

THE
DEVELOPMENT
OF LOGIC

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Haec autem est dialectica, cui quidem omnis veritatis seu falsitatis discretio ita subiecta est ut omnis philosophiae principatum dux universae doctrinae atque regimen possideat.

ABELARD

Lockius aliique qui spernunt non intelligunt.

LEIBNIZ

Neque enim leges intellectui aut rebus damus ad arbitrium nostrum, sed tanquam scribae fideles ab ipsius naturae voce latas et prolatas excipimus et describimus.

CANTOR

Inimicus Plato, sed magis inimica falsitas.

TARSKI

OXFORD
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time over his first attempt to bring order out of chaos. As part of the *Organon*, the *Topics* continued to influence students of philosophy until the seventeenth century, but we cannot in retrospect say that it has contributed much to the development of logic, except indirectly through the impulse it gave to the elaboration of the medieval theory of *consequentiae*.

Whereas in the *Topics* the word 'syllogism' was used in accordance with its etymology for any conclusive argument from more than one premiss, in the *Analytics* it is used in a narrower sense for a piece of reasoning that relates two general terms by means of a middle term; and in several passages of the *Prior Analytics* Aristotle claims that all proof, properly so called, involves such reasoning.¹ His elaboration of the rules of syllogistic is Aristotle's chief title to fame as a logician, but it must be recognized that the development to which we have just drawn attention represents a restriction of interest. Aristotle came to think that the study of syllogisms in his narrow sense was the central part of the study of reasoning, because he came to believe that in every statement worth serious consideration as a thesis of science one general term was asserted or denied of another, either universally or in part. Thus in the first of the passages mentioned above where he tries to explain the central importance of syllogistic he begins by saying: 'It is necessary that every demonstration and every syllogism should prove either that something belongs or that it does not, and this either universally or in part.'² If it is assumed also that statements admissible as premisses must be of the same general form, the rest follows, as we shall see when we examine his theory in detail. But it may be asked why in his later works he attached so much importance to general statements of the kind noticed here. Special attention to such statements is evident already in the doctrine of the predicables which Aristotle used throughout his *Topics*, and it is implicit in the Platonic doctrine of the interconnexions of forms, from which we must suppose that his inquiry began. When Aristotle asserted that nothing could count as proof unless it established a proposition of the kind noticed, he was merely stating dogmatically what he had generally assumed at an earlier date. But the hardening of the dogma seems to have occurred in connexion with the working out of the theory of science presented in the *Posterior Analytics*.

In what follows we shall be concerned chiefly with the doctrine of the *Prior Analytics*, though we shall have occasion to consider also what Aristotle says in his *De Interpretatione*.

¹ *An. Pr.* i. 23 (40^b16); i. 29, 30 (45^a23); ii. 23 (68^b8).

² *An. Pr.* i. 23 (40^b23).

4. Aristotle's Theory of Meaning and Truth

The introductory chapters of the *De Interpretatione* appear to be closely linked with Plato's discussion of truth and falsity in the *Sophist*; for Aristotle begins by saying that the terms 'noun' (*ὄνομα*), 'verb' (*ῥῆμα*), and 'proposition' or 'statement' (*λόγος*) must be defined. Like Plato he considers both the spoken words and the mental experiences (*παθήματα*) or thoughts (*νοήματα*) of which they are said to be the symbols. He implies that it is the thoughts to which the predicates 'true' and 'false' primarily belong, apparently on the ground that while the spoken words are different for different peoples, the thoughts and the things of which they are resemblances (*ὁμοιώματα*) are the same for all alike. The truth or falsity of the spoken word is derivative.¹

Aristotle also follows Plato in two other contentions. First he says that every thought or part of discourse which is to be true or false must be composite. The noun or verb taken alone has significance (*σημαίνει τι*), but is not true or false.² Secondly, he recognizes that spoken words are significant by convention (*κατὰ συνθήκην*).³ He distinguishes the noun from the verb by saying that the former is 'without time' (*ἄνευ χρόνου*)⁴ while the latter 'signifies time in addition' (*προσσημαίνει χρόνον*).⁵ It appears that he thinks of verbs as being always in some definite tense, past, present, or future, i.e. that he rejects the notion of timeless predication. This is not certain, however; for there is a distinction at the end of chapter 1 of the *De Interpretatione* between the use of the verb 'to be' 'simply' and 'according to time' (*ἢ ἀπλῶς ἢ κατὰ χρόνον*) which might be interpreted as a contrast between tensed and untensed assertion.⁶ Possibly Aristotle wished to allow what has been called the omnitemporal use of the present tense (which covers the past and future as well as the present) but to deny any strictly timeless predication on the ground that this was bound up with the Platonic metaphysics of the realm of timeless Forms, which he had abandoned. If so, this step had serious consequences for his philosophy of logic, as we shall see later.

Aristotle distinguishes among sentences (*λόγοι*) a special class to which alone it belongs to be true or false. These are declarative sentences as distinct from prayers and other utterances which are not true or false, although they have complete meaning. Aristotle's technical name for the declarative sentence is *ἀπόφανσις* or *λόγος*

¹ *De Interpretatione*, 1 (16^a9).

³ *Ibid.* 2 (16^a19). Cf. Plato's *Cratylus*, 384D.

⁵ *Ibid.* 3 (16^b6).

² *Ibid.* 1 (16^a13).

⁴ *De Interpretatione* 2 (16^a19).

⁶ Cf. also *An. Pr.* i. 15 (34^b7).

ἀποφαντικός.¹ It has been usual among logicians to follow Aristotle's lead here and to dismiss prayers, commands, &c., as having only rhetorical interest. We shall see that there is some confusion in this attempt to delimit the sphere of logic.

Although the notions of truth and falsity are essential to his explanation of ἀποφαντικός λόγος, Aristotle does not commit himself to any definition of these in his logical writings. In the *Metaphysics*, however, we find the following: 'For it is false to say of that which is that it is not or of that which is not that it is, and it is true to say of that which is that it is or of that which is not that it is not.'² Here again Aristotle follows the doctrine of Plato's *Sophist*.

The first four chapters of the *De Interpretatione* are perfunctory. Aristotle seems impatient to get on to his discussion of contradictory pairs and the formal classification to which it leads. Like others who have made logical discoveries of the first importance, he is somewhat impatient of the philosophy of logic; it is too troublesome to be really clear about the preliminaries. Unfortunately the neglect of these can lead to some logical trouble. In the case of Aristotle the result is the very odd and puzzling thesis to which he commits himself in chapter 9 of the *De Interpretatione*.

Before giving an account of this, it is convenient to say here that Aristotle accepts in general the principles which came to be known later as the Law of Contradiction and the Law of Excluded Middle. These are stated in several passages of his *Metaphysics* (including one which contains the definitions of truth and falsity quoted above) and run as follows:

'The principles of demonstration . . . as for example that it is necessary in every case either to affirm or to deny and that it is impossible simultaneously to be and not to be.'³

'The firmest of all first principles is that it is impossible for the same thing to belong and not to belong to the same thing at the same time in the same respect.'⁴

'It is not possible that there should be anything between the two parts of a contradiction, but it is necessary either to affirm or deny one thing of any one thing.'⁵

The first and third of these passages offer alternative formulations of the Law of Excluded Middle, while the first and second give less and more elaborate forms of the Law of Contradiction.

In chapter 9 of the *De Interpretatione* Aristotle questions the

¹ *De Interpretatione*, 4 (17^a2 ff.).

³ *Metaphysics*, B, 2 (996^b26-30).

⁴ *Ibid.* I, 3 (1005^b19-23).

² *Metaphysics*, I, 7 (1011^b26-27).

⁵ *Ibid.* I, 7 (1011^b23-24).

assumption that every declarative sentence is true or false. It might seem that he is clearly committed to this thesis already, but this is not so; for when he says that to be true or false belongs to declarative sentences alone, this may be taken to mean that only these are capable of being true or false not that they all necessarily are. The principle that every statement¹ is true or false is called the Principle of Bivalence and has been distinguished from the Law of Excluded Middle² which is generally formulated 'Either P or not-P', where 'P' marks a gap into which a declarative sentence may be inserted. Given the definitions of truth and falsity which we have quoted the principles are, however, obviously equivalent; for if 'It is true that P' is equivalent to 'P' and 'It is false that P' is equivalent to 'not-P', 'P or not-P' is plainly equivalent to 'It is true that P or it is false that P'. It is important to make the distinction here for what Aristotle appears to be doing in this chapter is to question the Principle of Bivalence while accepting the Law of Excluded Middle. It is not altogether surprising that he should do this for he approaches the main question of *De Interpretatione* by constructing the notion of a contradictory pair (ἀντίφασις). This is defined as a pair of statements in which the same thing is respectively asserted and denied of the same thing.³ It is not obvious that in the case of every such pair, the one must be true and the other false. Aristotle finds one exception to this rule in the case of indefinite statements for, he says, 'Man is white' and 'Man is not white' are both true.⁴ It is, therefore, quite conceivable to him that statements about the future should constitute another exception, although of a different kind.

He is puzzled by an argument which may be set out as follows. In accordance with the Law of Excluded Middle we can say today:

- (1) Either there will be a naval battle tomorrow or there will not be a naval battle tomorrow.

And this seems to be equivalent to the assertion:

- (2) Either the statement 'There will be a naval battle tomorrow' is true and its negation false or vice versa.

But it seems reasonable to say also:

- (3) If it is true now that there will be a naval battle tomorrow, it is necessary in relation to this fact about the present that

¹ We use the word 'statement' here as conveniently ambiguous between the notion of a declarative sentence and another notion which will be explained below.

² By J. Lukasiewicz, appendix to 'Philosophische Bemerkungen zu mehrwertigen Systemen des Aussagenkalküls', *Comptes rendus des séances de la Société des sciences et des lettres de Varsovie*, 1930, and *Aristotle's Syllogistic*, p. 82.

³ *De Interpretatione*, 6 (17^a34).

⁴ *Ibid.* 7 (17^b30).

there should be a naval battle tomorrow; and similarly if it is true now that there will not be a naval battle tomorrow, it is necessary in relation to this fact about the present that there should not be a naval battle tomorrow.

And from (2) and (3) taken together there follows the conclusion:

- (4) What is to happen tomorrow is determined already in any case apart from anything we may do, and so all deliberation is useless.

There is clearly something wrong in this short proof of fatalism, and Aristotle does right to reject it; but his solution of the puzzle is not at all clear. He seems to admit (1) and (3) and the fact that (4) follows from (2) and (3) taken together but to deny that (2) follows from (1). For while he asserts that 'everything must either be or not be, be about to be or not to be',¹ he also says: 'It is not necessary that of every affirmation and denial of opposed statements one should be true and the other false. For in the case of that which exists potentially but not actually the rule which applies to that which exists actually does not hold good.'² This appears to mean that the disjunction of a statement and its negation can be true without either the original statement or its negation being true. In other words Aristotle is trying to assert the Law of Excluded Middle while denying the Principle of Bivalence. We have already seen that this is a mistake, and it is especially surprising in a chapter where Aristotle has given explanations of truth and falsity that reveal the source of the error.³ But it seems to have been widely held in antiquity that there is a connexion between the Principle of Bivalence and determinism. The Stoics, who were determinists, held strongly to the principle, whereas Epicurus thought he had to deny it in order to maintain the doctrine of free-will.⁴ Though Aristotle does not say so, it may be that when he wrote there was already current a sophistic objection to deliberation such as these later philosophers discussed under the name of 'the lazy argument' (*ὁ ἀργός λόγος*).⁵

What is wrong with the argument for fatalism set out above is not (2) but (3) and the transition from (3) to (4). The mistake here arises from confusion concerning the nature of truth and

¹ *De Interpretatione*, 9 (19^a27-30).

² *Ibid.*, 9 (19^a39-19^b4).

³ Cicero, *De Fato*, 21 and 37.

⁴ We here follow the customary interpretation of this chapter as given, for example, by Boethius (*Commentarii in Librum Aristotelis Ἐπι Ἐρμηνείας, Secunda Editio*, ed. Meiser, pp. 248-9). It was rejected by Abelard (*Dialectica*, p. 221), and has recently been attacked by Miss G. E. M. Anscombe in *Mind*, lxx (1956), pp. 1-15.

⁵ *Ibid.*, 9 (18^a39-18^b2).

falsity. We have already seen in discussing Plato's views that there is a natural tendency to suppose that the predicates 'true' and 'false' can properly be applied to sentences or forms of words, i.e. to *λόγοι* in Plato's terminology, which is followed by Aristotle. This springs naturally from language; for we say that what people say is true or false, and what they say (in one sense of 'say') is obviously a sentence. This way of thinking and speaking leads us to talk of something 'becoming true', 'remaining true for some time', or 'being true at one time but not at another'. For if we consider such a sentence as 'I am sitting by a stove', it is tempting to say at a given time that it is true at that time, but was not true earlier and will not be true later. Aristotle himself notices and explicitly adopts the usage in another place.¹

A little reflection shows that this account of the proper subject for the predicates 'true' and 'false' is unsatisfactory. Two persons may utter the above sentence simultaneously, one speaking truly and the other falsely. This fact had already puzzled the author of the *δύσσοι λόγοι*. It is not the sentence or form of words which is true or false, but what is expressed by it. The word 'proposition' has often been used in modern times to convey this notion and it is, on the whole, the most convenient for the purpose. In order to avoid all confusion it is necessary, however, to distinguish here a number of interrelated notions.

(1) A *token-sentence* is a sentence in that sense in which we may say 'He hesitated in the middle of his first sentence' or 'The sentence on the blackboard is badly written'.² A sentence in this sense is a particular set of sounds or marks occurring at a definite time or existing for a definite period.

(2) A *type-sentence* is a sentence in that sense in which the same sentence may be said to occur many times. When grammarians talk of sentences, they commonly refer to type-sentences. A sentence in this sense is a complete pattern of sounds or marks having meaning. It is not the sounds or marks in abstraction from the fact that they have meaning; for we should not call a set of sounds or marks a sentence unless we at least believed that it had meaning. Nor, on the other hand, is it a meaning or content considered in abstraction from all determinate marks; for we cannot speak properly of the same sentence in different languages, but only of corresponding sentences.

(3) A *statement in the grammarian's sense* is an indicative or declarative sentence, where 'sentence' means 'type-sentence'. In

¹ *Cat.* 5 (4^a23).

² Cf. C. S. Peirce's distinction between token-word and type-word in *Collected Papers*, iv. § 537.

this sense statements are distinguished from prayers, commands, &c., just as Aristotle distinguished *ἀποφαντικοὶ λόγοι* from all other *λόγοι*.

(4) To *make a statement* is to utter an indicative sentence for the purpose of asserting something and the meaning of 'statement' in this context is not the same as the grammarian's sense noticed above. For, as we have seen, persons who utter the same indicative sentence do not necessarily make the same statement, and one person may make different statements by uttering the same indicative sentence on different occasions, e.g. by saying on different days 'Today I am sitting in front of a stove'. On the other hand, a man may utter two different indicative sentences at different times and thereby make the same statement twice, e.g. by saying on successive days 'I am sitting by a stove today' and 'I was sitting by a stove yesterday'. Moreover, it is not the case that the speaking or writing of an indicative sentence is always the making of a statement. Acting, fiction-writing, and reporting other people's statements are obviously exceptions. It should further be noticed that when we make a complex (e.g. conditional) statement, we do not thereby make all the statements which we should make by using the subordinate clauses alone as complete sentences. Thus someone who says 'If Charles entered for the race, James didn't come in last' does not state that Charles entered or deny that James came in last, although there is certainly something expressed by each of the subordinate clauses.

(5) A *proposition* or *propositional content* is that which is asserted in the making of a statement or expressed without assertion in the production of a subordinate clause such as those we have just considered. Clearly it is to propositions that the predicated 'true' and 'false' apply fundamentally. For in order that these words should have application it is not necessary that any particular sentence should have been spoken or written nor yet that any statement should have been made previously. What is expressed by the protasis or apodosis of a conditional statement may rightly be characterized as true or false. The notion of a proposition has given rise to some philosophical difficulties which will be noticed later, but there can be no serious doubt of the facts of usage reported here. Sentences and clauses which express propositions may both alike be described as propositional signs. In medieval Latin *propositio* was used in the sense of 'propositional sign' and 'proposition' sometimes has this meaning in older English, but in modern usage it is equivalent to 'propositional content.'

(6) A *designation of a proposition* is a 'that' clause or some linguistic equivalent. Such linguistic devices must be allowed to the

logician if he is to discuss propositions, which he plainly must in order to elucidate the notion of validity. In modern European languages the device of inverted commas is sometimes used as a means of designating the proposition which could be expressed by the use of the indicative sentence inside the inverted commas, e.g. 'He said, "I didn't hear you"', which was true enough'. This use of inverted commas is to be distinguished from their use to form the designation of a type-sentence, e.g. 'He said, "Ah've not 'eerd thi"', which she didn't understand'. The distinction is made clear by the consideration that in translating the first sentence, we can translate the part inside inverted commas without altering the sense, or affecting the point, of the whole, whereas we cannot do this with the quotation in the second sentence.

Having made these distinctions, it is possible to show clearly where Aristotle made his mistakes in the *De Interpretatione*. The argument in chapter 9 is faulty because he thinks of the predicates 'true' and 'false' as applicable to something (probably a sentence) at a certain time. What puzzles him is the fact that we can say, 'It is *now* true that there will be a naval battle tomorrow'. But the 'now' is superfluous. It may seem at first sight peculiarly uninformative to say, as Aristotle himself does in his *Metaphysics*, 'He speaks truly who says of what is that it is and of what is not that it is not'. But it is just this feature that has commended Aristotle's definition to later logicians who are anxious to avoid unnecessary metaphysical puzzles concerning the nature of truth. And their approval is justified; for Aristotle's definition gives the most important fact about the predicate 'true', namely that, if 'P' is any propositional sign, the proposition that-P and the proposition that it is true that-P mutually entail each other. This holds also when the propositional sign is a sentence in the future tense. For it is true that there will be a naval battle tomorrow if, and only if, there will be a naval battle tomorrow. By introducing the phrase 'it is true that' we make no assumption about determinism which is not made by use of the simple sentence in the future tense. We mislead ourselves, however, when we speak, as Aristotle does, of its being true *now* that there will be a naval battle tomorrow, for we thereby induce ourselves to suppose that *this* will not be true tomorrow evening, when the battle is over, but something else will, i.e. 'There has been a naval battle today'. Two different *sentences* are plainly involved here, but they both express the same proposition in the sense that to convict any person who uttered either of error would also be to convict of error any person who uttered the other at the appropriate time.

The system of tenses in a language is a device whereby we

indicate the temporal relation of our spoken or written sentence (i.e. token-sentence) to the events of which we speak or write. A verb with a tense is, therefore, like the demonstratives, a 'token-reflexive' word, i.e. on each occasion of use it indicates the object of discourse by relating it to the token of itself which is then uttered or written.¹ To say 'He walked' is to indicate that the walking occurred before the utterance of the sentence, while 'He walks' indicates that it is contemporaneous, and so on. Tenses or some similar device are therefore indispensable for the complete expression of singular propositions, i.e. those about unique events; for any system of dating which may be offered as an alternative must be explained by reference to the time of the utterance through which it is introduced.

The phrase 'to be true' is used in all tenses and there are somewhat complicated rules which govern its combination with the tenses of the subordinate clause. Thus we have, for example, 'It was true that there would be a naval battle', 'It is true that there has been a naval battle', and 'It is true that there will be a naval battle'. The important thing to note is that in all cases the verb 'to be' with 'true' can be eliminated in such a way as to leave a sentence expressing a proposition which entails and is entailed by the proposition expressed by the original sentence. Thus the first of the sentences above can be replaced either by 'There is a naval battle' or by 'There was a naval battle', according to circumstances, the second by 'There has been a naval battle', and the third by 'There will be a naval battle'. The use of 'is true' or 'was true' is determined by conditions of appropriateness other than the truth of the proposition designated by the 'that' clause. It adds no further information. Consequently, 'It is true that there will be a naval battle' does not refer to the time of utterance in any way in which 'There will be a naval battle' does not. In short, no argument for determinism can be drawn from this form of expression, and Aristotle is not obliged to find here any exception to the Principle of Bivalence.

Having made a distinction between sentences and propositions, we can also see why it was unnecessary for Aristotle to exclude prayers, commands, &c., from logical consideration. The linguistic expressions for these are not statements in our first sense of the word, nor do we in uttering them make statements in the second sense of the word. But we cannot formulate a prayer, command, &c., without expressing a proposition, and that proposition must be true or false. Thus in the command 'Shut the door' there is expressed the proposition that the door will be shut, and that is

¹ See H. Reichenbach, *Elements of Symbolic Logic*, p. 284.

in fact true or false. This consideration explains the fact, which is obvious on reflection, that commands or prayers may stand in logical relations to each other and be of various logical forms. If one person says 'Shut the door' and another says 'Don't shut the door', both speaking to the same hearer and in quick succession, they contradict each other. Similarly, there may be conditional requests, e.g. 'Please come, if it is fine', existential questions, e.g. 'Are there people on Mars?', &c.

Statements, commands, requests, &c., are to be distinguished by their different functions in social life. The function of statements is mainly, although not solely, to convey information, that of commands and requests to induce people to do things, and so on. Connected with the fact that a given type of utterance has a certain function is the fact that an utterance not only expresses a proposition but also manifests or evinces an attitude towards the proposition expressed. When we make statements we manifest belief in the propositions expressed; when we give orders we manifest a wish that the propositions expressed should be true. We may be insincere in manifesting any of these attitudes. If we evince belief insincerely we are said to lie, but the notion of lying is not extended to other forms of utterance, except doubtfully to promises. It is because the function of statements is mainly to convey information, i.e. to induce others to accept certain propositions as true, that they are evaluated mainly as true or false, whereas commands are evaluated as wise or unwise, and not solely by consideration of whether or not they are fulfilled. For this reason it is usual to characterize statements in both senses as true or false.

It will be convenient here to enumerate various different uses of 'true' and 'false' and to explain how they are related:

- (1) Propositions are true or false in the basic sense.
- (2) Token sentences are true when they express true propositions.
- (3) Type-sentences of the statement variety are true when they express true propositions. It is the fact that a given type-sentence containing a token-reflexive may express at one time and in one context a true, and at another time or in another context, a false proposition, which led to the puzzle of the *δυσσοι λόγοι* and also to that of chapter 9 of the *De Interpretatione*. It should be noticed that a sentence containing a token-reflexive taken out of context expresses no proposition at all and should not be called true or false, e.g. the sentence 'There will be a naval battle tomorrow' as used in this chapter, being purely illustrative, does not express

any proposition. Such sentences are puzzling because we can say of them that they 'become true', 'remain true for some time', and 'cease to be true', e.g. 'The reigning British monarch is a Queen' has been true at various times in history, is now true and will again cease to be true. This means that at certain times the situation is such that the sentence then expresses a true proposition.

(4) A person makes a true statement when he utters a declarative sentence which expresses a true proposition. He need not be sincere: for it is possible to make a true statement by mistake, believing oneself to be lying.

(5) Beliefs, thoughts, or opinions are true when their expressions would be the expressions of true propositions.

From this account it will be seen that Aristotle made two mistakes in the *De Interpretatione*. In the first place, he was misled by the confusion of sentence and statement on the one hand with proposition on the other into a faulty argument about determinism and so to an unnecessary limitation of the Principle of Bivalence. Secondly, by confining his attention to declarative sentences, he suggested falsely that there cannot be logical relations between utterances of other types. These mistakes are of considerable philosophical interest, but fortunately not of great logical importance. The first is of no importance to Aristotle, because, as we have noticed in our consideration of the *Topics*, he tends to confine his attention to general sentences. The puzzles concerning tenses and token-reflexives do not arise in connexion with general sentences of science, which, if they ever express true propositions, always express true propositions, provided only that the meanings of their constituent symbols remain unaltered. Consequently Aristotle's mistake in chapter 9 of the *De Interpretatione* has no serious consequences for his logic as developed in other parts of the *De Interpretatione* and in the *Prior Analytics*. The second mistake has also no serious consequences, since logic is concerned with the relations between propositions, and once these are worked out, the results can be applied to sentences other than statements.

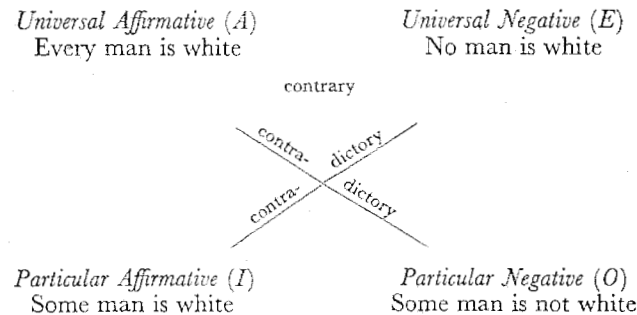
5. *The Four Forms of General Statement*

Aristotle is concerned in the *De Interpretatione* to group statements in pairs such that the second is the denial of the first. Generally, but as we have seen not always, the one will also be the contradictory of the other in the sense that one must be true and the other false. Apart from the dubious case of statements

about the future, the obvious exception to this rule is the indefinite statement, e.g. 'Man is white'. The only way to deny this is to say 'Man is not white', but as Aristotle points out these two statements may be true together.¹ The indefinite statement now drops out of logical consideration. Aristotle says in the *Prior Analytics* that for purposes of syllogistic it is equivalent to the particular statement,² i.e. he treats it, according to the doctrine foreshadowed in the *Topics*,³ as a disjunction of the universal and particular and so equivalent in inferential force to the latter. This provides some justification for treating it as existential.

Putting aside the indefinite statement, Aristotle recognizes three forms of statement which affirm a predicate of a subject, the singular, the universal, and the particular. In a singular statement the subject term is the name of an individual that cannot itself be predicated of anything else, e.g. 'Callias'. In a general statement, on the other hand, the subject term is said to be a symbol for a kind, e.g. 'man' and such that it may be predicated of many individuals. Further, statements which concern kinds may be distinguished according as they are or are not universal in scope. Thus 'Every man is white' is universal because it is about all instances of humanity, and it must be distinguished from the particular statement 'Some man is white'. The most important and influential part of his theory is concerned with the opposition of universal and particular statements.

Combination of the distinction between universal and particular with the distinction between affirmative and negative yields a fourfold classification of general statements according to the following scheme, in which each type is illustrated by Aristotle's own example:



¹ *De Interpretatione*, 7 (17^b30).

² *Topics*, iii. 6 (120^a15-17).

³ *An. Pr.* i. 7 (29^a27).