

SOME REMARKS ON GRICE'S VIEWS ABOUT THE LOGICAL PARTICLES OF NATURAL LANGUAGE

ORIGINAL

In the earlier part of a stimulating series of William James Lectures at Harvard in 1968 Professor H. P. Grice drew the attention of the philosophical public¹ to a most intriguing hypothesis about the familiar logical particles of natural language 'not', 'and', 'if ... then ...', and 'either ... or ...'. I shall henceforth call this the Conversationalist Hypothesis. What it asserts is that those particles do not diverge in meaning, or linguistic function, from the formal-logical symbols, ' \sim ', '&', ' \rightarrow ', and ' \vee ' respectively, as standardly interpreted by two-valued truth-tables, and that wherever they appear to diverge from truth-functionality the appearance is due to the various standing presumptions with which natural language utterances are understood. On the whole Grice argued in favour of this hypothesis, though he confessed to having no answer to one particular objection to it. I shall argue in this paper that the objection to which Grice refers is not, *pace* Grice, a serious one, but that there are good reasons for preferring an alternative account, which I shall call the Semantical Hypothesis, to the Conversationalist Hypothesis. According to the Semantical Hypothesis many occurrences of these particles do differ in significance from their formal-logical counterparts and many do not, and both kinds of occurrence are best explained within the bounds of an adequate semantical theory for natural languages and without recourse to a theory of conversational presumptions.

Grice in fact also included such expressions as 'all', 'some', and 'the' within the scope of the hypothesis that he was supporting. But he offered no arguments about these expressions. So, like him, I shall confine my remarks on the subject to the level of propositional logic. The question of quantification-theoretic idiom is also an interesting one, but it can be left for another occasion.

No doubt philosophers have sometimes mistakenly attributed to the meaning of a word or the analysis of a concept some feature that is more correctly regarded as a condition for the appropriateness of certain utterances involving that word or concept. Such philosophers have been struck, for example, by the oddity of discussing whether or not an action is

voluntary when the action itself is a perfectly satisfactory one; and then they have mistakenly traced this oddity to the meaning of the word 'voluntary' instead of to the conditions for there being some point in remarking of a (voluntary) act that it was voluntary. No doubt there are a number of philosophical errors than can thus be corrected by paying a proper regard to the presumptions of normal conversation. But it is also possible for the pendulum to swing too far in this direction. What is better accounted a feature of linguistic meaning may sometimes be put down to conversational presumptions. This, I shall argue, is what the Conversationalist Hypothesis does in regard to the logical particles of natural language.

One can easily see why the Conversationalist Hypothesis is so tempting. If there are divergences of meaning between 'not', 'and', 'if ... then ...', and 'either ... or ...', on the one hand, and their familiar formal-logical counterparts, on the other, the task of representing the logic of natural language becomes more complicated. If this representation is to be accomplished within a formal theory one or other of two things has to be done.

On one alternative some tailor-made non-truth-functional system has to be constructed with temporal connectives, intensional conditionals, and so on. But at best such a system achieves fidelity of representation in a certain area of language only at the cost of sacrificing conceptual economy and computational facility. More commonly the system throws up its own, more subtle, divergences from natural language.

On the other alternative, the formal theory is offered as a reconstruction, rather than as a description or replication of natural language, and divergences are explained away as being unimportant for logical purposes. For example, if 'if ... then ...' is always reconstructed as the truth-functional ' \rightarrow ', most intuitively valid patterns of deductive inference that involve conditional statements, like *modus ponens*, can be reproduced, and no inference from true premises to false conclusions will ever be validated. But then the system also throws up inferences that seem to have no counterparts in natural language, like that from ' q ' to ' $p \rightarrow q$ '.

To avoid either alternative, and thus escape through the horns of the dilemma, one has to surrender altogether the search for a formal representation and be content with informal descriptions of ordinary usage. But this is to sacrifice all the rigour of treatment, and opportunities for insight, that formal systematisation can provide. No wonder, then, that the Conversationalist Hypothesis should be so tempting. All these

difficulties loom over us as a result of our assuming that 'not', 'and', etc. commonly differ in meaning from their familiar formal-logical counterparts. If that assumption could be safely abandoned, the classical truth-functional systems of Frege and Russell would afford an accurate and economical representation of the fundamental features of the logic of natural language.

Unfortunately, however, tempting though the Conversationalist Hypothesis may be, there are good reasons for rejecting it in favour of the Semantical Hypothesis. I shall discuss each of the four main particles in turn.

I. NOT

According to the usual two-valued truth-table definition of ' \sim ', ' $\sim p$ ' is false whenever ' p ' is true. But there are several dialects or natural languages in which 'not', or its counterparts, do not behave in this way. In several London dialects of English, for example,

- (1) You won't get no beer here

is an emphatic reformulation, not a negation, of

- (2) You'll get no beer here.

I.e., in these dialects (1) is true, not false, when (2) is true. Similar emphatic uses of the negative particle occur in Italian (e.g., 'Non fa niente'), in Spanish and in Homeric and classical Attic Greek.²

How could the Conversationalist Hypothesis be defended against such *prima facie* counter-examples? One possible move would be to say that the Hypothesis is not to be construed as making a claim about natural language in general but only about some dialects of some natural languages, e.g., Standard English. But not only is this not how Grice apparently envisaged the hypothesis that he was discussing. It also substantially weakens the claim that is made. The claim now is that some natural languages or dialects are fundamentally truth-functional, rather than that all are. Instead of purporting to express a general truth about the logic of natural language, it now does no more than describe an idiosyncrasy of vocabulary that is allegedly present in some languages and absent in others.

Another possible move would be to say that the Conversationalist Hypothesis is to be construed as making a claim not about the negative particle 'not', and its counterparts in other languages, but rather about the

phrase 'it is not the case that' and its equivalents. It may well be that those phrases do conform to the usual truth-table definition of the formal-logical constant ' \sim '. However, this is again not how Grice himself apparently envisaged the hypothesis that he was discussing. And in any case the claim made is substantially weakened. It applies only to certain phrases in which 'not' occurs rather than to that word in general.

So perhaps a third possible defence would be offered, viz., that the apparent equivalence between (1) and (2) is not an equivalence of sentential meaning, but an equivalence in force of utterance, due to the bearing of conversational presumptions on our assertions. Now, Grice held that, *ceteris paribus*, participants in a conversation will be expected to observe a general principle that runs roughly as follows: "Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk-exchange in which you are engaged." Several more specific maxims, on Grice's view, will yield results more or less in accordance with this general principle, e.g., 'Make your contribution as informative as is required', 'Don't say what you believe to be false', 'Don't say what you lack evidence for', 'Be relevant', 'Avoid obscurity, ambiguity or unnecessary prolixity', and 'Be orderly'. It is conceivable therefore that in every case in which, in some dialect or other, someone utters a double negative as in (1) with the purport of a single negative like (2), the speaker should be construed to be speaking ironically. That is, we have to presume his obedience to the maxim 'Don't say what you believe to be false', and should therefore infer, from the obvious falsehood of what he says if taken literally, that he must be speaking ironically. There is an implicature, as Grice calls it now,³ of irony: i.e., one has to assume irony in order to maintain the supposition that the cooperative principle and maxims are being observed. If this were the case, the negative particle in (1) would have its usual meaning, in accordance with the truth-table definition of ' \sim ', and the equivalence between (1) and (2) would not be an equivalence of sentential meaning, but the kind of equivalence that exists between an ironical utterance of 'He's a fine person to trust' and a non-ironical utterance of 'He's a bad person to trust'.

But the defence of irony will not work here. First, it doesn't fit the facts. It assumes a quite incredibly wide prevalence of ironical speech. Indeed it implies the use of irony on very many occasions on which the hearer has no reason to believe that in its literal meaning what the speaker says is false, and therefore no adequate reason to believe that he is talking ironic-

ally. Secondly, the defence of irony will be even less plausible when the emphatic double negative occurs in a subordinate clause, as in the antecedent of a conditional or in indirect speech. Compare, e.g.,

If I won't get no beer here, I'll have a cider instead

or

They've tried to fix it so you won't get no beer here.

But, if irony is not at work here, it is very difficult indeed to see in what other way conversational presumptions could lead to the equivalence of uttering (1) with uttering (2) when 'not' is purely truth-functional. Indeed it looks as though this equivalence stems from an equivalence of sentential meaning between (1) and (2).

II. AND

Perhaps it will be said that at least Grice's own dialect is one in which 'not' always functions in accordance with the truth-table definition of '~', and never just adds emphasis to another negative. But what about 'and'? Let us look at some of the data.

Two facts seem incontestable. On the one hand, in some cases the utterance of two sentences conjoined by 'and' asserts more than just the truth of both statements. For example, there is an important difference between what is implied by an assertion, *tout court*, of the sentence

- (3) A republic has been declared and the old king has died of a heart attack

and what is implied by an assertion, *tout court*, of the sentence

- (4) The old king has died of a heart attack and a republic has been declared.

The order of events implied by an assertion of (3) is the converse of that implied by an assertion of (4). On the other hand, in some cases the assertion of two sentences conjoined by 'and' implies no more than the truth of both statements, as in

- (5) The old king has died of a heart attack and a republic has been declared, but I don't know which of these two events preceded the other nor do I wish to suggest some connection tends to exist between two such events.

In these latter cases every bit of additional information that might have been conveyed by the utterance of 'and' is somehow cancelled or deleted. (Compare too the patent truth-functionality of 'It is the case that . . . , and it is the case that . . .'.)

But, though both facts seem incontestable, their interpretation is highly controversial.

According to the Conversationalist Hypothesis, which Grice favours, the meaning or linguistic function of 'and', even in (3) and (4), is just the same as that of the truth-functional constant '&', and the implication of temporal sequence that is conveyed by uttering (3) or (4) derives from a presumption that people's discourse obeys the maxim 'Be orderly'. This presumption may be rebutted, as in (5), and then no sequence or connection will be implied (or implicated, as Grice calls it). But when the presumption is not rebutted, it will always operate, as in isolated assertions of (3) or (4).

According to the Semantical Hypothesis, however, the meaning or linguistic function of 'and', as a clause-concatenating particle, is rather richer than that of the truth-functional constant '&'. In addition to expressing the conjunction of two truths it also indicates that the second truth to be mentioned is a further item of the same kind, or in the same sequence, or of a kind belonging to the same set of commonly associated kinds of item, or etc. etc., as the first truth to be mentioned. Hence an implication of temporal sequence arises in cases like (3) or (4), or of connectedness in cases like

- (6) Tom has a typewriter and he types all his own letters.

But this additional feature in the meaning of 'and' and of its equivalents in other languages is subject to cancellation or deletion in certain contexts, as in (5). I.e., according to the Semantical Hypothesis what is cancelled is a feature that is one of those features which should be listed in any adequate dictionary entry for the word, whereas according to the Conversationalist Hypothesis what is cancelled is a presumption of human discourse in general – a presumption that it would be out of place to state in the description of any particular natural language.

Now how are we to choose between these two quite different theories about the correct interpretation of utterances asserting sentences like (3), (4), or (5)?

Note first that neither theory has any advantage over the other in respect

of lexicographical simplicity. At times Grice seems to suggest that anyone who opposes the Conversationalist Hypothesis about 'and', 'if... then...', etc. must be prepared to accept at least two dictionary meanings for such logical particles – a stronger meaning that is not purely truth-functional and a weaker meaning that is. But such a suggestion would be incorrect. The Semantical Hypothesis accords just as well as the Conversationalist Hypothesis with Grice's excellent recommendation not to multiply senses beyond necessity. Both assign only one dictionary sense to 'and', as a word in the language. But the one theory assigns a weaker sense to the word and fills out this analysis by invoking a deletable conversational implicature of orderliness, while the other theory assigns a stronger sense to the word and allows a certain feature of this sense to be deleted on occasion, in the process of composing the meaning of a compound sentence out of the meanings of its constituent words and clauses.

Moreover, while the two theories disagree about the nature of the deletion or cancellation that has to be imputed to assertions of (5), each type of deletion is certainly realized in some other, relatively uncontroversial cases. For example, if Professor X is asked his opinion of Professor Y's abilities and replies

(7) He is a very competent bicyclist,

he implicates, without its being part of his sentence's meaning, that Professor Y is not so competent in academic matters; and this implicature would be cancelled or deleted if Professor X added

(8) But I do not wish to suggest that he is not also very competent at his work.

On the other hand, the statement

That is a flower

implies, in virtue of the meaning of the word 'flower', that the object in question forms or formed a part of a plant; and this implication is cancelled or deleted if the word 'plastic' is put before 'flower'. In that respect the phrases 'stone lion', 'well-painted hand', 'sub-vocal speech', etc. are all rather similar: in each case part of the normal meaning of the noun is cancelled or deleted by the adjacent adjective.⁴ Dictionaries do not need to list both a strong sense of 'flower', in which we speak of flowers as growing, and a weak sense in which we speak of 'artificial flowers', 'plastic flowers', or 'toy flowers'; and similarly the Semantical Hypothesis does not need

to suppose both a strong and a weak sense for 'and'. In other words, while we can regard the Conversationalist Hypothesis as assimilating the interpretation of (5) to the paradigm of (7) + (8), we can regard the Semantical Hypothesis as assimilating it to the paradigm of

That is a plastic flower.

Is there any reason for preferring one pattern of assimilation to the other? A marginal advantage seems to be gained by the Conversationalist Hypothesis because it treats locutions like 'I do not wish to suggest that ...' as accomplishing the same type of deletion or cancellation in both (5) and (7) + (8). However, the assumption of this argument is that similar expressions should perform similar roles and on that assumption there is an argument of about equal strength for the Semantical Hypothesis. The particle 'but' obviously has an adversative, and not merely conjunctive, function in such sentences as

Tom has a typewriter but he prefers to write all his letters.

So, by analogy, it seems reasonable to suppose that the particle 'and' has a connexive, and not merely conjunctive, function in (6). Indeed the temptation to treat 'and' as being like 'but' in this respect (i.e., in being not merely conjunctive) becomes stronger when we consider cases like

Tom picked up a stone, and threw it, but missed the tree, and hit a window, but the window did not break, and Tom's father was not angry,

where connection seems to alternate with opposition. It seems a little strained to suppose that in uttering such a sentence the connection conveyed by each utterance of 'and' is a consequence of conversational maxims while the opposition conveyed by each utterance of 'but' is a consequence of linguistic function. However, though it is a little strained to suppose this, it is not very difficult, just as it is also not very difficult to suppose that locutions like 'I do not wish to suggest that ...' accomplish different kinds of deletion in (5) and (7) + (8), respectively. So this line of reasoning does not seem to be conclusive in either direction.

But there is at least one type of 'and'-occurrence that the Conversationalist Hypothesis can hardly be stretched to fit at all. This is where 'and'

occurs in the antecedent of a conditional and the truth of the statement made by asserting the conditional depends on the precise sequence of events suggested by this occurrence of 'and'. Consider, for example,

- (9) If the old king has died of a heart attack and a republic has been declared, then Tom will be quite content

where Tom might not be at all content if a republic had been declared first and then the old king died of a heart attack.⁵ Of course, it would be open to Grice to extend or adapt his theory of implicatures in such a way that anyone who asserts a conditional like (9) would normally implicate that the truth of the conditional as a whole is partly dependent on a condition of temporal sequence that is conveyed, in virtue of conversational presumptions, by the utterance of the antecedent. But this would hardly be consistent with the claim made by the Conversationalist Hypothesis, which Grice supports, that 'if ... then ...' has just the same purely truth-functional meaning as the standard formal-logical connective '→'. For, if the truth of (9) as a whole is just a function of the truth-values of its antecedent and consequent, and if 'and' is purely truth-functional, so that the truth-value of (9)'s antecedent is just a function of the truth-values of its constituent conjuncts, it follows that the truth of (9) cannot depend at all on any condition of temporal sequence that may be conveyed, in virtue of conversational presumptions, by the utterance of the antecedent. That is, the truth-functionality of 'and' in cases like (9) could only be maintained at the cost of sacrificing the truth-functionality of 'if ... then ...' (and accepting a good deal of extra complexity into the theory of implicatures). Hence, so far as the purpose of maintaining the truth-functionality of 'and' is to defend the Conversationalist Hypothesis, there seems to be no point in maintaining it: the Conversationalist Hypothesis seems incapable of being defended in this way.

Perhaps it will be claimed instead that utterance of (9) implicates the order of the conjoined clauses in the antecedent to be somehow essential to the relevance of one part of the indirect evidence for (9). (By 'indirect evidence', for a conditional, is meant evidence other than the truth-values of the conditional's antecedent and consequent.) But that would amount to claiming that an assertion of (9) implicates the existence of more indirect evidence for its truth than is necessary on a purely truth-functional account of the meaning of 'and'. It would be as if to say that the truth-functionality of 'if ... then ...' can only be maintained at the cost of

sacrificing the truth-functionality of 'and'. The Conversationalist Hypothesis has again to be rejected.

III. IF ... THEN

Grice suggested, in his Lectures, that there are some cases in which 'if ... then ...' quite obviously does not diverge in linguistic function from the standard formal-logical connective '→', other cases in which it may seem to diverge but can be shown not to, and yet other cases in which it seems to diverge and he, Grice, does not see how to show that it does not. Let us consider these cases in turn, as data to be taken into account in making a rational choice between the Conversationalist and Semantical Hypotheses. It should be borne in mind that on Grice's view, i.e., according to the Conversationalist Hypothesis, the assertion of an 'if ... then ...' sentence, while truth-functional in linguistic meaning, commonly carries with it a (cancellable) implicature that there is indirect, i.e., non-truth-functional, evidence for its truth. I suppose that this is because of the maxims requiring a speaker to have evidence and forbidding him unnecessary prolixity: e.g., if his only evidence for 'if *p*, then *q*' were the fact stated by '*q*', he would do better to say just '*q*'. On the other hand, according to the Semantical Hypothesis, a dictionary entry for the particles 'if ... then ...' should state that they indicate a connection between antecedent and consequent as well as performing the purely truth-functional role of ruling out the conjunction of the antecedent's truth with the consequent's falsehood, though the Hypothesis is quite consistent with finding certain occurrences of these particles where the context is such as to delete the connexive aspect of their dictionary meaning, analogously to 'and' in (5).

First, then, let us consider the cases in which 'if ... then ...', on Grice's view, quite obviously does not diverge from '→'. These are, on his view, the cases in which the alleged implicature of there being indirect evidence for the conditional is cancelled by the linguistic or environmental context of utterance.

Suppose, for example, two partners announced at the beginning of a game of bridge a special Five No Trumps Convention, whereby a call of 'Five no trumps' signified the statement

- (10) If I have the king of hearts, I also have a black king

as well as the usual undertaking to make five no trumps if there is no overbid. Grice claimed that, on such an occasion, not only would (10) be

patently truth-functional, but also its utterance would not convey the usual suggestion made by a conditional statement that there is some reason for believing it other than knowledge of the truth-values of its antecedent and consequent clauses. However, the trouble with this example is that the speaker, by uttering the call 'Five no trumps', does give the other players an indirect reason to believe in the truth of (10), as a statement in which 'I' refers to himself. Even if what he said to the others was actually (10) instead of 'Five no trumps', he would still be giving them thereby an indirect reason to believe in its truth. The only kind of utterance of (10) at the bridge table that would not count as an indirect reason to believe in its truth would be if a player said (10) silently to himself. But this he would hardly be likely to do. So even if we grant to Grice that his indirect-evidence implicature is normally cancelled when sentences like (10) are at issue, that is not because the utterer of such a sentence does not convey clearly enough to his hearers the existence of indirect evidence for the truth of his assertion, but rather because he conveys this altogether too clearly: his very utterance constitutes the evidence. Nevertheless, an assertion of (10), in the specified circumstances, does seem patently truth-functional, when contrasted with an assertion of, say

If I have the king of hearts, I am lucky.

But this is not because there is no suggestion of indirect evidence, since there is such a suggestion. Rather, it is because there is no suggestion of a connection between antecedent and consequent. Hence the Semantical Hypothesis fits such cases perfectly well. We simply have to suppose that the connexive aspect of the linguistic meaning of 'if . . . then . . .' is deleted or cancelled by the context of utterance. It is rather like pointing to something in the corner of an oil-painting and saying

(11) There's a hand.

The context of such an utterance of (11) would make it perfectly clear that 'hand' here did not mean flesh and blood.

Just the same is true of another example of Grice's – the kind of logical puzzle in which you are given the names of a number of persons in a room, their professions, and their current occupations, and a few clues as to how these fit together, and then you have to determine which person belongs to which profession and is currently occupied in what. For example, a sentence like

(12) If Mr. Tailor is a cobbler, Mr. Baker is currently gardening

may be given as a clue. But the very giving of it as a clue is a perfectly adequate indirect reason to believe in the truth of the statement it makes about the puzzle situation. At the same time the nature of the puzzle context is such as to delete or cancel the connexive aspect of the meaning of 'if . . . then . . .', if the Semantical Hypothesis is correct.

Similarly, if we consider a case in which according to Grice the implicature of indirect evidence is explicitly cancelled by the linguistic context of utterance, we shall see that the Semantical Hypothesis again fits perfectly well. Suppose someone says

(13) I know just where Smith is and what he is doing, but all I will tell you is that if he is in the library he is working.

Grice's view seems to have been that by uttering the clause

(14) I know just where Smith is and what he is doing

the speaker cancels the usual implicature that there is indirect evidence for the truth of the conditional

(15) If Smith is in the library he is working.

But whatever happens to the implicature, according to Grice's theory, it is certainly true that by uttering (14) along with (15) a speaker would create indirect evidence for (15). And in any case, if the utterance of (14) deletes the assertion of a connection when (15) is uttered (and I am not sure that this deletion will always occur when (13) is uttered), this deletion can be explained in the usual way by the Semantical Hypothesis.

Thus far I have been agreeing with Grice that the assertion of certain conditional sentences may sometimes be wholly truth-functional in meaning, while arguing that the Semantical Hypothesis can cover all such cases. In this respect I class two other examples of Grice's along with (10), (12), and (13), viz.,

If England win the first Test, they will win the series, you mark my words

and

Perhaps if he comes he will be in a good mood.

Grice also cited two further sentences where he thought the implicature of

indirect evidence would be either absent or cancelled and the assertion of the conditional would be purely truth-functional in character, viz.,

(16) See that, if he comes, he gets his money
and

(17) If he was surprised, he didn't show it.

But (16) and (17) are even worse evidence for the Conversationalist Hypothesis than (10), (12), or (13), because neither would commonly involve a purely truth-functional conditional. If the conditional in (16) were purely truth-functional, the instruction expressed by (16) as a whole would be fulfilled by seeing that the man got his money even if he did not come. But the employer who uttered (16), and thus told his cashier to pay the man if he came to work, might be inclined to dispute the view that the cashier had done his duty by paying the man even though he had not come to work. As for (17), what one has to ask, if (17) is alleged to be truth-functional, is why someone who accepts (17) because its consequent is true may nevertheless be reluctant to assert

If he was not surprised, he didn't show surprise

of which the consequent would also be true. The reason, surely, is that 'if' in (17) has the sense of 'even if', not of 'if . . . then . . .' as in (10), (12), or (13). You can put 'even if' in place of 'if' in (17) without changing the sense, but if you do this in (10), (12), or (13) you change the sense. 'Even if . . .' does not normally function to state a condition that, if it holds, generates a certain consequence, as in the ordinary conditional, but rather to state a condition that does (did, will) not prevent a certain consequence. Hence it looks as though (17) is not strictly relevant to the present discussion.

Let us now turn to cases where, on Grice's view, the implicature of indirect evidence is not cancelled. In these cases, according to Grice, the conditional 'if . . . then . . .' is purely truth-functional, and the suggestion of non-truth-functional reasons for accepting the conditional is carried not by the meaning but by the implicature that conversational presumptions generate. A typical case, I suppose, would be

(18) If the government falls, there will be rioting in the streets.

Now, in the case of simple, straightforward conditionals like (18) there seems nothing to choose between the Conversationalist Hypothesis,

favoured by Grice, and the Semantical Hypothesis which claims the standard linguistic meaning of 'if' to be stronger than a purely truth-functional account can represent.

But consider what happens when (18) goes into the antecedent of another conditional like

(19) If it is the case both that if the government falls there will be rioting in the streets, and also that the government will not fall, then the shopkeepers will be glad.

According to the Conversationalist Hypothesis, (19) would normally carry the implicature that there is indirect evidence of its antecedent's not being true without its consequent's also being true. But for the antecedent of (19) to be true, we must have both (18) true and the antecedent of (18) false. Hence, if (18) is to be understood as a truth-functional conditional, in accordance with the Conversationalist Hypothesis, its inclusion in the antecedent of (19) would be quite inessential. To discover the truth-value of the antecedent of (19) all we need to know is the truth-value of the antecedent of (18). For, if the antecedent of (18) is false, the antecedent of (19) must be true, in virtue of the law ' $\sim p \rightarrow ((p \rightarrow q) \& \sim p)$ '; and, if the antecedent of (18) is true, the antecedent of (19) must be false, in virtue of the law ' $p \rightarrow \sim ((p \rightarrow q) \& \sim p)$ '. It follows that indirect evidence for the truth of (19) would be quite sufficient if it related the fate of the government to the feelings of the shopkeepers without having any bearing whatever on the causes and effects of rioting in the streets. But this is quite counter-intuitive since it assumes the truth of the consequent to be dependent on only one condition – the fate of the government – whereas in asserting (19) one would assert it to be dependent on two mutually independent conditions. Therefore, if we feel that the evidence for (19) must tell us something about the question of rioting, we cannot accept that the occurrence of 'if . . . then . . .' in (18) is purely truth-functional in meaning.

Perhaps it will be objected that because of the conversational maxim forbidding unnecessary prolixity there is a presumption that in uttering (19) no inessential clauses have been uttered. Accordingly, it will be said, there is an implicature that the content of (18), as well as its truth-value, is essential to the truth of (19). But that would make (19) not wholly truth-functional – contrary to what the Conversationalist Hypothesis asserts. So perhaps the objector will instead claim an assertion of (19) to implicate that the content of (18) is somehow essential to the relevance of part of the

indirect evidence for (19). But that would amount to claiming that an assertion of (19) implicates the existence of more evidence for its truth than is necessary on a purely truth-functional account of (19)'s meaning. It would be as if to say that the truth-functionality of 'if ... then ...' in its occurrence as the main logical particle of (19) can only be maintained at the cost of sacrificing its truth-functionality in respect of its occurrence within one of the conjuncts in the antecedent of (19). For sentences like (19), as for those like (9), it looks as though the Conversationalist Hypothesis is indefensible. Only some vastly complicated, and correspondingly implausible, addition to the theory of implicatures could possibly save it.

Finally we come to the cases in which 'if ... then ...' seems to diverge in meaning from the ordinary formal-logical ' \rightarrow ' and in which Grice sees no way of using his theory of conversational presumptions to show that this divergence is illusory. Consider, for example,

- (20) It's not the case that, if the government falls, then there will be rioting in the streets.

On Grice's view, if assertion of (18) normally carries an implicature of indirect evidence for the truth of a truth-functional conditional, (20) must normally carry a denial of that implicature. But someone might object that when an utterance is not absurd, if taken literally, a denial of it is standardly a denial of its literal reading, not of its implicature. For example, if you say ironically

- (21) He is a splendid fellow

and I reply

- (22) He is not a splendid fellow

I must be saying, directly and feebly, just what you have, ironically, implicated. And to this objection Grice, in his Lectures, sees no answer.

But, compared with some of the other – above mentioned – objections to the Conversationalist Hypothesis, this one seems rather weak. The fact that although there are some cases like (21) and (22) in which denial of an utterance is not a denial of its implicature there are also other, non-absurd utterances in which it is. For example, if I say

- (23) *Someone* has not sent in a correct return

I implicate that I am unable or unwilling to tell the full story. But if I deny (23) by saying

Everyone has sent in a correct return

I also deny the implicature of (23). It looks as though Grice has over-generalized from the rather special case of ironical implicatures as in (21). Certainly, if we construe one of his conversational maxims as prescribing 'Don't say what you lack *adequate* evidence for', anyone who says *p* implicates that he has adequate evidence for *p* and anyone who denies *p* denies this implicature also. So, *pace* Grice, the objection under consideration looks as though it can be quite easily answered: whether or not the denial of a non-absurd assertion is also a denial of its implicature must depend on the nature of the assertion and the nature of the implicature.

Nevertheless there is a very obvious way in which (20) runs counter to the Conversationalist Hypothesis. That hypothesis holds that 'not' and 'if ... then ...' are truth-functional in meaning, though assertions of 'if ... then ...' sentences often carry with them implicatures of indirect evidence. But, if the meaning of (20) is such as to deny the truth of a truth-functional, it must logically imply both that the government will fall and that there will be no rioting; and as this implication is quite unacceptable (20) cannot be the denial of a truth-functional conditional. Grice's Lectures offered no viable rejoinder to this type of objection. It is no use rejoicing that (20) should be construed as propounding a counter-conditional to (18), viz.,

- (24) If the government falls, there will not be rioting in the streets,

since (24) is not at all synonymous with (20). Nor is it any use rejoicing that (20) has the effect of a refusal to assert (18), or of a denial of the implicature of (18). For, if by 'effect' here is meant 'implicature' or 'illocutionary force', the rejoinder does not meet the objection, which is about the meaning of (20). And, if by 'effect' here is meant 'meaning', then the Conversationalist Hypothesis is being sacrificed in respect of the meaning of 'not' in order to try and save it in respect of the meaning of 'if ... then ...'.

IV. EITHER ... OR ...

Analogous moves may be made against the Conversationalist Hypothesis in regard to 'either ... or ...' sentences, and I shall not go into much detail here. According to the Hypothesis assertion of such a disjunctive sentence normally carries with it an implicature that there is indirect evidence

for the disjunction, though the implicature may be explicitly cancelled in certain cases as in Grice's example

- (25) The prize is either in the garden or in the attic, but I'm not going to tell you which,

where the speaker suggests that he knows the truth of the disjunction because he knows the truth of one of its disjuncts. But such cases are rather like (10) and (12). The speaker's utterance of (25) is an event that constitutes indirect evidence for the truth of the disjunction. Here too the speaker would not normally utter the corresponding sentence to himself, viz.,

The prize is either in the garden or in the attic, but I'm not going to tell them which,

because from his point of view there is only direct (truth-functional), and no indirect, evidence for the disjunction. So even if we grant to Grice that his indirect-evidence implicature is normally cancelled when sentences like (25) – or (10) – are at issue, that is not because the utterer of such a sentence does not convey clearly enough to his hearers the existence of indirect evidence for the truth of his assertion, but rather because he conveys this altogether too clearly: his very utterance constitutes the evidence. Hence, though an assertion of (25), as of (10), would normally seem truth-functional, this cannot be because there is no suggestion of indirect evidence, since there is such a suggestion. Rather, it must be because there is no suggestion of any underlying fact or principle that limits the alternatives. Now, according to the Semantical Hypothesis, though such a suggestion is part of the dictionary-meaning of 'either . . . or . . .',⁶ it is deleted or cancelled in certain contexts, just as the prefixing of 'plastic' to 'flower' deletes the suggestion of forming part of a plant. So the Semantical Hypothesis can accommodate sentences like (25) just as well as it can accommodate sentences like (10) or (12).

Moreover it is easy to construct 'either . . . or . . .' examples that present the same kind of difficulty to the Conversationalist Hypothesis as does (19). Consider

- (26) If the prize is either in the garden or in the attic, and in fact it is in the attic, the gardener will be glad.

On the truth-functional account the disjunction is quite inessential to the antecedent of (26). Indirect evidence for the truth of (26) would be quite

sufficient if it related the prize's being in the attic to the feelings of the gardener without having any bearing whatever on the question where the prize would be if it were not in the attic. But this is quite counter-intuitive, because it assumes the truth of (26)'s consequent to be dependent on only one condition – the prize's being in the attic – whereas in asserting (26) one would assert it to be dependent on two mutually independent conditions. If therefore we feel that the evidence for (26) must tell us something about where the prize would be if it were not in the attic, we cannot accept that the disjunction in (26) is purely truth-functional in meaning.

Someone may object that (9), (19) and (26) are all special cases because they mention mental attitudes in their consequents. But it does not seem difficult to construct appropriate examples of other kinds such as, for (9),

If a shilling is pushed into the slot and the red button is depressed, a bar of chocolate will fall into the tray

or, for (19),

If it is the case both that if the wind blows the cradle will fall, and also that the wind will not blow, then the cradle is insecurely fastened but the wind will nevertheless not interfere with it

or, for (26),

If it is the case both that he will either jump off the ice or fall through it and also that he will in fact jump off it, then he will have saved his own life.

I conclude that there are several rather stronger objections to the Conversationalist Hypothesis than the single objection that Grice himself was worried about in his Lectures. In general that hypothesis breathes the same spirit as earlier attempts to resolve philosophical puzzles about truth by reference to speech-acts of endorsing or conceding, or to resolve puzzles about goodness by reference to speech-acts of commending or commanding.⁷ Such theories gain what support they seem to have from the consideration of relatively simple examples. Their weakness becomes apparent when more complex sentences are examined – especially sentences where the locution in question occurs within the antecedent of a conditional.

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NOTES

¹ I do not know whether Grice still holds the views that he expressed in these lectures, and I certainly do not wish to imply that he does. In any case I hope that he will take it as a tribute to the interestingness of his ideas that I have not delayed my own discussion of them until the oral publicity of the William James Lectures has been compounded by a printed version. I have taken great care not to misrepresent the content of Grice's lectures as they have been reported to me. But if there are any details on which I have erred I do not think that they affect the main point I am trying to make.

² E.g. Euripides *Andromache*, line 986: "Ouk estin ouden kreisson oikeiou philou", literally 'There is not nothing better than . . .', meaning, in Standard English, 'There is nothing better than . . .'.

³ Grice's concept of implicature was explained by him in 'The Causal Theory of Perception', *Proc. Aristotelian Soc.*, Suppl. vol. 35 (1961), 121-152, but there he still used the word 'implication' for it.

⁴ Compare perhaps also 'He unintentionally insulted her' and 'The girl on the dust-cover is naked'. On the relation of such cancellations or deletions to other processes of semantic composition, cf. L. Jonathan Cohen and Avishai Margalit, 'The Role of Inductive Reasoning in the Interpretation of Metaphor', *Synthese* 21 (1970), 469 ff. It emerges that an order of relative importance has in any case to be supposed for the set of distinctive features that characterise a particular meaning. So the less important features will normally be the ones that are exposed to cancellation or deletion in literal usage: e.g. the prefix 'plastic' deletes the notion of growth implicit in the meaning of 'flower' but not the feature of outward appearance. Where one of the more important semantic features is deleted, we tend to regard the usage as metaphorical - e.g., in 'A child is a fragile flower'. Correspondingly it is the truth-functional core of meaning in the logical particles that is undeletable: we never ascribe such words a metaphorical usage.

Of course, it might be objected that every word for a representable object or event x should be assigned a second dictionary meaning as 'representation of x '. But anyone who was prepared to multiply dictionary meanings on this scale would hardly be entitled to jibe at assigning a weaker (purely truth-functional) meaning to 'and', 'if . . . then . . .', 'either . . . or . . .', etc., in addition to a stronger (connexive) meaning. Also, presumably, the decision between listing one meaning or two in the dictionary entry for 'and' must be matched by a corresponding decision, in discourse analysis, with regard to the semantics of sentence concatenation.

⁵ I have borrowed this example, in a modified form, from my *The Diversity of Meaning*, 2nd ed., 1966, p. 271.

⁶ I am trying to suggest here no more than the general nature of the non-truth-functional element in the meaning of 'either . . . or . . .'. I am not offering, in this article, an exact lexicographical characterisation of 'either . . . or . . .', any more than of 'and' or of 'if . . . then . . .'. But I certainly do not wish to claim, as is sometimes claimed, that a dictionary entry for the locution 'either . . . or . . .' should mention as a feature of its meaning that it indicates the speaker's ignorance of which alternative is true. Where an utterance of the locution does indicate this, the indication seems to belong rather to what Grice calls the implicature than to the meaning.

⁷ Cf. my 'Speech-Acts', in T. Sebeok (ed.), *Current Trends in Linguistics*, vol. XII (forthcoming).

FORMAL MESSAGE THEORY

I. INTRODUCTION

Formal communication is the sort of communication used in large organizations; the unit of formal communication is the formal message. Typically, a formal message indicates that it comes *from* a certain person (in a certain status, at a certain time), *to* another person (in a certain status, at a certain time), with an *aim* or *point* connected with previous messages; it has a *body*, and perhaps also an *interpretation intention* that includes a special glossary or other aids to interpreting the body.

Zermelo-Fraenkel set theory provides a natural framework for logical analysis of formal messages and formal communication. The first part of this paper is devoted to presenting such an analysis. We call this *message theory*; its main concepts are *standard message* and *standard message set*. Within this theory we define some concepts that we believe will be fruitful in formal studies of the human communication situation. E.g., we define *communicative force* and *pragmatic content*.

In the latter part of this paper we present the basis for a theory of utterances (roughly, an utterance is an entity that can be construed as expressing a message), and we discuss the relations between our message theory and the utterances of natural language. It will be obvious that our message theory can serve as a logic of utterances, and is at least indirectly relevant to explanatory theories of human language behaviour.¹

Notation: We use 'iff' for 'if and only if.' Where there is no danger of ambiguity, we omit commas and outermost brackets from expressions of the form $\langle X_1, \dots, X_n \rangle$. Thereby $XY = \langle X, Y \rangle$.

II. THE LANGUAGE L

To fix ideas, let us assume a standard language L with first-order predicate logic, identity, and descriptions. L has a finite alphabet, out of which are constructed denumerably many individual constants, individual variables, k -ary functors, and k -ary predicates (for every k). The *constants* of L are

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