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Michael Devitt

REFERENCE

PART B

It is usual to think that referential relations hold between language and thoughts on the one hand, and the world on the other. The most striking example of such a relation is the naming relation, the sort that holds between 'Socrates' and the famous philosopher Socrates. Indeed, some philosophers, in effect, restrict the vague word 'reference' to the naming relation, or something close. Others use 'reference' broadly to cover a range of semantically significant relations that hold between various sorts of terms and the world; for example, between 'philosopher' and all philosophers. Other words used for one or other of these relations include: 'designation', 'denotation' (see DENOTATION), 'signification', 'application', and 'satisfaction'. We shall follow the broad usage of 'reference' in this entry.

Philosophers are interested in reference because they take it to be the core of meaning (see SEMANTICS). Thus, the fact that 'Socrates' refers to that famous philosopher is the core of the name's meaning and hence of its contribution to the meaning of any sentence - for example, 'Socrates is wise' - that contains the name. The name's referent contributes to the sentence's meaning by contributing to its 'truth condition': 'Socrates is wise' is true if and only if the object referred to by 'Socrates' is wise (see TRUTH CONDITIONS, MEANING AND TRUTH).

The first question that arises about the reference of a term is: What does the term refer to? Sometimes the answer seems obvious - for example, 'Socrates' refers to the famous philosopher - although even the obvious answer has been denied on occasions. Othertimes, the answer is not obvious. Does 'wise' refer to the property wisdom, the set of wise things, or each and every wise thing? Clearly, answers to this should be influenced by one's general view of what exists, or 'ontology'. Thus, a 'nominalist' who thinks that properties do not really exist, and that talk of them is a mere manner of speaking, would not take 'wise' to refer to the property wisdom.

The central question about reference is: In virtue of what does a term have its reference? Answering this requires a theory that explains the term's relation to its referent. There has been a great surge of interest in theories of reference in this century.

The most popular theory for proper names arose from the views of Gottlob Frege and Bertrand Russell and became known as 'the description theory'. According to this theory, the meaning of a name is given by a definite description - an expression of the form 'the F' - that competent speakers associate with the name; thus, the meaning of 'Aristotle' might be given by 'the last great philosopher of

antiquity'. And the answer to our central question is that a name refers to a certain object because that object is picked out by the name's associated description (see SENSE/REFERENCE).

Around 1970, several criticisms were made of the description theory by Saul Kripke and Keith Donnellan; in particular, they argued that a competent speaker usually does not have sufficient knowledge of the referent to associate a reference determining description. Under their influence, many adopted 'the historical-causal theory' of names. On this view, a name refers to its bearer in virtue of standing in an appropriate causal relation to the bearer (see PROPER NAMES).

Description theories are popular also for words other than names. Similar responses were made to many of these theories in the 70s. Thus, Kripke and Hilary Putnam rejected description theories of natural-kind terms like 'gold' and proposed historical-causal replacements. David Kaplan rejected description theories of 'indexicals' - terms like 'I' and 'this' that depend for their reference on the context of their utterance (see CONTEXT SENSITIVITY) - in favor of the idea that their reference is determined in a more direct way (see INDEXICALITY; DEMONSTRATIVES).

Many other words, for example, adjectives, adverbs and verbs, seem to be referential. However we need not assume that all other words are. It seems preferable to see some words as 'syncategorematical', contributing structural elements rather than referents to the truth conditions and meanings of sentences. Perhaps this is the right way to view words like 'not' and the 'quantifiers' like 'all', 'most', and 'few'.

The referential roles of 'anaphoric' (cross-referential) terms are intricate. These terms depend for their reference on other expressions in their verbal context. Sometimes they are what Peter Geach calls 'pronouns of laziness', going proxy for other expressions in the context. Othertimes they function like 'bound variables' in logic. Geach's argument that every anaphoric term can be treated in one of these two ways was challenged by Gareth Evans (see PRONOUNS AND ANAPHORA).

Finally, there has been an interest in 'naturalizing' reference, explaining it in scientifically acceptable terms (see NATURALISM). Attempted explanations have appealed to one or more of three causal relations between words and the world: historical, reliable, and teleological.

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PART A

1 Millian and description theories of proper names

The description theory of proper names stands in sharp contrast to the following age-old and attractive theory: there is no more to a name's meaning than its role of designating something. Thus, John Stuart Mill claimed that 'proper names are not connotative: they denote the individuals who are called by them; but they do not indicate or imply any attributes as belonging to those individuals' (1867: 20). One problem for this theory is that it makes answering our central question seem hard: If a name does not 'imply any attributes' of its bearer, as the description theory claims it does, what determines which object is the bearer?

It was not primarily concern with this question, however, that led most philosophers to abandon the Millian theory and adopt the description theory. They did this largely as a result of the criticisms and counter-proposals of Frege (1893) and Russell (1911).

The most famous criticism of the Millian theory concerns identity statements (see IDENTITY). The ancient Greeks observed what they took to be a star rising in the evening and called it 'Hesperus', and what they took to be another star rising in the morning and called it 'Phosphorus'. In fact these 'two stars' were the planet Venus. So the statement, (1), 'Hesperus is Phosphorus', is true. Now compare (1) with (2): 'Hesperus is Hesperus'. (1) and (2) seem to differ sharply in meaning. Various reasons have been adduced in favour of this view. Some philosophers have argued that whereas (1) is synthetic, (2) is analytic; some, that whereas (1) is known empirically, (2) is known a priori; some, that whereas (1) is contingent, (2) is necessary. However, probably the most influential reason for thinking that the statements differ in meaning has been Frege's claim that they differ in 'cognitive value': (1) is highly informative, revealing an important astronomical discovery, whereas (2) is uninformative, a trivial piece of logical knowledge. In any case, it was generally agreed that the two statements do differ in meaning. If so, the only way to explain this seemed to be to attribute different meanings to 'Hesperus' and 'Phosphorus'. Yet, according to the Millian theory, they must have the same meaning: they both have the role of designating Venus. So the Millian theory must be wrong: a name's role of designating its bearer does not exhaust its meaning.

Another important criticism concerns existence statements (see FICTION/SEMANTICS OF). 'Vulcan does not exist' is true. Because it is true, 'Vulcan' does not designate anything. So, on the Millian theory, 'Vulcan' should be meaningless. So, 'Vulcan does not exist' should be partly meaningless. Yet, it is perfectly meaningful. Indeed, if it were not, it could not be true. The Millian theory must be wrong.

The description theory provides neat solutions to the problems for the Millian theory. According to the description theory, a name, in effect, abbreviates the definite description that competent speakers associate with the name; thus, 'Aristotle' might abbreviate 'the last great philosopher of antiquity'. So it is easy to see why (1) and (2) differ in meaning: 'Hesperus' might be associated with

the description, 'the star that rises in the evening', and 'Phosphorus', with 'the star that rises in the morning'. And 'Vulcan does not exist' is fully meaningful because 'Vulcan' abbreviates the meaningful description 'the planet in orbit between Mercury and the Sun'.

More importantly for our purposes, the description theory provides an answer to our central question. A name designates a certain object because that object is denoted by the definite description associated with the name; 'Aristotle' designates Aristotle because 'the last great philosopher of antiquity' denotes him. Of course, this answer raises another question (to which we shall return: Sect. 6): In virtue of what does the description denote that object? Still, progress has clearly been made because we had that problem anyway.

Some obvious problems with this 'classical' description theory - including the problem that speakers differ in the descriptions that they associate with a name - led some philosophers, notably John Searle (1958) and Peter Strawson (1959), to modify the theory. A name is not tied tightly to one description but loosely to many. It can designate its bearer despite the failure of some in its 'cluster' of associated descriptions to denote that object: it designates whatever object most of the descriptions in the cluster denote.

2 Three arguments against description theories of proper names

Description theories dominated for half a century until challenged by three arguments around 1970: 'the unwanted necessity argument' and 'the rigidity argument', both due largely to Kripke (1980), and 'the argument from ignorance and error' due to Kripke and to Donnellan (1972).

Unwanted necessities were one of the obvious problems for the classical description theory. If 'the last great philosopher of antiquity' is synonymous with 'Aristotle', then 'Aristotle is a philosopher' should be necessarily true (provided Aristotle exists). Yet it is not: Aristotle might have died young, long before his philosophical fulfilment. The cluster theory avoided this version of the problem. The description 'the last great philosopher of antiquity' is just one among many in the cluster that expresses the meaning of 'Aristotle'. Aristotle need not have any particular one of the many properties specified by the cluster. The cluster theory does require, however, that Aristotle have most of the properties specified by the cluster. Kripke points out how implausible this is. Aristotle might not have had any of the properties commonly associated with him: he might not have been a pupil of Plato, taught Alexander the Great, and so on. So 'Aristotle' cannot be synonymous with the cluster of associated descriptions.

The rigidity argument deploys the notion of rigid designation, explained as follows: for a term 'a' to be a rigid designator is for it to designate the same object in every possible world (in which it designates at all); or, less picturesquely, for it to be such that 'a is F' would truly characterize some nonactual situation if and only if the object that the term actually designates were F in that

situation. Kripke argues that names are rigid designators whereas the descriptions alleged to be synonymous with them are not. So description theories are wrong. Thus, compare: (3), 'Aristotle was fond of dogs'; and (4), 'The last great philosopher of antiquity was fond of dogs'. Suppose that Aristotle had indeed died young. Then Plato not Aristotle would have been the last great philosopher of antiquity. In those circumstances the truth of (4) would depend on whether Plato was fond of dogs. But the truth of (3) would still depend, just as it does depend in the actual world, on whether Aristotle was fond of dogs. The name 'Aristotle' designates Aristotle in a nonactual situation just as it does in the actual situation, whereas the description 'the last great philosopher of antiquity' designates whoever is the last great philosopher of antiquity in that situation, whether Aristotle or not. So the name is not synonymous with the description. Similarly, it is not synonymous with any other description, or cluster of descriptions, that is a candidate to give its meaning. (Note that what we are evaluating for truth and reference in a nonactual situation are expressions with the meanings that they actually have as a result of our usage. Clearly any expression could have a different meaning as a result of different usage in a nonactual situation - language is 'arbitrary' - but that is beside the point.)

(3) and (4) are not modal statements (although we have been evaluating them in nonactual situations). Other versions of the rigidity argument concern modal statements. For example, whereas 'Hesperus is necessarily Hesperus' is true, 'Hesperus is necessarily the star that rises in the evening' is not: had the solar system been differently arranged, Hesperus might not have been visible in the evening but it still would have been Hesperus. This sort of difference between descriptions and names in modal statements had been emphasized earlier by other philosophers, particularly Ruth Barcan Marcus (1961).

Some philosophers, notably Michael Dummett (1973), resisted Kripke's two arguments by focusing on modal statements. These philosophers exploited the well-known ambiguities of scope in these statements (see SCOPE) to undermine the apparent difference between names and descriptions. Whatever the truth of this matter, the apparent difference in nonmodal statements remains.

These two arguments challenge the description theory as a theory of the meaning of a name, a meaning that determines the name's reference. This is how the theory is naturally understood. However, as Kripke points out, the theory could be understood as simply a theory of reference: the reference of a name is fixed by a description, but the name is not synonymous with that description. This weaker theory is impervious to the two arguments. Of course, the weak theory has a defect: because it is no longer a theory of meaning, it no longer solves the problems that troubled the Millian theory. Indeed, the relation between meaning and reference becomes a pressing issue on this theory.

There is another way of saving the description theory from the two arguments while avoiding this defect. Instead of weakening the original theory into a mere theory of reference, we revise it along the following lines: a name is synonymous with a rigidified

description. Our language already seems to have descriptions that contain 'rigidity operators'; for example, the italicized part of 'the person who, *in the actual world*, is the last great philosopher of antiquity' seems to make this description designate Aristotle in every possible world. If descriptions of this sort are indeed rigid, the revised theory claims that a name is synonymous with such a description. If such descriptions are not rigid, the revised theory can claim that the name itself supplies the rigidity operator and so would be synonymous with an ordinary nonrigid description governed by that operator.

All of these description theories - original, weak, and revised - have the consequence that the users of a name associate with it a description that identifies its bearer. The third argument against description theories, the argument from ignorance and error, challenges this. So, if the argument is good, it counts against all description theories.

The argument shows that people who seem perfectly able to designate with a name are very often too ignorant to supply an identifying description. Thus, some may fail with the name 'Cicero' because they associate with it only the description 'a famous Roman orator', which applies to many people. Others may fail because they associate 'the man who denounced Catiline' with 'Cicero' and are unable to supply an appropriate description for 'Catiline': the description that they associate with 'Catiline' is 'the man denounced by Cicero', which takes us in a circle and leaves both names without reference, according to the description theory.

The argument shows also that people often associate a description that identifies something other than the name's bearer; people are simply wrong about the bearer. Thus some associate 'the inventor of the atomic bomb' with 'Einstein' and some, 'the first person to realize that the world was round' with 'Columbus'. Almost everyone associates 'the discoverer of Peano's axioms' with 'Peano', but the axioms were actually discovered by Dedekind! Yet, despite such errors, people succeed in designating Einstein, Columbus, and Peano by their names.

The description theory can be improved by allowing people to borrow their reference from others. So the description Martha associates with 'Einstein' might be 'the person Joe referred to yesterday by 'Einstein''. Provided Joe can supply an appropriate description - either one that describes Einstein directly or one that borrows reference from someone who can supply an appropriate description - Martha will succeed in designating Einstein. There is a danger of a circle, of course. Apart from that, there are problems of ignorance and error once more. Perhaps Martha cannot remember the reference lender; or she can remember the lender by his name, 'Joe', but cannot supply the identifying description that the theory requires; or the lender is identified but he cannot identify Einstein, perhaps identifying something else instead. The description theory still seems to place too great an epistemic burden on speakers.

An argument from ignorance and error can also be brought against another, more general, theory that some - for example, Dummett - have taken from Frege. This is the theory that to understand a name a

person must be able to identify its bearer. This ability is usually evidenced by providing a description but it may be evidenced by recognizing the bearer (see MEANING AND VERIFICATION). The epistemic burden that this more general theory places on speakers still seems too great.

Various moves have been made to save the description theory in the face of these difficulties. Most popular, perhaps, have been theories that the reference of, say, 'Einstein' is determined by a description along the lines of 'the person referred to by (called, named, etc.) 'Einstein'', for this description does identify Einstein and speakers surely associate it with the name. However, such theories risk circularity.

3 General terms and mass terms

Just as there are description theories of names, so also there are description theories of general terms like 'tiger', 'hammer', and 'bachelor', and mass terms like 'gold' and 'paper' (see MASS TERMS). Speakers of the language associate various descriptions with a term. One of these descriptions, or most of a cluster of them, expresses the meaning of the term and determines what it applies to. If only one description does the job, the view is analogous to the classical description theory of names. If a cluster of descriptions does, the view is analogous to the cluster theory of names.

Kripke (1980) and Putnam (1975) argued that description theories are false of general and mass terms that apply to natural kinds. So they are false of 'tiger' and 'gold'. The arguments are like the three against description theories of names (Sect. 2). First, the theories yield unwanted necessities. The description we associate with 'tiger' is along the lines of 'large carnivorous quadrupedal feline, tawny yellow in colour with blackish transverse stripes and white belly'. Yet it is not necessary that a tiger has four legs and is striped: a tiger might lose a leg; in a different environment tigers might not be striped. Second, the term 'gold' is a rigid designator, applying to the same kind of stuff in every possible world. In contrast, an associated description like 'dense yellow metal' is nonrigid. Third, people who seem perfectly able to use a term are often too ignorant or wrong about the things to which it applies to supply an appropriate identifying description. Thus, some who use 'elm' and 'beech' cannot supply descriptions that distinguish elms from beeches; many who use 'gold' cannot distinguish gold from fool's gold; it was once common to associate 'fish' with 'whale'.

Putnam added a further argument built around the following fantasy. Imagine that somewhere in the galaxy there is a planet, Twin Earth. Twin Earth, as its name suggests, is very like Earth. In particular, each Earthian has a doppelganger on Twin Earth who is a cell for cell duplicate of the Earthian. Twin Earth differs from Earth in one respect, however: the stuff that the Twin Earthians who appear to speak English call 'water', stuff that is superficially indistinguishable from what we call 'water', is not H₂O but a very different compound XYZ. So Oscar on Earth and Twin Oscar on Twin Earth

refer to different stuffs by 'water'. Yet Oscar and Twin Oscar are doppelgangers, associating exactly the same descriptions with 'water' (which is more plausible if we place Oscar and Twin Oscar in 1750 before the chemical composition of water was known). So those associations are not sufficient to determine reference and the description theory is wrong. Indeed, nothing going on in the head is sufficient to determine reference. As Putnam put it, 'meanings just ain't in the head'.

We have considered criticisms of description theories of proper names and natural-kind words. Do these criticisms extend to description theories of other words? Putnam took the arguments to apply to almost all words, including 'pencil' and 'pediatrician'. Tyler Burge (1979) took a similar line, arguing that the meanings (contents) and references of a wide range of a person's words and accompanying thoughts are not 'individualistic' in that they are not determined simply by the person's intrinsic states. To a large extent they are determined by the person's social context. Burge's examples include 'arthritis', 'sofa', 'brisket', 'clavicord' and 'contract'.

The Twin-Earth fantasy brings out an important feature of description theories in general: even if a description theory gives the right answer to our central question for some word, its answer is incomplete. Thus, consider a description theory of 'tiger'. According to the theory, the reference of 'tiger' is determined by the reference of such words as 'carnivorous' and 'striped'. Suppose, contrary to the above argument, that this were so. We then need to explain the reference of those words to complete the explanation of the reference of 'tiger'. Description theories might be offered again. But then the explanation will still be incomplete. At some point we must offer a theory of reference that does not make the reference of one word parasitic on that of others. We need an "ultimate" explanation of reference that relates some words directly to the world. Description theories pass the referential buck. The buck must stop somewhere if there is to be any reference at all.

4 Historical-causal theories

Kripke and Donnellan followed their criticism of description theories of names with an alternative view. This became known as the 'causal' 'historical' theory, although Kripke and Donnellan regarded their view as more of a 'picture' than a theory.

The basic idea of this theory is that a name designates whatever is causally linked to it in an appropriate way, a way that does not require speakers to associate an identifying description of the bearer with the name. Reference is initially fixed at a dubbing, either by perception or description of the referent. The name is then passed on from person to person in communicative exchanges. People succeed in designating an object with a name because underlying their uses of the name are causal chains stretching back to the dubbing of the object with the name. People borrow their reference from people earlier in the chain but borrowers do not have to remember lenders; it is enough that borrowers are, as a matter of historical fact,

appropriately linked to their lenders in communication. So people can designate Cicero despite their ignorance of him and can designate Einstein despite their errors about him.

Similarly, Kripke and Putnam proposed an historical-causal theory of natural-kind words. Reference is initially fixed at a dubbing, either by description or perception of samples of the kind. The reference is then to all those objects, or all that stuff, having an internal structure of the same sort as the samples; for example, in the case of gold, having the atomic number 79 (see ESSENTIALISM). People at a dubbing lend their reference to others, who can then lend it to still others. People who are ignorant about the kind can use the word to refer to its members because underlying their uses are causal chains stretching back to a dubbing.

In thus removing the epistemic burden on speakers, historical-causal theories are a radical departure from the Frege-Russell tradition. That tradition assumes that those who understand a name must know about its meaning and reference, so that if its reference is determined in a certain way, they must know that it is (see MEANING AND UNDERSTANDING). The historical-causal theory must reject the assumption that speakers have this privileged "Cartesian" access to semantic facts: the reference of a name is determined by causal chains that are likely to be beyond the ken of the ordinary speaker; 'meanings just ain't in the head'. This very feature of the theory has led many to reject it and to work hard to preserve the description theory (or the more general 'identification theory' favored by Dummett; Sect. 3). From the traditional Cartesian perspective, the causal theory's failure to impose an epistemic burden rules it out as a candidate to explain reference.

The historical-causal theory nicely captures the rigidity of names: the reference of a name is determined by its actual causal relations, something that cannot change when we consider other possible worlds. Less pleasingly, by rejecting any descriptive element to the meaning of a name, the theory may seem to leave no alternative but to resurrect the Millian view, identifying a name's meaning with its role of designating its bearer. Many philosophers, influenced by the 'direct reference' approach to indexicals (Sect. 5), have taken this route, despite the problems for the Millian view (Sect. 1). To avoid this it seems that we must explain a name's meaning in terms of the particular sort of causal chain that determines the name's reference.

The theory faces problems arising from various confusions and mistakes that can play a role in forming the causal network underlying a name. And it must explain how the reference of a name can change even though the historical fact of the dubbing cannot change. In developing the theory to deal with these problems, Michael Devitt (1981) has emphasized that a name is typically 'grounded' in its bearer in many perceptual confrontations after the initial dubbing; it is multiply grounded in its bearer.

We shall return to the historical-causal theory in Sect. 8.

5 Indexicals

To answer our central question for indexicals - terms like 'I', 'now', 'here', 'you', 'she', 'that' and 'this table' - we need to consider how the context of their utterance determines their reference.

Both Russell (1918) and Hans Reichenbach (1947) explain the reference of all indexicals (called 'egocentric particulars' by Russell and 'token-reflexive words' by Reichenbach), in terms of the reference of 'this'. Thus, Reichenbach claims that 'I' means the same as 'the person who utters this token'; 'now' means the same as 'the time at which this token is uttered'; 'this table' means the same as 'the table pointed to by a gesture accompanying this token' (p. 284). This amounts to a description theory of reference for all indexicals except 'this token' in terms of the reference of 'this token'.

Any description theory of an indexical may face arguments of the usual three sorts: unwanted necessities, rigidity, and ignorance and error. The theory is particularly vulnerable to the argument from rigidity, as Kaplan (1989) showed. (Kaplan prefers to talk of the closely related notion of direct reference rather than rigidity.) Thus, compare (5), 'This table is green', and Reichenbach's interpretation of it, (6), 'The table pointed to by a gesture accompanying this token is green'. Suppose that the table referred to is in fact green so that (5) and (6) both assert true propositions. Consider now a situation in which that table was still green but the furniture had been moved around so that a different table, a brown one, would be the subject of the gesture. Would those propositions asserted by (5) and (6) still be true? (Note that this question concerns the propositions actually asserted by (5) and (6), not the propositions that would have been asserted by the sentences in that nonactual situation.) Kaplan argues that whereas what (6) asserts would be false, what (5) asserts would still be true. The indexical 'this table' is rigid, referring to the same table in each possible world, whereas the description 'the table pointed to by a gesture accompanying this token' is nonrigid referring to whatever table fits that description in the possible world. So the demonstrative is not synonymous with the description.

Aside from this, a general theoretical consideration counts against a description theory of indexicals. We have noted the essential incompleteness of description theories (Sect. 3): even if a description theory is right for some word, the theory's explanation must rest ultimately on the reference of some other words which must be explained nondescriptively. Indexicals seem to be the most plausible candidates for nondescriptive explanation, more so even than proper names or natural-kind words: indexicals seem to be the place where language stands in its most direct relationship to the world.

In seeking a nondescriptive theory, it helps to follow Kaplan in dividing indexicals into two groups: 'pure indexicals' like 'I', 'here', and 'now', and 'demonstratives' like 'she', 'that', and 'this table'. The nondescriptive explanations of pure indexicals are fairly

simple: 'I' designates the speaker of the utterance; 'here' designates the place of the utterance; 'now' designates the time of the utterance; and so on. (These explanations may seem to be description theories once again, but they are crucially different. For example, the last explanation is not that 'now' designates the time of the utterance because it is synonymous with an associated description 'the time of this utterance' but rather, because it is governed by the rule that it designates that time.) Demonstratives are more tricky.

There are three basic ideas for a nondescriptive explanation of demonstratives. According to the first, a demonstrative designates the object demonstrated by the speaker. One problem with this idea is that a demonstration is often so vague that it alone would not distinguish one object from many others in the environment. A more serious problem is that demonstratives are not always accompanied by a demonstration. Thus, where only one table is salient in the environment, the speaker may use 'this table' without a demonstration. And reference is often to an object that is not around to be demonstrated; for example, 'That drunk at the party last night was offensive'.

According to the second idea for a nondescriptive explanation, a demonstrative designates the object that the speaker intends to refer to. Even if this is so, it does not take us far because it raises the question: In virtue of what does the speaker intend to refer to that object? This is very similar to the original problem.

According to the third idea - urged, for example, by Edmund Husserl (1900-01) - a demonstrative designates the object in which it is perceptually based (cf. the perceptually based grounding of a name according to the historical-causal theory). So 'this table' designates a certain table in virtue of the fact that it was perception of that table that led to the utterance; similarly 'that drunk at the party' designates the person that caused the remark.

6 Descriptions

Definite descriptions have the form, 'the F', and indefinite descriptions the form, 'a/an F'. In his 'theory of descriptions', Russell (1905) claimed that 'the F is G' is equivalent to 'there is something that is alone in being an F and it is G'; and 'an F is G' is equivalent to 'there is something that is an F and it is G'. So the descriptions are to be understood in terms of the the general term, 'F' and the existential quantifier, 'there is something' (see DESCRIPTIONS).

Under the influence particularly of Donnellan (1966), many now think that a description is 'ambiguous', having not only this 'attributive' meaning captured by Russell but also a 'referential' meaning like that of a name or demonstrative (see REFERENTIAL/ATTRIBUTIVE).

It has been generally agreed that descriptions have a referential use as well as an attributive use. Used attributively, 'the F' conveys a thought about whatever is alone in being F and 'an F', one about some F or other. Used referentially, each description conveys a thought

about a particular F that the speaker has in mind, about a certain F. Thus, consider (7), 'The murderer of Smith is insane', used in the following two contexts. (i) We come upon Smith foully murdered. We have no idea who is responsible but the brutal manner of the killing leads us to utter (7). Its description is used attributively. (ii) We observe Jones on trial for Smith's murder. The oddness of his behavior leads us to utter (7). Its description is used referentially.

Next, consider (8), 'A man in a red cap stole Anne's computer', used in the following two contexts. (iii) Anne's computer is discovered missing in the morning. We find signs that the burgler made a hasty escape dropping a red cap in the ally. This leads us to utter (8). Its description is used attributively. (iv) After discovering that the computer is missing we remember noticing a man in a red cap behaving suspiciously earlier in the day. We utter (8) to report our suspicions to the boss. Its description is used referentially.

Despite agreement that there are these two uses, there is no agreement that descriptions are ambiguous. Appealing to ideas prominent in the work of Paul Grice (1989), many have defended Russell. They argue that a speaker can use a description referentially, thus making the object in mind the speaker referent, even though that object is not the semantic referent. Whether a speaker has an object in mind or not, the truth conditions of the sentence are as specified by Russell. The referential use is pragmatically different from the attributive use but not semantically so (see PRAGMATICS; SPEECH ACTS; IMPLICATURE). Thus, in context (ii), although Jones is the speaker referent, the truth of (7) will depend on the sanity of whoever murdered Smith, whether Jones or not. And in context (iv), although the suspiciously behaving man is the speaker referent, the truth of (8) will depend on whether some man or other in a red cap stole the computer.

Against this, many have found reasons for thinking that in contexts like (ii) and (iv) the speaker referent is also the semantic referent and hence that descriptions are semantically ambiguous after all. Some of these reasons - for example, those arising from misdescriptions of the object in mind and from the behavior of descriptions in opaque contexts - have not stood up well. Others seem more promising. (a) Not only can we use descriptions referentially, it seems that we regularly do so. This regularity suggests that there is a convention of so using descriptions. If there is, then it is hard to see why the convention is not semantic. (b) In their referential uses descriptions seem to have roles just like demonstratives; 'the F' and 'an F' function like 'that F' and are similarly based on perception of a particular object. To try to treat these demonstratives like Russellian descriptions would be to give a description theory of them, and we have just noted problems for this (Sect. 5). (c) Definite (but not indefinite) descriptions seem to have the same range of anaphoric roles as a pronoun like 'she' (Sect. 7). We might then expect them also to share the pronoun's role as a demonstrative which, to repeat, seems not to be Russellian. (d) Consider the utterance, 'The book is on the table'. In the right circumstances, this will seem true and yet, on the Russellian view, it must be false: since the world is full of books and tables the two definite descriptions

fail to describe unique objects. The obvious modification to save the Russellian view is to treat these 'incomplete' descriptions as elliptical. But this modification has problems. A speaker may have many ways to complete the description and there may be no basis for saying that any one is the correct way. Alternatively, trying to complete the descriptions may lead to the familiar problems of ignorance and error.

Another argument against the ambiguity thesis appeals to rigidity. If referential uses of descriptions were semantically significant then, it is claimed, they should be rigid like names and demonstratives. Yet they do not seem to be. Thus, consider the use of 'Smith's murderer' in context (ii) above. 'Smith's murderer is insane' does not seem to be true in a world where Smith is alive and well even if Jones is insane. However, this argument has a problem: the referential use of the demonstrative 'that murderer' would equally seem to fail this rigidity test in these circumstances (hence suggesting a need to revise Kaplan's claims about demonstratives; Sect. 5). Yet a demonstrative surely has a semantically significant referential use. If so, then a description may have one too despite not being rigid.

7 Other terms

Many terms that we have not discussed - like adjectives, adverbs, and verbs - are naturally taken to refer. It is certainly no easier to explain reference for these terms than for the terms discussed, but we may hope that doing so will not pose sharply different problems.

What about sentential operators like 'and' and 'not' and the quantifiers 'every pen', 'some stones', 'most dogs' and 'few bachelors' (see QUANTIFIERS)? Perhaps these should be seen as largely 'syncategorematical'. If we are prepared to accept the existence of certain abstract entities, however, we can take these expressions as referential also. Thus we can take 'and' as denoting a 'truth function' conjunction which is such that the sentence 'p and q' is true if and only if 'p' is true and 'q' is true. The quantifiers involve a 'determiner' and a general term and can be taken as applying to sets. Thus 'most dogs' involves the determiner 'most' and the general term 'dogs' and can be taken as applying to any set that contains more than half the dogs; and the sentence 'most dogs bark' is true if and only if there is such a set and 'bark' applies to all its members.

In virtue of what do these expressions have these referents? The most promising answer for the sentential operators has two stages. We start by describing the 'conceptual role' of the operator in deductive, inductive, and practical inferences. For a token to denote conjunction it must have the appropriate conceptual role. But in virtue of what should we assign to a token with that role the denotation conjunction rather than, say, disjunction? Because, under that assignment, deductive inferences are truth-preserving, inductive inferences are reliable, and so on. A similar line is presumably part of the answer for the quantifiers: 'most dogs' applies to any set containing most dogs not, say, to any set containing a few cats partly

because of the reference of 'dogs' and partly because of the conceptual role of the determiner 'most' and the reliability of inferences. A worrying feature of both these answers is that they seem to make widespread irrationality impossible.

Finally, we must consider anaphoric terms. Pronouns, and even definite descriptions, often depend for their reference on other expressions in their verbal context. Thus 'one' in 'John owns a car and Alice owns one too' is 'a pronoun of laziness', going proxy for the noun phrase 'a car' in the preceding conjunct. And consider 'he' in 'John is happiest when he is alone' and in 'Every man knows a woman that he admires'. In the former sentence 'he' is naturally seen as coreferential with 'John', in the latter, as 'bound by' the quantifier 'every man' and so functioning like a bound variable in logic.

Geach (1962) has argued that all anaphoric pronouns are either pronouns of laziness or bound by quantifier antecedents. Against this Evans (1985) has argued that some pronouns with quantifier antecedents are unbound. He calls these 'E-type'. (i) Consider (9): 'Few congressmen admire Kennedy, and they are very junior'. If 'they' were bound by 'few congressmen', (9) should mean that few congressmen both admire Kennedy and are very junior. But it does not: (9) entails that few congressmen admire Kennedy, period; and that all of those are very junior. (ii) If 'they' were bound in (9), then we should be able to substitute any quantifier for 'few congressmen' and still make sense. But 'No congressmen admire Kennedy, and they are very junior' does not make sense. (iii) Last, consider (10): 'If many men come to the ball, Mary will dance with them'. The quantifier 'many men' could bind 'them' only if (10) meant 'Many men are such that if they come to the ball Mary will dance with them', which is not the natural reading. As a result of these considerations and others - particularly pronouns in one person's sentence that are anaphoric on quantifiers in another person's - it is generally agreed that Evans has identified a distinct type of pronoun.

However, Evans' view of this type has been challenged. He thinks that the reference of such a pronoun is determined in a Russellian way by a definite description that can be derived from its quantified antecedent; thus, the reference of 'they' in (9) is determined by 'the few congressmen who admire Kennedy', and that of 'them' in (10) by 'the many men who come to the ball'. Because these are definite descriptions, for (9) to be true all the Kennedy admirers must be junior, and for (10) to be true Mary must dance with all the men who come. This consequence does not seem to generalize. 'Some congressmen admire Kennedy, and they are very junior' seems to be compatible with some other congressmen admiring him and not being very junior. The problem is more acute in singular cases: 'Socrates owned a dog and it bit him' seems to be compatible with Socrates owning another dog which did not bite him. Finally, there are the formidably difficult 'donkey sentences': 'Every man that owns a donkey beats it' and 'If John owns a donkey, he beats it'. On one reading, these sentences concern not simply the unique donkey of each donkey owner but all the owner's donkeys.

8 Naturalizing reference

From a naturalistic perspective, reference must ultimately be explained in scientifically acceptable terms. Attempted explanations have appealed to one or more of three causal relations between words and the world: historical, reliable, and teleological.

1. Kripke, Donnellan, and Putnam (Sect. 4) did not claim to be naturalizing reference, but their theories, together with the role that perception of an object may play in determining the reference of demonstratives and referential descriptions (Sects 5 and 6), suggest the idea that reference might be explained naturalistically in historical-causal terms: a token refers to the object that played the appropriate role in causing it. But this idea, developed by Devitt, faces the 'qua'-problem. In virtue of what is, say, 'Aristotle', perceptually grounded in a 'whole object' and not a time-slice or undetached part of the object, each of which is equally present and causally efficacious? The problem is more pressing for natural-kind words. 'Horse' is grounded in a few horses. But those objects are not only horses, they are mammals, vertebrates, and so on; they are members of very many natural kinds. Indeed, any horse is a member of indefinitely many nonnatural kinds: it may be a pet, an investment, and so on. In virtue of what is 'horse' grounded in an object qua horse rather than qua mammal, pet, or whatever? So in virtue of what does it refer, as a result of such groundings, to all and only horses rather than all and only mammals, pets, or whatever (see SEMANTICS, ???)?

2. Under the influence particularly of Fred Dretske (1981) and Jerry Fodor (1990), 'reliabilist', 'informational', or 'indicator', theories have been popular. The basic idea is that a token refers to objects of a certain sort because tokens of that type are reliably correlated with the presence of those objects; the tokens are caused by those objects. The token 'carries the information' that a certain situation holds in much the same way that tree rings carry information about the age of a tree. There is a problem. How can the theory allow for error? Occasionally we see a muddy zebra and wrongly think 'horse'. So, some zebras are among the things that would cause tokens of 'horse'. What 'horse' is reliably correlated with is really the presence of horses, muddy zebras, the odd cow in bad light, So according to reliabilism, it should refer to horses, muddy zebras, the odd cow ... (with the result that that it was not wrong to think 'horse' after all). The problem is that many things that a token of a certain type does not refer to, including some denizens of Twin Earth, would cause a token of that type (see SEMANTICS, ???).

3. According to a teleological theory, most fully developed by Ruth Millikan (1984), the reference of a token is explained in terms of its function, where that function is explained causally along Darwinian lines: a token's function is what tokens of that type do that explains why they exist. This theory deals neatly with the problem of error because something - for example, sperm - can have a function which it does not reliably perform. An immediate consequence of the theory is that a token of a type that has not evolved will lack a

referent. So the 'thoughts' and 'utterances' of an exact replica of Russell created by some cosmic accident would have no reference. This strikes many as implausible but is accepted by the theory's proponents. To complete the theory it must be shown that tokens - even a belief like 'computers make writing easier' which could not plausibly be taken as innate - have a function in the required biological sense and that this function does indeed relate the token to its referent. Millikan has attempted this formidable task (see SEMANTICS, TELEOLOGICAL/BIOLOGICAL).

9 Further issues

Terms in 'opaque' or 'intensional' contexts cannot be seen as having their usual referential roles. For, in these contexts, particularly those of propositional attitude ascriptions (see OPACITY, PROPOSITIONAL ATTITUDE ASCRIPTIONS; INTENSIONALITY), the replacement of a term by a coreferential term may not preserve truth.

There are a range of what might be called 'negative' views of reference. (i) Some philosophers have a 'deflationary' view according to which there is nothing more to referential notions than is captured by all instances of a schema like 'e designates a', where what is substituted for 'a' 'translates' what is named by the term substituted for 'e'; 'Socrates' designates Socrates' is a typical instance. This view accompanies a similarly deflationary view of truth (see TRUTH). (ii) W.V Quine (1960) argues that even once the translation of a sentence has been fixed the reference of any part of the sentence is inscrutable; thus there is no fact of the matter whether an alien's 'Gavagai' in response to an environment of rabbits refers to rabbits, undetached rabbit parts, time slices of rabbits, and so on (see INDETERMINACY OF MEANING AND TRANSLATION). Related to this, Donald Davidson (1984) takes an instrumentalist attitude to reference, denying any need for, and possibility of, a theory of reference. And Putnam (1983) gives a model-theoretic argument that reference is indeterminate because any theory has unintended models. (iii) Kripke (1982) presents an argument which he finds in Ludwig Wittgenstein's discussion of rule following that the meanings and references of terms are not determinate (see MEANING AND RULE FOLLOWING). (iv) Less sweepingly, Hartry Field (1973) has argued that in some cases there is no determinate matter of fact whether a term refers to one thing or another and we should see it as 'partially referring' to both; for example, 'mass' as used by Newtonians does not determinately refer to either proper mass or relativistic mass but partially refers to both. (v) Finally, those in the 'structuralist' tradition reject reference, and hence its role in meaning, altogether. They apparently think that the only possible theory of reference is one according to which a word resembles what it refers to. But his theory is refuted by the fact that language is arbitrary, by the fact that anything could be used to mean anything. Reference is thus left as simply 'God-given', which is unacceptable (see STRUCTURALISM IN LINGUISTICS; SEMIOTICS).

Finally, views on reference can bear on realism about the external world (see REALISM AND ANTI-REALISM). Thus, Putnam draws anti-realist conclusions from his model-theoretic argument. And consider the consequences of a holistic description theory for scientific terms. When, in time, we come to replace a scientific theory with another, it is natural to think that part of the reason we do so is that the theory does not accurately describe reality. Combine this thought with the holistic view that the reference of each term in the theory is determined by its associations with all other terms in the theory, and we get the consequence that all terms in the theory fail to refer. So, it was a mistake to believe in the entities apparently referred to by that theory. Worse, it is probably a mistake to believe in the entities of our present theory, for that theory will surely be replaced in time too. So we should not be scientific realists. Indeed, these considerations lead Thomas Kuhn (1970) and others to constructivism, a radically relativistic anti-realism: rather than saying that the replaced theory does not describe reality, they say that it describes its reality, a reality that only exists relative to that theory. Each theory has its own reality and no sense can be made of scientific entities existing 'absolutely'. This line of thought can be resisted by rejecting the holistic description theory of reference in favor of a localist theory, perhaps one explaining reference in terms of causal relations to reality (see SCIENTIFIC REALISM; HOLISM/ATOMISM IN SEMANTICS).

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