indeed, it is rather unlikely that anyone would wish to construe (17)–(19) as expressing an essential proposition. The kind of adverbial modifier that suggests itself for insertion (either in initial position or immediately after the verb) in (17)–(19) is one that approximates in meaning to 'generally', 'typically', 'characteristically' or 'normally', rather than to 'essentially' or 'necessarily'; and it is notoriously difficult to specify the truth-conditions for propositions containing adverbs of this kind (cf. Lewis, 1975). They certainly cannot be formalized, in any straightforward fashion, in terms of either universal or existential quantification; and, so far at least, there does not seem to be available any satisfactory formalization of the truth-conditions of the vast majority of the generic propositions that we assert in our everyday use of language. This point should be borne in mind in view of the rather loose appeal that is made to the notion of generic propositions or generic reference in many recent discussions of the topic.

As there are different kinds of generic propositions, so there are different kinds of generic reference. Definite noun-phrases, like 'the lion', and indefinite noun-phrases, like 'a lion', are far from being intersubstitutable in all kinds of sentences expressing generic propositions. For example, whereas

(23) The lion is extinct,

or

(24) The lion is no longer to be seen roaming the hills of Scotland,

are perfectly normal sentences, which can be used to assert a generic proposition, neither

(25) A lion is extinct,

nor

(26) A lion is no longer to be seen roaming the hills of Scotland,

can be used to assert a generic proposition. One obvious difference between definite and indefinite noun-phrases, used generically, is that, with definite noun-phrases, both a collective and a distributive interpretation is possible, but with indefinite noun-phrases (in the singular) the collective interpretation is excluded. The fact that this is so accounts for the unacceptability of (25) and (26), under a generic interpretation of 'a lion'.

It has been suggested occasionally that sentences like (18) should be construed (under the generic interpretation) as expressing a conditional proposition in which 'a lion' is not a referring expression at all (i.e.

"If something is a lion, then it is – typically, normally, characteristically, etc. – a friendly beast"). However, in view of the obscurity or indeterminacy of the truth-conditions of non-essential generic propositions, it is very difficult to be sure that there is a constant difference between the referential potential of definite and indefinite noun-phrases in sentences expressing what appear to be very similar, if not identical, generic propositions. Indeed, generic propositions pose a very serious, and so far unsolved, problem for truth-conditional semantics (cf. 6.6); and the problem is not solved, or even rendered more amenable to solution, by the introduction of a special generic quantifier, distinct from the universal and the existential quantifier. Generic propositions, and generically referring noun-phrases, are too heterogeneous to be handled in this way.[7]

From what has been said in this section, it should be clear that some understanding of how reference operates in language-behaviour is essential for the analysis of actual texts (whether written or spoken); and furthermore that the analysis of sentences in terms of the propositional and predicate calculus is by no means as straightforward as we may have appeared to assume in the previous chapter. The linguist can contribute to the study of reference by describing the grammatical structures and processes which particular language-systems provide for referring to individuals and groups of individuals. It does not follow, however, that the linguist must be concerned with the actual reference of expressions in his analysis of the grammatical structure of system-sentences.

## 7.3. *Sense*

All that we have said so far about sense is that it is now customary to distinguish sense* from reference*. It is perhaps helpful to add that 'sense' is the term used by a number of philosophers for what others would describe simply as their meaning, or perhaps more narrowly as their cognitive* or descriptive* meaning. For this reason the distinction of reference and sense is sometimes formulated as a distinction of reference and meaning. As was pointed out earlier, it has also been identified with Mill's distinction of denotation and connotation (cf. 7.1).

Frege's (1892) classic example, which is frequently used in discussions of sense and reference, is

(1) The Morning Star is the Evening Star.

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[7] See Biggs (1975), Dahl (1975), Jackendoff (1972), Lawler (1972), Smith (1975).

As Frege pointed out, the two expressions 'the Morning Star' and 'the Evening Star' had the same reference (Bedeutung), since they each referred to the same planet. But they could not be said to have the same sense (Sinn). For, if they did, (1) would be tautologous, or analytic, as is (2),

(2) The Morning Star is the Morning Star.

But (1), unlike (2), is (potentially) informative: it can make the hearer aware of some fact of which he was not previously aware and which he could not derive simply from his understanding of the meaning of the sentence (cf. 2.2). It follows that 'the Morning Star' and 'the Evening Star' are not synonymous*: i.e. they do not have the same sense. So runs the standard argument.

It may be observed in connexion with (1) and (2) that expressions such as 'the Morning Star' and 'the Evening Star' might be regarded as falling somewhere between proper names and definite descriptions; and, like many uniquely-referring titles, they have, in fact, grown capital letters (as Strawson puts it: cf. 7.2). In so far as they approximate to proper names, it is legitimate to question the assertion that they have sense; for, as we shall see, it is widely, though not universally, accepted that proper names do not have sense (cf. 7.5). On the other hand, if 'the Morning Star' and 'the Evening Star' are treated like definite descriptions, which differ in sense in a way that is obvious to any speaker of English by virtue of his knowledge of the language, there is the problem that

(3) The Morning Star is not a star (but a planet)

is, not only not contradictory, but potentially informative. Of course, as a matter of historical fact, it was known to astronomers that neither the Morning Star nor the Evening Star were fixed stars, but planets, long before it was discovered that the Morning Star and the Evening Star were identical. Nonetheless, the rather uncertain status of the two expressions 'the Morning Star' and 'the Evening Star' makes them less than ideal for the purpose for which they (or rather their German equivalents) were used by Frege. One might even argue that they differ not only in sense, but also in reference, the conditions under which the planet Venus is visible from Earth, rather than its spatiotemporal continuity, being in this case more relevant to the notion of referential identity. But we need not pursue this point. Frege's example has been introduced simply to illustrate in a general way the nature of his distinction between sense and reference. Expressions may differ in sense, but have the same reference; and 'synonymous' means "having the same sense", not "having the same reference". A rather better example than Frege's is Husserl's, 'the victor at Jena' and 'the loser at Waterloo' ('der Sieger von Jena' and 'der Besiegte von Waterloo'), both of which expressions may be used to refer to Napoleon (cf. Coseriu & Geckeler, 1974: 147).

It is, incidentally, unfortunate that Frege selected 'Bedeutung' as his technical term for what is now generally called reference in English. That he did choose the German word which in non-technical usage covers much of what is covered by the English word 'meaning' was no doubt due to the fact that he, like many philosophers, thought of reference as the basic semantic relationship. There is, however, an alternative technical distinction drawn in German between 'Bedeutung' ("meaning") and 'Bezeichnung' (often translated into English as 'designation'). This distinction is at least roughly comparable with Frege's distinction between 'Sinn' and 'Bedeutung': it is, however, Frege's 'Bedeutung' which, if anything, is identifiable with what many German writers call 'Bezeichnung', and it is his 'Sinn' that is identifiable with their 'Bedeutung'.[8] One of the advantages of using 'meaning' as a very general pre-theoretical term, as we are doing in this book (cf. 1.1), is that it enables us to avoid the kind of problem that has arisen in German. It will become apparent presently that our use of 'sense' as a theoretical term is somewhat narrower than is customary in philosophical writings.

That expressions with the same reference should not always be intersubstitutable in all contexts "salva veritate" (to use Leibniz's phrase: cf. 6.4) has been a problem for those philosophers who have attempted to construct a purely extensional theory of semantics. If the meaning of an expression is the class of entities to which it refers (or may refer), how is it that even uniquely referring expressions (and, let us grant that they are uniquely-referring expressions), such as 'the Morning Star' and 'the Evening Star', or 'Tully' and 'Cicero', or 'Pegasus' and 'Medusa' (which both refer to the same class in that they refer to the null class: cf. 6.3), are not synonymous and do not satisfy Leibniz's principle of substitutability? If *x* and *y* are two expressions which refer to the same entity, it is certainly not the case that either may be substituted for the other, without affecting the truth-value of the proposition that is expressed, in sentences like 'He does not believe that *x* is *y*'.

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[8] The 'Bedeutung' *vs.* 'Bezeichnung' distinction is drawn differently by different authors. But Brekle (1972), for example, relates it very closely to Frege's distinction. So, too, do Coseriu & Geckeler (1974).

As Russell pointed out in one of his later works (1940: 247), the thesis of extensionality "is sought to be maintained for several reasons. It is very convenient technically in mathematical logic, it is obviously true of the sort of statements that mathematicians want to make, it is essential to the maintenance of physicalism and behaviourism, not only as metaphysical systems, but even in the linguistic sense adopted by Carnap. None of these reasons, however, gives any ground for supposing the thesis to be true." We need not discuss the reasons given by Russell, Carnap, or other philosophers for believing that the thesis of extensionality holds within everyday discourse or, at least, can be made to hold by reinterpreting the statements of ordinary language in terms of some formal system (such as the propositional calculus or predicate calculus). The fact that the thesis of extensionality is philosophically controversial (and is nowadays even less widely accepted than it was when Russell was writing) gives us good grounds, in linguistic semantics, for not feeling obliged to accept it. And, if we do not accept it, we need not be concerned with many of the problems over which philosophers have agonized.

The distinction of reference and sense is not, however, bound to any single philosophical theory of meaning; and it holds independently of such logical considerations as extensionality and the preservation of truth under substitution. Even if it proved possible to eliminate the distinction of reference and sense, for reasons of technical convenience, in the formalization of the logical structure of the propositions expressed by sentences, the distinction is crucial once we take into account the utterance of sentences in actual contexts. It is validated in linguistic semantics by the fact that, on the one hand, what we take, pre-theoretically, to be non-synonymous expressions (like 'my father' and 'that man over there') can be used to refer to the same individual and, on the other hand, the same pre-theoretically non-ambiguous expression (like 'my father' or 'that man over there') may be employed to refer to distinct individuals. It is up to the theoretical semanticist to explicate these pre-theoretical intuitions and to do so, if he can, in a way that facilitates the analysis of meaning in the everyday use of language.

Many of the classic examples used by philosophers to illustrate the distinction of sense and reference are similar to 'The Morning Star is the Evening Star' in that they have to do with the identity or non-identity of individuals referred to by expressions on either side of the verb 'to be' in equative* sentences (cf. 7.2). But most declarative sentences in English do not have the same grammatical structure as 'The Morning Star is the Evening Star'.

The statement that John is a fool, which might be made by uttering the sentence

(4) John is a fool,

is non-equative. We are not saying of two possibly distinct individuals that they are in fact identical: we are ascribing to some person called John the property or attribute of folly: or, alternatively, we are saying that he is a member of the class of fools. (We have just used the term 'non-equative', it will be noted, with respect to utterances; and this is a more basic usage than its employment by linguists in relation to a class of sentences. Sentences of a certain kind are called equative (or non-equative) because they are characteristically employed in making equative (or non-equative) utterances.) In (4) 'John' is a referring expression, but '(be) a fool' has a purely predicative function. We may now think of these expressions as having two distinct kinds of meaning. Instead of 'John' we can employ any other expression, simple or complex (a name, a pronoun or a descriptive noun-phrase): provided that it serves to identify the same individual as 'John' does in the particular context of utterance, the descriptive meaning of the statement (including the proposition that is expressed) will be unaffected. And if we substitute for 'be a fool' some other expression which has the same sense (if there is one in the language), the descriptive meaning of the statement, once again, will be unaffected. To put it in a nutshell: the criterion for substitutability in subject position in this construction is referential identity; the criterion for substitutability in predicate position is identity of sense.

Attempts have been made by many philosophers to apply the Leibnizian principle of substitutability without change of truth-value to define both reference and sense. Two expressions would have the same reference, under this application of the principle, if they could be substituted one for the other in the subject position of all sentences without affecting the truth value of any of the statements that could be made by uttering any of the sentences (i.e. without changing the truth-conditions of the sentences: cf. 6.5); and they would have the same sense, if the substitution could be carried out in the predicate position (of non-equative sentences) without changing the truth-conditions. It is now generally recognized that, as far as statements made in everyday discourse are concerned, such attempts are doomed to failure. They break down, not only in the case of belief-statements and other such intensional statements, but also in the case of any statement in which the sense and reference of expressions in the sentences used to make these statements are in part determined by the particular context of utterance; and such statements constitute the majority of the statements that are actually made in the everyday use of language.

Our criterion for sameness and difference of sense will be made more directly dependent upon the descriptive meaning of utterances; two or more expressions will be defined to have the same sense (i.e. to be synonymous*) over a certain range of utterances if and only if they are substitutable in the utterances without affecting their descriptive meaning. If the utterances are such that they have a determinate truth-value, constancy of descriptive meaning will guarantee constancy of truth-value. The converse, however, does not hold; for the substitution of one expression for another may change the descriptive meaning of a statement without thereby altering the truth-value. Let us grant for the sake of the argument that John is both a fool and a linguist. If we substitute 'linguist' for 'fool' in (1), we obtain

(5) John is a linguist.

Now (4) and (5) – or, to be more precise, the propositions expressed in statements made by uttering these sentences – have the same truth-value. But they do not have the same descriptive meaning.

How do we know that they differ in descriptive meaning? Where the difference is as gross as this, our intuitive, or pre-theoretical, response to the question "Does (5) mean the same as (4)?" is reliable enough; and it should not be forgotten that part of what we are doing in descriptive semantics is explicating such intuitive judgements. But we cannot let the matter rest there. How can we test the validity of our intuitive judgement that (4) and (5) differ in descriptive meaning? That is the theoretically interesting question.

Two statements will be descriptively equivalent (i.e. have the same descriptive meaning) if there is nothing that is entailed* by the one that is not entailed by the other (cf. 6.5). A more recognizably philosophical way of making the point is Quine's "sentences are synonymous if and only if their biconditional (formed by joining them with 'if and only if') is analytic" (1960: 65). This formulation (though it uses the term 'sentence' rather than 'utterance' or 'statement') brings out, as it is intended to do, the interdefinability of 'synonymous' and 'analytic'.

We now meet another problem. Quine himself, in a famous article (1951), challenged the notion of analyticity as one of the "dogmas of empiricism" (without thereby intending to cast any doubts upon empiricism as such). His point was that no sharp distinction could be drawn between logical and factual truth: that we should not look for "a sweeping epistemological dichotomy between analytic truths as by-products of language and synthetic truths as reports on the world". According to Quine, what we should expect to find instead is a continuous gradation between those things that we hold to be true which occupy a more central position in our conceptual scheme and in our patterns of argument and those things that we hold to be true which occupy a less central, or peripheral, position. We are more willing to make adjustments or alterations on the periphery than we are at the centre. Among the truths which occupy a very central position in our conceptual framework are mathematical propositions, such as "$2+2 = 4$", and logical principles, such as the law of the excluded middle. Such truths have frequently been regarded by philosophers as analytic and as known to be true a priori (i.e. prior to, or independently of, experience). But Quine would seem to hold that even the most central truths such as these are in principle subject to revision in the light of experience and our interpretation of experience in terms of some new conceptual framework. After all, what is generally reckoned as scientific progress has frequently led to the abandonment of propositions which were once held to be of universal validity.

There can be little doubt that, as Quine said, no hard and fast line can be drawn between analytic and synthetic truths in everyday discussion and argument. Carnap (1952) pointed out that analyticity could be guaranteed within the framework of some particular logical system (provided that it contains, or has added to it, the requisite rules of inference) by means of what he called meaning postulates*. For example, given the meaning postulate

$$(x)\,(\mathrm{B}x \rightarrow \sim \mathrm{M}x),$$

which may be read as "No $x$ that is a bachelor is married", we can infer

$$\mathrm{Ba} \rightarrow \sim \mathrm{Ma}:$$

("If Alfred is a bachelor, then he is not married"). Of course this does not solve the descriptive problem of deciding whether $(x)\,(\mathrm{B}x \rightarrow \sim \mathrm{M}x)$ should be incorporated in the system in the first place; and Carnap, at the time that he made this suggestion, was not concerned with the problems of descriptive semantics. He wanted to explicate the notion of analyticity for pure semantic systems. The important point to notice is that a meaning-postulate like $(x)\,(Bx \rightarrow \sim Mx)$ is of itself sufficient to establish a relation of sense between the predicate B and M and is not logically dependent upon some prior or alternative specification of what each of them means. To make the point in relation to the English words 'bachelor' and 'married': it is in principle possible to know that they are related in this way (and the meaning-postulate makes precise the nature of their relationship) without knowing anything else about their meaning. That 'bachelor' should be semantically related in this way to 'married' is part of its sense; and it is part of the sense of 'married' that it should be related in a certain way to 'bachelor'. By analysing or describing the sense of a word is to be understood its analysis in terms of the sense-relations* which it contracts with other words; and each such sense-relation can be explicated by means of what Carnap called meaning-postulates.

It has already been pointed out that, although Carnap was at first concerned solely with the syntactic and semantic structure of logical calculi, he later took the view that his work could be profitably extended to the description of natural languages also; and he came to agree with Morris that the notion of meaning-postulates was necessarily a pragmatic* notion, since it depended upon a decision as to what implications and equivalences are acceptable to users of the semiotic system that is being constructed or analysed (cf. 4.4). If this is so, it should be possible for the linguist to adopt a philosophically neutral position on the epistemological distinction of analytic and synthetic truth. He can define the sense of expressions in natural language in terms of what we will call pragmatic implication*. What is meant by pragmatic implication may be explained, in sufficient detail for our present purpose, as follows: given that $U_i$ and $U_j$ are both statements, an utterance $U_i$, pragmatically implies an utterance, $U_j$, if the production of $U_i$ would normally be taken to commit the speaker not only to the truth of the proposition expressed in $U_i$, but also to the truth of the proposition expressed in $U_j$. The word 'normally' is here intended to cover certain conditions which make it reasonable for us to assume or presuppose sincerity and communicative success; i.e. that the speaker not only says what he says, but both means what he says and says what he means (cf. 16.1).

It should also be noted that the notion of truth involved here is a pragmatic concept: it is defined in terms of the speaker's belief that something is so, not in terms of either matters of fact or logical necessity. Pragmatic truth need not be either invariable or determinate: speakers of a language can change their beliefs or be uncertain, to a greater or less degree, about the semantic relationship that holds between particular words. For example, we might be uncertain as to whether a bachelor is a man (of marriageable age) who is not married or one who has never been married; and we might be uncertain as to what counts as the age from which men (or boys), other than by legal definition in different states and countries, become marriageable. Nor is it difficult to envisage circumstances in which we might be quite prepared to abandon our belief that all men must be either bachelors or married, if we have previously more or less consciously subscribed to this belief. Is a monk appropriately described as a bachelor? Is a man who lives with a woman who is not his legal wife, has children by her and supports her and the children also to be described as a bachelor? The answers to these questions might be clear enough in legal usage, since marriage is a social institution which is regulated by law and words like 'married' and 'bachelor' may be explicitly defined in law in relation to various circumstances. But it does not follow that they are so clearly defined in everyday discourse.

Different speakers may hold partly different beliefs about the meaning and applicability of words, so that the set of implications that one speaker will accept as following from a given utterance may differ, to a greater or less degree, from the set of implications that another speaker will accept as following from the same utterance. But there will commonly be a considerable overlap in these two sets; and the descriptive semanticist may generally limit himself to specifying the intersection of these sets of implications without being disturbed unduly about the indeterminate instances. Our description of language need not, and should not, be any more determinate in this respect than the language-system of which it is a model (cf. 1.6).

It should be observed that we have here formulated the notion of pragmatic implication in terms of utterances, not sentences. We can subsequently define it for sentences, if we so wish, on the assumption that the referring expressions that occur in sentences have their reference fixed in relation to some possible world and on the further assumption that the sentences are being used to make utterances of various kinds. For the present, however, it is sufficient to have introduced the notion of sense and to have given a general account of the way in which it may be defined in terms of pragmatic implication.

The notion of sense presented in this section is somewhat narrower than that which is defined or assumed in most philosophical semantics. Sense is here defined to hold between the words or expressions of a single language independently of the relationship, if any, which holds between those words or expressions and their referents* or denotata* (7.4). "What is the sense of such-and-such a word or expression?" is, therefore, a more limited question than "What is the meaning of such-and-such a word or expression?" The way in which sense, reference and denotation are interrelated will be discussed in the remaining sections of this chapter. But here it should be noted that both single vocabulary words (more precisely, lexemes*; 1.5) and expressions are said to have sense (and denotation), whereas only expressions (and a subset of them at that) have reference. The sense of an expression (e.g. 'that embittered old bachelor') is a function of the senses of its component lexemes and of their occurrence in a particular grammatical construction.

It may also be added, at this point, that, although the sense, and in the previous section the reference, of expressions has been discussed solely in relation to their occurrence in utterances used to make statements, it does not follow that the notions of sense and reference are applicable only with respect to such utterances. The sense of 'that book over there' is the same both in the question *Have you read that book over there?* and in the request or command *Bring me that book over there* as it is in the statement *I have read that book over there.* Whether the reference is the same or not will of course depend upon the particular context of utterance.

## 7.4. *Denotation*

It has already been pointed out that the term 'denotation' is employed by many authors for what we are calling reference; conversely, 'reference' has frequently been used (e.g. in Lyons, 1968) for what we will in this section distinguish as denotation. Part of the reason for this terminological confusion, as Geach has emphasized, is the failure of many authors to distinguish clearly "between the relations of a name to the thing named and of a predicate to what it is true of" (1962: 6). It might be argued that what Geach calls "a sad tale of confusion" has already gone too far and that, as he proposes, "so battered and defaced a coin" as 'denotation' should be "withdrawn from philosophical currency" (1962: 55). But it seems to be impossible to find an alternative which is not equally battered or defaced. The usage that we adopt here is close to, if not absolutely identical with, that of such writers as Lewis (1943; cf. Carnap, 1956: 45), Quine (1960: 90n), Martin (1958) and Alston (1964; cf. Lehrer & Lehrer, 1970: 25). It should be clearly understood, however, that the treatment of denotation given here is intended to be philosophically neutral. No more should be read into the term 'denotation' than it is definitely said to imply. There are, in any case, many important differences in the ways in which 'denotation' is defined by the various authors referred to above.

By the denotation* of a lexeme (and in the first instance we will discuss the notion of denotation in relation to lexemes) will be meant the relationship that holds between that lexeme and persons, things, places, properties, processes and activities external to the language-system. We will use the term denotatum* for the class of objects, properties, etc., to which the expression correctly applies; and, for grammatical convenience, we will construe 'denotatum' indifferently as a mass noun, a collective noun, or a countable noun as the occasion demands. For example, we will say that the denotatum of 'cow' is a particular class of animals, and also that the individual animals are its 'denotata'; that the denotatum of 'red' is a particular property (viz. the colour red), and that its denotata are red objects or, using the plural of 'denotatum' now quite differently, various subdivisions of the property (viz. various shades of red). There are all sorts of important logical and philosophical distinctions lurking behind this liberal and grammatically convenient use of the singular and plural of 'denotatum'. The status of the relationship between denotation and reference, on the one hand, and denotation and sense, on the other, is not, however, affected by our failure to draw these distinctions; and we could not do so without philosophical commitment, except at the cost of introducing a further set of technical terms.

There is just one such philosophical distinction that may be singled out for explicit mention at this point; and this is the distinction between the intension and extension of an expression (which was introduced in an earlier section: cf. 6.4). Many philosophers would say, like Carnap, (1956: 233) that the extension of 'red' is the class of all red objects and that its intension is the property of being red. The relationship between classes and properties (and the possibility of defining one in terms of the other) is, as we have seen, controversial (6.4). Carnap regards his distinction of extension and intension as one among a number of possible interpretations of Frege's distinction of reference and sense. Our use of 'denotation', it must be emphasized, is neutral as between extension and intension. We will normally say, for example, that 'dog' denotes the class of dogs (or perhaps some typical member, or exemplar, of the class), but that 'canine' denotes the property, if there is such a property, the possession of which is a condition of the correct application of the expression. This use of 'denotation' to cover both extension and intension allows for the adoption of a neutral position on the question whether the predicate calculus and class logic are equally appropriate for the formalization of descriptive semantics. It is compatible with, though it neither implies nor depends upon, the view that there is a fundamental semantic difference between typical adjectives like 'red' and typical common nouns like 'cow' (cf. Strawson, 1959: 168).

How does denotation differ from reference? In the previous section, it was stressed that reference is an utterance-bound relation and does not hold of lexemes as such, but of expressions in context. Denotation, on the other hand, like sense, is a relation that applies in the first instance to lexemes and holds independently of particular occasions of utterance. Consider, for example, a word like 'cow' in English. Phrases like 'the cow', 'John's cow', or 'those three cows over there' may be used to refer to individuals, whether singly or in groups, but the word 'cow' alone cannot. Furthermore, as we have already seen, the reference of expressions like 'the cow' is context-dependent. Now the reference of phrases which contain 'cow' is determined, in part, by the denotation of 'cow'. For example, the phrase 'this cow' may, in certain circumstances, be understood by the hearer to mean "the object near us which belongs to the class of objects which the lexeme 'cow' denotes". How the hearer knows that the word 'cow' denotes, or is applicable to, a particular class of objects is a separate issue; there may or may not be some unique and determinate intensional definition, of which, as a speaker of English, he is intuitively aware. We will come back to this. The point to be stressed here is that in English common nouns like 'cow' are not normally used as referring expressions; and this is true for most other lexemes in the vocabulary of English. If they have denotation, their denotation will determine their reference when they are employed in referring expressions. But they do not have reference as lexemes (i.e. as vocabulary-items: 1.5).

To say that there is a distinction between denotation and reference does not imply that they are unconnected. Whatever may be referred to in a given language is generally within the denotation of at least one, and usually several, lexemes in that language. (For example, cows may be referred to in a variety of ways; and the various classes to which they belong are denoted, not only by 'cow', but also by 'animal', 'mammal', etc.) Many would claim that whatever may be referred to in one language may be referred to in any other language; and even that it will be denoted by one or more lexemes in all languages, though in some instances perhaps only at the most general level of the vocabulary. However that may be, it is clear that reference and denotation both depend in the same way upon what has been called the axiom of existence: whatever is denoted by a lexeme must exist, just as "whatever is referred to must exist" (Searle, 1969: 77). It also seems evident that denotation and reference are closely connected in the acquisition of language. We will take up this point in the next section.

How is the denotation of a lexeme to be specified by the descriptive linguist? The short, practical answer is: in any way that is likely to be successful. Consider, for example, the following specification of the denotation of 'walrus', which is cast in the form of a typical dictionary definition: "either of two species (Odolenus rosmarus and Odolenus divergens) of large, seal-like Arctic mammals, with flippers and long tusks". Anyone reading this definition, who knows the meaning of the other words in it, would probably acquire as good an understanding of the denotation of 'walrus' as most other speakers of English; and he might therefore use the word in referring and predicative expressions, and otherwise, in such a way that we should be justified in saying that he knew its meaning. Consider, however, a similar dictionary definition of 'cow': "a mature female bovine animal (of the genus Bos)". Unless the user of the dictionary happened to be a foreign zoologist who knew the meaning of 'bovine', but not 'cow', he would probably not be very much helped by such an attempt to explain to him the denotation of 'cow'. We should be better off trying to teach the denotation of 'cow' to most non-English speakers by means of some denotational equivalent in their own language (if there is one) or by confronting them with a few specimens (or pictures of them) and perhaps drawing their attention to one or two salient features (the horns, the udders, etc.). The point being made is simply this: there may be no single correct way, in practical terms, of specifying the denotation of a lexeme.

Nor is it clear, in the present state of theoretical semantics, that there is in principle any way of handling denotation in a uniform manner. We could of course adopt the positivist approach favoured by Bloomfield and others (cf. 5.3). But this would be to introduce unnecessary and irrelevant criteria into semantics. For if there is one thing that does seem to be clear in this whole area, it is this: the denotation of lexemes is not generally determined by what Bloomfield called a "scientifically accurate" description of the denotata (1935: 139). Nor indeed is the denotation of most lexemes determined solely, or even principally, by the physical properties of their denotata. Much more important seems to be the role or function of the objects, properties, activities, processes and events in the life and culture of the society using the language. Until we have a satisfactory theory of culture, in the construction of which not only sociology, but also both cognitive and social psychology, have played their part, it is idle to speculate further about the possibility of constructing anything more than a rather ad hoc practical account of the denotation of lexemes.[9]

We have dealt with the relationship between denotation and reference, as far as we need to at present. Something should now be said about the distinction of denotation and sense. It is obvious enough that the relationship between two lexemes, like 'cow' and 'animal', is to be distinguished from the relationship that either of these lexemes bears to the class of objects which it denotes: the relationship between a linguistic entity and something outside the language-system. The question is whether one of these two kinds of relationship is derivable from the other and theoretically dispensable. As we have seen, attempts have often been made to relate sense and denotation on the basis of the traditional notion of signification* or some modern (e.g., behaviourist) version of it (4.1). But there are serious objections to making either sense or denotation basic in terms of the traditional triangle of signification.

If we assume that the relationship of denotation is logically and psychologically basic (so that, for example, we know that 'cow' and 'animal' are related in sense in a certain way because of our prior knowledge that the denotatum of 'cow' is properly included in the denotatum of 'animal') we have to face the problem of how we can know the sense of words, such as 'unicorn', which have no denotation. The fact that 'There is no such animal as a unicorn' is a perfectly normal and comprehensible sentence of English (which may be used to make what is probably a true statement), whereas 'There is no such book as a unicorn' is semantically odd, depends upon the fact that 'unicorn' and 'animal' (like 'cow' and 'animal') are related in sense, in a certain way, whereas 'unicorn' and 'book' are not; and speakers of English are aware of these sense-relations. Of course, it can be argued that, although 'unicorn' has no primary denotation, it has what might be called a secondary denotation (cf. Goodman, 1952). We can draw a picture and, pointing to the picture, say *This is a unicorn*; and speakers of English may agree or disagree that what we have said is true, as they may agree or disagree about an alleged picture of a cow. But their ability to recognize our picture of a mythical animal (if it is not directly dependent upon their having seen pictures of unicorns before) rests upon their understanding of the sense of 'unicorn', and in particular upon their knowledge of its relations with such words as 'horse', 'horn', etc., and their ability to identify the denotata of these words. It is because we know the sense of 'unicorn', that we know what kind of object it would apply to, if there were anything in the world for it to apply to.

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[9] And this is what I take to be the import of Putnam's (1975) *notion of* stereotypes or Rosch's (1973a, b) *notion* of natural categories, which can be related to the traditional notion of natural kinds.

This point holds more generally, it should be noted, and not just of words that lack denotation. To return to the definition of 'walrus' given above: we interpreted this as a definition of the denotation of walrus. But in order to apply it, we need to know the sense of many of the component lexemes in the definition; and we can learn the sense of 'walrus' (its relationship with such words as 'seal' and 'mammal') without knowing whether it has a denotation or not. Sense, then, in some cases at least is epistemologically prior to denotation.

We might therefore consider the alternative method of reduction: that of taking sense to be basic in all instances and treating denotation as a derivative relation. But there are problems here too. We first learn the use of many words in relation to the persons and objects around us; and we learn the denotation of some of these words, it seems clear, before we can relate them in sense to other words in the vocabulary. It appears to be no more correct to say that denotation is wholly dependent upon sense than it is to say that sense is wholly dependent upon denotation.

Not everyone will agree with what has been said here about the necessity of taking sense and denotation to be interdependent, but equally basic, relations. Should it prove possible, within some philosophical theory of meaning, to derive the one satisfactorily from the other or both from some more basic notion, it is at least terminologically convenient for the linguist to distinguish these two aspects of the meaning of lexemes. He can use the two terms to avoid commitment on the philosophical and psychological issues involved in the controversy between nominalism and realism (4.3).

One further point should be made in connexion with words which lack or may lack denotation. Much of the philosophical discussion of this question has been directed towards the analysis of the meaning of such words as 'unicorn'. The fact that 'unicorn', etc., have no extension in the actual world can be treated as irrelevant within any theory of semantics which allows for the relativization of truth and denotation to possible worlds (cf. 6.5). But it is perhaps more instructive to consider a word like 'intelligent' (or 'honest', or 'beautiful'). Does 'intelligent' denote some real property or attribute of persons (and perhaps animals or even machines) as, we may assume, 'red-haired' does? Is it not possible that the word 'intelligent' is used by speakers of English in a variety of circumstances, among which we can perhaps discern certain family resemblances (cf. Wittgenstein, 1953; Waismann, 1965: 179ff), but which have no common defining property? It is certainly the case that there are languages in which there is no satisfactory translation equivalent to the English 'intelligent'. In Plato's Greek, for example, the nearest equivalents are 'sophos' and 'eumathēs'; but the former is much wider, and the latter somewhat narrower, in application (cf. Lyons, 1963).[10] Then there are adjectives such as 'dangerous', which, regardless of whether it is readily translatable into all languages or not, can hardly be said to denote an inherent property of the objects or situations to which it is applied. The linguist, whether he is working as a theoretical or descriptive semanticist, need not be concerned to answer the question whether 'intelligent' (and a host of other lexemes) denote some identifiable property or not. But he must appreciate that there are problems involved in assuming that they do.

It would be no less of a mistake to say that no lexemes have denotation, or that denotation is irrelevant in linguistic semantics, than it is to say that all lexemes must have denotation. But denotation is just one part of a wider and more complex relationship which holds between language and the world (or between language and the set of possible worlds: cf. 6.5). We live in the world and are ourselves part of it; and we use language, not only to describe the persons, things and situations in the physical world and the world of social activity with which we interact in our daily life, but also to control and adjust to these persons, things and situations in a variety of ways. The descriptive function of language, important though it is, is not the sole function of language, or even the most basic (cf. 2.4). If we use the term applicability* for the admittedly rather ill-defined wider relationship that holds between language and the external world we can say that a particular lexeme (or expression, or whole utterance) is applicable* (i.e. may be correctly applied) in a certain context, situational or linguistic (cf. 14.1); and that it is applicable to individuals or properties of individuals. We may use the term 'applicability', in fact, for any relation that can be established between elements or units of language (including the prosodic* and paralinguistic* features of utterances) and entities in, or aspects of, the world in which the language operates. If we consider the applicability of a lexeme with respect to the question whether it is true of the entity to which it is applied, we are concerned with its denotation. (If we consider the applicability of an expression with respect to the question whether it is intended to identify some entity or group of entities about which something is being said, or some question is being asked, etc., on some particular occasion, we are concerned with its reference.) But words may be correctly and incorrectly applied to persons and things, and other features of the external world, for all sorts of reasons, some of which have nothing to do with their denotation.

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[10] It may be that in other authors of the period 'sunetos' is the nearest equivalent to 'intelligent'. But 'sunetos' is very rarely used in Plato; and in contexts in which we would readily use 'intelligent', 'clever' or 'bright', the Greek words 'eumathēs' or 'sophos' tend to be employed. In saying this, I am of course making certain assumptions about the cross-cultural identification of contexts (cf. Lyons, 1963).

So far we have discussed denotation solely with respect to lexemes. But the notion is also clearly relevant to certain expressions which may be substituted for single lexemes in sentences and may be denotationally equivalent to, or denotationally narrower or wider than, the lexemes for which they are substituted. For example, 'dark red' is denotationally narrower than 'red', as 'red book' is narrower in denotation than either 'red' or 'book'. 'Featherless biped' and 'rational animal' (to use a traditional example) are perhaps denotationally equivalent, and each of them is perhaps denotationally equivalent to 'human being' (or 'man' in its wider sense). 'Deciduous tree' is denotationally wider than 'oak', 'beech' or 'sycamore'. The denotation of expressions such as these can generally be accounted for in terms of the logical conjunction or disjunction of the denotations of their constituent lexemes and formalized in terms of the logic of classes (cf. 6.4). We will not go further into this topic here.

It was pointed out at the beginning of this section that the term 'denotation' has been used in various ways in the literature. We have employed it with respect to lexemes and expressions considered independently of their function in sentences or utterances. The question that now arises is whether it can be consistently and usefully extended to both predicative and referring expressions. As far as predicative expressions are concerned, this extension would seem to be straightforward. For denotation and predication are closely related notions. When we ascribe a property to an individual (or group of individuals), we do so in the simplest cases by predicating of the individual (or group) a lexeme or expression denoting the property in question. For example, when we utter the sentence 'The man drinking a martini is a crook' to make an assertion about a particular individual we are predicating of him the lexeme 'crook'; and we can just as reasonably ask what is the denotation of the expression '(be) a crook' as we can what does 'crook' denote. The answer in both cases is the same; or, if we prefer to put it this way, the denotation of '(be) a crook' is the intension of the class whose extension is the denotatum of 'crook'. Subject to the existence of the correlated property or class (under some appropriate interpretation of 'existence'), complex predicative expressions like '(be) the first man to climb Mount Everest' or 'break the bank at Monte Carlo' can also be said to have a denotation.

It is less clear that referring expressions have denotation in the sense in which we are using the term 'denotation'. Proper names, when they are employed as referring expressions, identify their referents, not by describing them in terms of some relevant property or properties which the name denotes, but by utilizing the unique and arbitrary association which holds between a name and its bearer. We could say that the denotatum of a name is the class of individuals to which the name is correctly applied. We could also say that to be called such-and-such is to have a certain property just as being of a certain size, shape, etc., or having been involved in certain processes, actions, states-of-affairs, etc., is to have a certain property (in the rather liberal sense of the term 'property' with which we are at present operating). This would enable us to account naturally for the parallelism between 'There are twelve chairs in this room' and 'There are twelve Horaces in this room'. But this would tend to obscure important differences between denotation and other kinds of applicability: a name is not true of its bearer (cf. Geach, 1962: 6). We return to this question in the next section.

Personal and demonstrative pronouns, like proper names, are used as referring expressions; they differ from proper names (and expressions like 'the Morning Star' and many titles) in that their reference, as we have seen, is more obviously utterance-dependent. But it would be rather odd to talk of the denotation of 'he' or the pronoun 'this' (and still more so of 'I' or 'you') in English as something distinct from their reference, since the conditions of correct application would be referential conditions. The class of individuals to which 'he' may be correctly applied is the class of individuals that may be referred to (whether deictically* or anaphorically: cf. 15.3) by means of 'he'; and 'he' is not true of these individuals.

The third main class of referring expressions is that of descriptive noun-phrases; and philosophers have often said that referring expressions of this kind have (or, subject to the axiom of existence, may have) a denotation. For Russell, a definite descripton was said to denote an individual if that individual fitted the description uniquely. Donnellan (1966) adopts Russell's definition of denotation (without however accepting the condition of uniqueness) and uses it to draw a distinction that Russell did not draw between reference and denotation. Donnellan maintains that an expression may be used successfully to refer to an individual even though there is no individual that fits the description, and conversely that an individual may fit a definite description and be denoted, though not necessarily referred to, by it. In standard cases, however, an expression like 'the man drinking a martini', if it is used to refer, will refer to the individual (or one of the individuals) that it denotes. Granted that the principal points made by Donnellan in terms of his distinction of reference and denotation are valid, the question remains whether the definite noun-phrase, as such, can be said to have a denotation. It seems preferable, on our interpretation of denotation, to say that it is the complex predicative expression '(be) a man drinking a martini' which has denotation (and that its denotation is a function of the denotation of the expressions '(be) a man' and '(be) drinking a martini'); and that the use of the definite noun-phrase to refer to an individual implies or presupposes that the complex predicative expression is true of the individual in question. We can choose to define 'denotation' in the one way or the other. But, if we decide to use the term as we have been doing throughout this section, we cannot consistently apply it to referring expressions. It goes without saying, however, that many philosophers, if they use the term 'denotation' at all, would probably prefer to link it more closely to 'reference'.

## 7.5. *Naming*

As far back as we can trace the history of linguistic speculation, the basic semantic function of words has been seen as that of naming. The story of Adam naming the animals, so that "whatsoever the man called every living creature, that was the name thereof" (Genesis 2.19), is typical of a conception of meaning that is to be found in many other sacred or mythological accounts of the origin of language. St Augustine's discussion of the acquisition of language by children, in his *Confessions*, is based on the same notion, and is quoted and criticized by Wittgenstein (1953: 1): adults point to things in the child's environment and thus direct his attention to them; simultaneously they name these things by means of the words which denote them in the child's native language; and the child comes to learn the association that holds between words and things, so that he can subsequently use those words to name things himself.

This view of meaning, which Ryle (1957) in a characteristic turn of phrase christened the 'Fido'-Fido view, has persisted throughout the centuries and, although it has come in for a good deal of criticism recently from Wittgenstein, Ryle, Austin, and other philosophers of ordinary language, it is still to be found, unquestioned, in very many works on semantics. It will be clear from our discussion of denotation in the previous section that the relation which holds between a proper name and its bearer is very different from the relation which holds between a common noun and its denotata: at least in such clear cases as 'Fido': Fido, on the one hand, and 'dog': {Fido, Bingo, Tripod, Towzer, etc.}, on the other. This is not to say that there are no unclear cases; nor that there is no connexion between naming and denotation as far as the acquisition of language is concerned. If there were no such connexion it would indeed be surprising that generations of subtle thinkers should have fallen victim to the alleged error of confusing the two, and even more surprising that ordinary folk should find it natural to talk of words as names for things. The philosophical semanticist will obviously try to make do with the minimum number of theoretical notions and is occupationally prone to what Ryle elsewhere calls category-errors (1949: 17). The ordinary speaker of English, reflecting and reporting upon his language, is not similarly bound by the dictates of theoretical or ontological parsimony. We will consider the relationship between naming and denoting in the next section. But first of all we must briefly discuss one or two important features of names and the role they play in language.

Names, as they are employed in everyday language-behaviour, have two characteristic functions: referential and vocative. Their referential function has been discussed sufficiently for the present. It is worth pointing out here, however, that names are frequently used simply to draw the hearer's attention to the presence of the person being named or to remind the hearer of the existence or relevance of the person being named. The utterance of the name may be given some paralinguistic modulation sufficient to distinguish it as a warning, a reminder, an exclamation of astonishment, etc. But there need be no precise or explicit predication. It is surely not just fanciful to think that it is this function, which one might call quasi-referential* rather than fully referential, that serves as the basis for the further development of true reference in language. [illegible]

By the vocative* function of names is meant their being used to attract the attention of the person being called or summoned. Once again, this function appears to be basic in the sense that it is not reducible to any other semiotic function, though the vocative, like the quasi-referential, utterance of a name may be paralinguistically modulated to give additional, mainly indexical, information. The distinction between the referential and the vocative function of names (and perhaps more commonly of titles) is systematized in many languages as a distinction between what are called terms of reference and terms of address; and the same distinction was grammaticalized in the case-systems of the classical Indo-European languages. The use of a common noun with vocative function (e.g., the use of 'child' in *Come here, child!*), whether it is distinguished as such by its form or not, approximates, it may be observed in passing, to the use of a proper name or a title.

It is important to distinguish clearly between the referential or vocative use of names and their assignment to their bearers in what we will call appellative* utterances (e.g., *This is John, He is called John Smith*). The term 'naming' is frequently unclear in respect of this distinction. We will therefore introduce the technical term nomination* for the second of the two senses of 'naming': by saying that X nominates some person as John we shall mean that X assigns the name 'John' to that person. But 'assignment' is also ambiguous as between didactic* and performative* nomination. By didactic nomination we mean teaching someone, whether formally or informally, that a particular name is associated by an already existing convention with a particular person, object or place. The role of didactic nomination in language-acquisition is something we shall be discussing presently. It should be noticed that didactic nomination operates, not only in the acquisition of language, but is a continuing and important semiotic function of language. When we introduce ourselves or others by name (*This is*

*John, My name is 'Harry'*), we are carrying out an act of nomination; and normally it is one of didactic nomination.

Performative nomination may be exemplified by means of one of Austin's (1961) original illustrations of his notions of performative utterances: "When I say *I name this ship the Queen Elizabeth* I do not describe the christening ceremony, I actually perform the ceremony". The class of performative utterances includes many other kinds of utterances other than nominative, and we will return to it later (cf. 16.1). At this point, however, it should be noted that performative nomination may take various forms and includes not only the assignment of personal names at baptism or some other formal ceremony, but also such semiotic acts as the definition of terms (where naming and denotation are often hard to distinguish), and so on. And each kind of performative nomination will be governed by certain conditions of appropriateness: one cannot assume the role of name-giver just when and how one pleases. This is clear enough in the case of such a highly-formalized instance as christening; but it is also true of the many other less formal, and perhaps less obvious, kinds of performative nomination (the assignment of nicknames at school or in the family, of names of endearment for the private use of lovers, and so on). Mention should also be made of the fact that in many cultures people have assigned to them a different name from that which they had previously when they pass from childhood to adulthood or when they assume a new role in society; and also of the fact that the use of names is frequently subject to taboos of various kinds. The name of a person is something that is held to be an essential part of him. Performative re-nomination may be an important part of what anthropologists have called the rites of passage (rites de passage).[11]

Of particular interest is the way in which many names appear to be created by the parents' interpretation of a child's utterance as a name being used by him in vocative or quasi-referential function and the reinforcement of this utterance as a name by the parents. Whether this phenomenon can support all the weight that is put upon it by the behaviourist semanticist is, as we have seen, doubtful (cf. 5.4). But it may be plausibly supposed to play some role in language-learning; and most families can probably testify, anecdotally at least, to its operation in the creation of some of the names used within the family. What is interesting from the present viewpoint is the fact that the child creates the name (though he may be imitating the form of some adult lexeme), but the parents by the interpretation they impose upon his utterance make of it an instance of performative nomination.

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[11] This notion of rites of passage originates with Van Gennep (1908). But it has been widely employed by anthropologists: cf. Gluckman (1962), Lévi-Strauss (1963), Turner (1969). (It has also been extended to cover the ritualization of the transitions between the various more or less distinguishable stages of an encounter: cf. Firth, 1972; Laver, 1975.) There is a tendency for philosophical treatments of proper names to underestimate the ritual, and even magical, significance of names in many cultures.

The linguistic status of names has long been a subject of controversy, not only amongst philosophers, but also amongst linguists (cf. Ullmann, 1962: 71–9). One of the questions that has been most hotly disputed is whether names have a sense. What is probably the most widely accepted philosophical view nowadays is that they may have reference, but not sense, and that they cannot be used predicatively purely as names; and this is also the view that we shall adopt. As we shall see (cf. 7.6), we allow for the possibility that in the learning of a language the distinction between names and common nouns may not be always clear-cut, so that there might be a time when 'chair', for example, is treated as a name which happens to be associated with several otherwise unrelated objects and, conversely, when all the people called 'Horace' are thought of as having one or more other properties by virtue of which the name 'Horace' is peculiarly appropriate. It is our assumption, however, that, apart from a relatively small number of borderline cases the distinction between names and common countable nouns in adult English is one that is readily drawn. Utterances like *There are twelve Horaces in this room* (understood as meaning "There are twelve people called Horace in this room") are to be accounted for, it is assumed, by means of a rule for using proper names which depends for its application upon the recognition that they are proper names; and rules like this may or may not be specific to particular languages. Such much discussed examples as 'He is no Cicero' or 'Edinburgh is the Athens of the north' are in this connexion irrelevant: 'Cicero' and 'Athens' are here being used predicatively, or, more precisely, within predicative expressions (in what was rather loosely classified in traditional grammar and rhetoric as one kind of synechdoche*). That names can, in a given culture or society, acquire more or less definite associations, such that the name can be said to symbolize* eloquence or architectural beauty, is an important fact; and it is this fact which accounts for the ease with which names can in the course of time become ordinary common nouns (e.g., the Italian word 'cicerone', which is now fairly well established in French, English and other languages, for "museum guide" (Ullmann, 1962: 78)).

Synechdoche (?)

But it does not invalidate the principle that names are without sense; and Jespersen's claim (1924: 66), in deliberate contradiction of Mill, that proper names (as actually used) "connote the greatest number of attributes" is misleading; for it trades upon an equivocation between the philosophical and the more popular sense of 'connotation' (cf. 7.1).

Using the term 'connotation' in the non-philosophical sense, as Jespersen appears to be doing, we can certainly agree that many proper names have quite specific connotations, or associations. The connotations which one person associates with a name may be different from the connotations which another person associates with the same name, even in cases where both persons would use the name to refer to or address the same individual (or set of individuals). When the bearer of the name is a historically, politically or culturally prominent place or person, the connotations of the name of this place or person may be relatively constant for members of a particular language-community sharing the same culture (cf. 'Cicero', 'Athens', 'Judas', 'Napoleon', 'Shakespeare', 'Mecca', etc.). And if they were asked to say what they knew, or believed, about the bearer of the name, they could be expected to provide a set of identifying descriptions: *Cicero was the greatest Roman orator*, *Cicero was the author of the Verrine orations*, *Cicero denounced Catiline in the Senate*, etc.

These identifying descriptions, or some disjunction of them, will provide names with what Searle (1958; 1969: 162ff) calls a descriptive backing*, such that the names in question (although they do not have sense) are "logically connected with characteristics of the objects to which they refer". The descriptive backing of a name may serve as the basis for the use of the name predicatively in such sentences as 'He is no Cicero' (where 'Cicero' symbolizes eloquence). The fact that names may have a descriptive backing also accounts for their use in certain kinds of existential statements (e.g., *Cicero never existed*) and equative statements (e.g., *Cicero was Tully* or *Cicero and Tully were one and the same person*). The sentence 'Cicero never existed', when used to make a statement, may be held to imply that (contrary to what the hearer may have supposed to be the case) there never existed any great Roman orator who was the author of the Verrine orations, and/or denounced Catiline in the Senate and/or, etc. The equative statement *Cicero was Tully* may be held to imply that the descriptive backing of both 'Cicero' and 'Tully' is true of the same individuals (cf. Searle, 1969: 171). There are considerable problems attaching to the formalization of this notion of the descriptive backing of names. In particular, it is unclear what should count as the essential characteristics of the individual to which a name refers. Nor is it obvious that all existential and identity statements can be satisfactorily analysed in this way. But there are many instances of the use of names in such statements for which an analysis in terms of their descriptive backing does seem to be appropriate.

The principle that names have no sense is not invalidated by the fact that performative nomination, whether formal or informal, may be determined by certain culturally prescribed conditions of semantic appropriateness. In some cultures there is a more or less well-defined set of institutionalized personal names ('John', 'Mary', etc.) which are assigned to children shortly after birth according to a variety of more or less strict criteria. Most English-speaking families will no doubt respect the convention that 'John' should not be assigned to girls or 'Mary' to boys (though there are some institutionalized names, e.g. 'Lesley', that they might assign happily to children of either sex): it is therefore possible to infer, with a very good chance of being right, from an utterance like *My friend John came to see me on Wednesday* that the friend who came to see me was male. But this fact of itself does not force us to say that 'John' and 'male' are semantically related in the way that 'man' or 'boy' and 'male' are. If a girl happened to be called 'John', we would have no hesitation in saying *John has just cut herself*. We might wonder why, in defiance of convention, she was given the name 'John' in the first instance; but that is a different matter. The sentence *John has just cut herself* is not only grammatically acceptable (under any reasonable explication of grammatical acceptability), but also, one might argue, semantically acceptable. Even if we admit that names such as 'John' or 'Mary' are part of the English language, as words like 'boy' or 'girl' are (and this is another controversial issue), we are by no means obliged to concede the point that they have sense.

Nor are we obliged to concede this point in the case of names which are not taken from a more or less fixed list of personal names as they are for the most part in English-speaking countries, but are taken from the ordinary vocabulary of a language and are assigned by virtue of the meaning of the expressions in question. If we trace the etymology of institutionalized names of persons and places in various languages (in that branch of semantics that is known as onomastics*), we will usually find that they had the same kind of origin. For example, 'John' comes, through Greek and Latin, from a Hebrew name, which could be interpreted in terms of the ordinary vocabulary of Hebrew as "God has been gracious". We will call this the etymological meaning* of the name; and it would seem to be appropriate to extend the coverage of this term to include the synchronically* motivated, as well as diachronically* discoverable, interpretation of names (for the distinction of synchronic and diachronic description, cf. 8.2). Very frequently, however, as the standard anthropological treatments of word-magic and taboo have shown, the symbolic meaning both of names and of other words is governed by conventions that are specific to a particular culture.

One question which has been much discussed in the literature is whether names belong to a particular language-system in the way that other words do. It has often been argued that names like 'John' or 'London' are not English words as 'man' or 'city' are and that the lexicographer should not be expected to list them in a dictionary. Ryle (1957), for example, says: "Dictionaries do not tell us what names mean – for the simple reason that they do not mean anything". Geach (1962: 27) maintains against this point of view that "it is part of the job of a lexicographer to tell us that 'Warsaw' is the English word for 'Warszawa'; and a grammarian would say that 'Warszawa' is a Polish word – a feminine noun declined like 'mowa' ". And he asks: "what is wrong with this way of speaking?" The answer is that there is nothing wrong with it, for a rather limited class of instances. But the situation with respect to the translation of proper names from one language into another is in general far more complicated than Geach's example would suggest.

As far as place names are concerned it is probably the case that, if there is a conventional translation equivalent, it will always be used. Where there is not, there can be complications. If I was translating from German into English would I put 'Danzig' or 'Gdansk' as the name of the now Polish town? It would surely depend upon what I was translating, my political sympathies, and so on. The translation of personal names is far more complex. Even when there exists a well-established translation equivalent, it is not always appropriate to use it. An Englishman named James will not normally be addressed or referred to in French as Jacques, but as James: the very Englishness of his name, as it were, is an essential part of it. As pronounced in French, however, it will probably be accommodated to the French phonological system and thus become, in that respect, a French word. And there is nothing to prevent monolingual English-speaking parents from calling their monolingual English-speaking son Jacques, rather than James. The point is that there is no clear theoretical answer to the question whether names "belong to the language in which they are embedded" (Geach, 1962: 27). For there is no single principle which determines their translation from one language into another. However, some institutionalized place names and personal names are so common in certain countries that one would expect all speakers of the language used in that country to recognize their status as names. If the question whether such names belong to the language and should be included in a dictionary is considered in purely practical terms it can be answered with Geach in the affirmative. But one would only list the well-known institutionalized names: it is, in any case, impossible to list all the names one might use when speaking English, since there is in principle no limit to this set.

There is one important difference between certain institutionalized place names and certain personal names that has not so far been mentioned. Very many institutionalized place names, when used as referring expressions by most speakers of a language, are unique in their reference, but personal names like 'James' are not. Furthermore, whereas 'James' and 'Jacques', subject to the reservations expressed in the previous paragraph, are translation equivalents, as 'London' and 'Londres' are, the conditions which determine their translation equivalence are quite different. 'Londres' will be used in French to translate 'London' only when it refers to the capital of Great Britain; and not when it refers to London, Ontario, or any of the other towns and cities that bear the name 'London'.

Enough has been said perhaps to show that the questions whether names belong to a language or not and whether they have a meaning or not do not admit of a simple and universally valid answer.[12] What has been emphasized in this section is the fact that some names at least can be said quite reasonably to have a symbolic, etymological or translational meaning. But they do not have sense, or some unique and special kind of meaning which distinguishes them as a class from common nouns. It has also been stressed that personal names may have a vocative as well as a referential or quasi-referential function in language-behaviour. There is no reason whatsoever to suppose that their vocative function is derived from, or in any way less basic than, their referential function.[13]

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[12] For some discussion of the linguistic status of names: cf. Kuryłowicz (1960), Sørensen (1963).

[13] There are many contexts in which it is hard to separate the vocative from the referential function (e.g., in roll-calling); and there are others in which neither the vocative nor the referential function of names is involved.

### 7.6. *Reference, sense and denotation in language-acquisition*

In the previous sections of this chapter we have been at some pains to distinguish reference, sense, denotation and naming. We must now show how these different kinds, or aspects, of meaning are, or may be, interrelated in the acquisition of language.

There is a clear connexion in everyday English between the noun 'name' and the verb 'call'; and it is no coincidence that the verb 'call' can mean, not only "to name", but also "to address", "to summon" and "to assign a name to". First of all, it should be observed that names, as we have seen, are characteristically used to refer to or address individuals. We can say equally well *What is X called?* or *What is the name of X?* And there are occasions when the noun 'name' and the verb 'call' are employed in this way with respect to classes of individuals. If we come across an animal of unfamiliar species, we can ask *What is the name of this animal?* or *What is this animal called?* expecting to be given in reply, not the name of the individual animal (if it happens to have one), but the word which denotes all members of the species. It might be argued that our question, in either version of it, is ambiguous; and that we can eliminate the ambiguity by using the plural (substituting 'these animals' for 'this animal' and making the necessary grammatical changes: *What are these animals called?*). There is some force in this argument; but the point about ambiguity cannot be pressed too hard. For the lexeme which denotes the class can also be used to address an individual member of the class. We can say *Come here, dog* or *Come here, Fido.* One can of course insist that the former is to be analysed, semantically or logically, as "Come here, you who are a dog" and the latter as "Come here, you who are named Fido". The predicative function of the statement "It's a dog" must certainly be distinguished from the appellative function of the statement "It's Fido" in the analysis of English. It does not follow, however, that this distinction must be imposed upon vocative expressions. Nor does it follow that the distinction is clear from the start in the acquisition of language by children.

The distinction between names and common nouns like 'dog' or 'boy' is fairly clear in adult English when either is used referentially in the singular. The grammatical structure of English is such that any singular countable noun in a referring expression must be accompanied by a determiner*, quantifier* or syntactically equivalent form. One can say *The boy came yesterday* or *James came yesterday*, but not (as grammatically acceptable utterances) *Boy came yesterday* or *The James came* *yesterday*. In many other languages the grammatical distinction between proper names and common nouns with referential function is less sharp; and this is true also of the speech of very young English-speaking children. It is at least arguable, therefore, that the distinction between referring to an individual by name and referring to the same individual by means of a descriptive noun-phrase is something that the child only gradually acquires.

One might even argue the stronger claim that the distinction between naming and describing is never absolutely clear in vocative expressions; and that it would be unclear in the case of many referential expressions in English were it not for the fact that purely syntactic rules influence us to interpret countable nouns in the singular preceded by determiners or quantifiers as common nouns rather than proper names. Even so, there remain a number of borderline cases: is 'the sun' a proper name (like 'The Hague') or an expression containing a common noun? Once we use 'sun' in the plural (as in the sentence 'There may be other suns in the universe as well as our own') we may be inclined to say that it is a common noun. But a nominalist might argue that cases like this can still be analysed like sentences containing proper names in the plural ('There are other Peters in the room'). However, we are not concerned to defend a nominalist analysis of particular examples (and still less of all phrases containing common nouns), but merely to show that, although 'reference', 'denotation' and 'naming' need to be distinguished, they can coincide. And they may do so typically in the conditions in which children acquire their native language. The nominalist's account of the acquisition of reference and denotation deserves the most serious consideration (cf. Quine, 1960).

Before we proceed, it must be emphasized that, as far as the subject we are discussing is concerned, there is no necessary connexion between nominalism and empiricism, still less between nominalism and behaviourism. The way in which the child comes to re-identify individuals and group them into classes, might very well depend upon an innate faculty or mechanism, not only for classification, but for classification according to certain universal principles which have their reflexion in language. Even the behaviourist will admit the necessity of postulating some innate mechanisms (cf. Quine, 1969); what is psychologically and philosophically controversial is the nature of these mechanisms. The linguist should not feel obliged to commit himself on such issues.

Quine (1960: 80–124) distinguishes four phases in what he calls the ontogenesis of reference and denotation (using the term 'reference' to cover both). In the first phase, it is assumed that all words are used to name unique denotata; in the second phase, the child acquires the distinction between proper names and words with multiple denotation; in the third phase, he learns how to construct and use such collocations as 'tall man' and 'blue book'; and in the fourth and final phase, he masters the use of collocations like 'taller than Daddy'. We will be concerned solely with the transition between the first and the second of these two phases.

It has already been pointed out that common nouns like 'dog' can be used in English on occasion to refer to or address individuals; and we can readily imagine that a child first uses and understands such nouns in the same way that he uses and understands proper names. In addition to countable common nouns, we must also consider mass nouns like 'water' and words like 'red', which denote qualities. The first thing that must be said is that the distinction between single and multiple denotation is here far less clear than it is in the case of countable nouns; hence the convenience of allowing the term 'denotatum' itself to fluctuate between various interpretations as a countable noun, as a mass noun, or a collective noun (see 7.4). Consider such utterances as *I don't like water* or *My favourite colour is red*. What is being referred to by means of the expressions 'water' and 'red'? It is arguable that denotation and reference coincide here. And yet we should probably not wish to say that water and red are individuals. Although it is possible to think of water as an individual ("a single scattered object, the aqueous part of the world") and similarly to think of the denotatum of 'red' as an individual ("the scattered totality of red substance" (Quine, 1960: 98)), we have to make a considerable intellectual effort in order to see the world in this way.

It is worth observing at this point that in English it is usually the plural of countable nouns which corresponds to the singular of mass nouns in sentences of the kind we are considering. An utterance like *I don't like books* (in contrast with *I don't like these books*) is very similar to *I don't like water*. One is perhaps inclined to say that the reference of *books* coincides with the denotation of 'book' in the utterance of this sentence (so that it would be wrong to insist that the form *books* is ambiguous between an existentially and universally quantified interpretation: cf. 6.3). If we make another deliberate intellectual effort, we can think of all the books there are in the world as discontinuous parts of a single scattered object. But we probably feel that it is even less natural to think of books in this way than it is to think of all the lakes, pools, rivers and so on as parts of a single aqueous individual. And we should no doubt resist entirely any suggestion that we could reasonable think of human beings or animals (above a certain phyletic level) as discontinuous parts of some single scattered whole. We have either acquired or were born with some principles of classification which, on the one hand, inhibit us from categorizing rather amorphous and spatially discontinuous substances like water as individuals and, on the other hand, positively incline us towards the individuation* of persons, animals and discrete, but temporally continuous, physical objects.

It is probable that the principles of individuation are, to some considerable degree at least, universal and independent of the language we are brought up to speak as children. At the same time, it must be appreciated that neither the grammatical distinction of countable nouns and mass nouns nor the grammatical distinction of singular and plural, which in English support and strengthen our appreciation of the corresponding semantic distinctions, are by any means universal in language. Very many languages make use of what are called classifiers* for the purpose of explicit individuation and enumeration and have no distinction of singular and plural in nouns. The classifiers are comparable in syntactic function with such words as 'pool' or 'pound' in English phrases like 'two pools of water', 'that pool of water', 'three pounds of butter'. But they are used, obligatorily, not only with nouns which denote amorphous or scattered substances like water or butter but also with nouns denoting classes of individuals, so that 'three men' might be translated in a way which suggests a semantic analysis something like "three persons of man". In such languages the difference between single and multiple denotation is less sharp than it is in most English utterances. Most of the common nouns will be like 'salmon' in English, which in an utterance such as *I like salmon* can be taken as referring to a class of individuals (cf. *I like herrings*) or to a stuff or substance (cf. *I like meat*). But to say that it must refer to either the one or the other is perhaps to force an unreal and unnecessary choice upon us. Why should we not take it as indeterminate rather than ambiguous? And why should we not think of an example like this as representative of what is the normal situation in an early stage of language-acquisition?

We have seen that what eventually become lexemes which denote classes of individuals in the adult language may have been first used and understood by the child as names. At this stage, a purely nominalistic interpretation of the meaning of all expressions is, we may assume, acceptable. There is no need to distinguish between reference and denotation, because each expression will be used to refer to what it denotes and what precisely it does refer to may be somewhat indeterminate.

What now of the distinction of denotation and sense? This too is perhaps unnecessary for the analysis of language-behaviour at the very earliest stage when all expressions are interpreted as names (if this is in fact the case). For then, we may suppose, the difference between 'red' and 'green', say, may not be clearly distinct from the difference between 'boy' and 'girl', on the one hand, and 'John' and 'Peter', on the other. Once these differences are established, however, it is clear from our earlier discussion that the notion of sense comes into its own.

Sense-relations determine the limits of the denotation of particular lexemes (for lexemes that have denotation); and the sense and denotation of semantically related lexemes is learned, more or less simultaneously and presumably by a process of gradual refinement (involving both specialization* and generalization*: cf. 8.5), during the child's acquisition of a language-system. Neither sense nor denotation is psychologically or logically prior to the other. Normally, it may be assumed, the child learns or infers the denotationally relevant differences between boys and girls, between men and women, at the same time as he is learning the sense of 'boy' and 'girl', and of 'men' and 'women', and as part of the same process. Ostensive definition* (i.e. the definition of the meaning of a word by pointing to, or otherwise drawing the child's attention to, one of the denotata), in so far as it plays any role at all in language-acquisition, usually involves both the sense and the denotation of lexemes. For example, if a parent says to the child *That's a boy and this is a girl,* he is not only presenting to the child typical denotata of the two words 'boy' and 'girl', but, if he is understood by the child to be using the words in contrast, he is simultaneously teaching the child, or reinforcing the child's assumption, that there is a sense-relationship holding between 'boy' and 'girl', such that $(x)$ $(x$ be a boy $\rightarrow x$ not be a girl) and $(x)$ $(x$ be a girl $\rightarrow x$ not be a boy). Of course, explicit ostensive definition of this kind (despite the importance assigned to it in many empiricist theories of meaning) is relatively uncommon in the acquisition of language. The child learns the applicability of words, expressions and utterances in all sorts of situations of language-use; and his initial assumptions about the sense and denotation of the words he hears in utterances may be guided by more or less specific innate principles of categorization. Language-acquisition is a very complex process, and it is uncertain to what extent various parts of it are governed by the maturation of innate cognitive structures and mechanisms (cf. 5.4). But it is clear enough that the acquisition of the denotation of words cannot be separated from the acquisition of their sense, and that neither can be separated from learning the applicability of words and utterances in actual situations of use.[14]

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[14] For references to recent work on language-acquisition, see note 13 to chapter 3.