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SEMANTICS, PRAGMATICS AND THE THEORY OF MEANING *

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In this paper arguments are given for the thesis that an adequate theory of meaning for a natural language has to consist at least of a recursive specification of the truth conditions (semantics) and of a recursive specification of the correctness conditions (pragmatics) of the sentences of that language.

The thesis is defended on both theoretical and empirical grounds. The empirical grounds are that such a theory of meaning makes it possible to explain a wide range of phenomena concerning the meaning of various kinds of linguistic expressions and constructions which cannot be explained in either syntactic or semantic terms.

The theoretical grounds are that a theory of meaning which consists of both a semantics and a pragmatics seems a promising way to unify insights from two main streams of contemporary philosophy of language: logical semantics and speech act theory.

Furthermore, some notions and principles of a formal pragmatic theory are discussed.

0. Introduction

In this paper we will present some arguments for the thesis that *an adequate theory of meaning for a natural language has to consist of at least a semantics and a pragmatics*. The arguments which we will present are partly empirical and partly of a more theoretical nature. The empirical arguments are that such a theory of meaning can explain a wide range of phenomena concerning various kinds of linguistic expressions and constructions which neither can nor should be accounted for in either semantic or syntactic terms.

The more theoretical arguments for adopting the thesis are that a theory of meaning which consists of both a semantics and a pragmatics seems a promising way to unify insights from two main streams in contemporary philosophy of language: logical semantics and speech act theory.

Besides presenting these arguments, we will discuss informally some notions and principles of a formal pragmatic theory.

1. Terminology

Let us begin by making some remarks about the terms figuring in the thesis just formulated. To start with the most difficult term, what do we understand by a

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theory of meaning? A rather rough characterization might be: 'a theory of meaning is a theory which describes and explains those phenomena concerning expressions and constructions of a language that according to the intuitions of the users of that language are related to the meaning of those expressions and constructions'.

This means that what constitutes a theory of meaning depends on intuitions about meanings. These intuitions are to be taken as pretheoretical and fundamental in this sense that they constitute the empirical basis of the theory. To put it differently, a theory of meaning is a theory concerning those linguistic intuitions that are considered to be about meaning.

Of course this does not imply that the basis of the theory is subjective and arbitrary. Which intuitions of a given language community concern meaning and which do not is objectively given, although there may be some cases in which it is hard to draw a sharp line and some cases in which the specific form of the theory influences the data to a certain extent. The fact remains that the boundaries within which these variations are allowed are objectively given and that a theory which leaves out or adds too much will no longer be considered to be a theory of meaning.

The characterization of a theory of meaning just given does not say much about its content and nothing about its form. The thesis we are arguing for is a little bit more specific. It states that a theory of meaning has to consist of at least a semantic theory and a pragmatic theory. We will now give a general characterization of semantics and pragmatics. Later, in section 4, we will be more specific about form and content of the pragmatic theory.

It will be clear that, contrary to what seems to be usual, in our terminology the terms 'theory of meaning' and 'semantics' are not synonymous. In our view semantics constitutes just a part of a theory of meaning. It is that part that deals with the relation between language and reality. It should be noted that this conception of semantics does not imply that semantic analysis reveals anything about reality as such; it will only reveal reality as it is seen through the eyes of language, so to speak. And these are, in general, two quite different things. Semantic analysis does not even necessarily reveal the way in which human beings at present conceptualize reality. It only reveals those elements of conceptualizations, present and past, which are in some way reflected in the ways in which language is organized. This latter fact in particular, explains why sometimes linguistic analysis and philosphical analysis diverge.

Be this as it may, in our terminology semantics, as a part of a theory of meaning, will be a theory of truth, i.e. a theory which gives a recursive specification of the truth conditions of the sentences of a given language on the basis of the contribution of the parts of these sentences to these conditions. Based upon such a definition of truth, semantics defines a relation of logical consequence, and in this way part of the intuitions concerning the meaning of sentences, namely those which concern the conditions under which a sentence A is true and those which concern whether or not a sentence A implies a sentence B, are accounted for. The intuitions concerning the

meaning of words or classes of words are partly accounted for by means of the specification the semantic theory gives of the contribution these words or classes of words make to the truth conditions of sentences in which they occur.

This is, of course, a rather rough characterization which is compatible with different approaches, such as Davidson's extensional semantics (Davidson 1969) and Montague's intensional semantics (Montague 1974). However, it sufficies to make clear the role that semantics as a theory of truth plays in a theory of meaning.

The term 'pragmatics' has been used and is used to denote a variety of things, including the waste-paper basket, indexical semantics, sociolinguistics, speech act theory, semantic performance and what not. Our use of the term links it with the study of a certain range of phenomena, which concerns certain aspects of meaning. Quite generally, pragmatics could be characterized as a theory which deals with conditions for the correct use of expressions and constructions of a given language. Where semantics is a theory of truth, pragmatics is a theory of correctness. Such a theory gives a recursive specification of the correctness conditions of the sentences of a given language on the basis of the contribution of the parts of these sentences to these conditions. So, a pragmatic theory gives a recursive definition of the notion of correctness in much the same way as a semantic theory gives a recursive definition of the notion of truth.

This characterization of pragmatics still covers a larger area than we want to study at this moment. Whether or not it is proper to use a certain expression in a situation with a certain social structure would have to be dealt with in pragmatics according to this general characterization. Although we do not want to exclude *a priori* that such aspects could sometimes belong to the realm of meaning, we would, for the moment, like to restrict ourselves to those correctness conditions which concern *the information language users have*. This part of pragmatics we call 'epistemic pragmatics'. And the correctness conditions in question we call 'epistemic correctness conditions'. In what follows, we will use the shorter expressions 'pragmatics' and 'correctness conditions' intending them to be understood in this restricted sense.

Thus restricted, pragmatics is a theory which gives a recursive specification of the conditions under which the use of sentences is correct relative to the information the language users have.

This restriction is less stringent than it may seem at first sight, for the information of language users is information about quite a lot of things. In general, the information we are concerned with is information about reality. But information about certain aspects of reality plays a special role. For example, information about information of other language users, in particular the hearer, must be singled out in order to be able to formulate conditions on informativeness. Also very important is the information one has about one's own mental states. In terms of this latter information, we can formulate correctness conditions which are usually formulated in terms of intentions, preferences, etc. Due to the fact that one has optimal

information about one's own conscious mental states, we can e.g. formulate a condition requiring a language user to intend to do something as a condition requiring him to have the information that he intends to do something. To someone who might object that believing that one intends to do something does not imply that one intends to do something – an objection we find very implausible – we would like to point out that if this were true, it would be even more important to formulate the conditions concerning the correct use of language in terms of what one believes that one intends, and not in terms of what one intends. For it is the information language users have about reality, and not reality itself, which determines the (in)correctness of utterances.

Using a notion of information such as this, we can formulate in a uniform way correctness conditions which are superficially quite different. For the specific task of pragmatics, to give a recursive specification of correctness conditions, a formal representation of the information of language users is indispensable. We will return to this later.

It should be noted, by the way, that restricting pragmatics to epistemic pragmatics does not imply a restriction to the so-called informative use of language. For other uses of language as well, correctness conditions concerning the information of language users are relevant.

Given this characterization of semantics and pragmatics, we can reformulate the thesis as follows: *an adequate theory of meaning for a natural language has to consist of at least both a recursive characterization of the notion of truth and a recursive characterization of the notion of correctness for that language.* The fact that we leave open the possibility that something besides semantics and pragmatics might be a component of a theory of meaning expresses our doubts as to whether or not the restriction of pragmatics to epistemic pragmatics excludes certain aspects of meaning, such as those concerning politeness and the like. In other words, what we are arguing for is that semantics and pragmatics are necessary components of a theory of meaning. We leave open the question whether they are the only components of such a theory. What we leave unargued for is our conviction that semantics as a theory of truth is an indispensable component of a theory of meaning. Arguments for this position can be found in many places, for example in the works of Davidson (1969) and Montague (1974). We will argue for incorporating a pragmatics as a theory of correctness into a theory of meaning.

2. Theoretical arguments

The theory of speech acts evolves from the insight that the use of language can have many different functions, that it can serve many different purposes. Language is an instrument which can be used to perform different speech acts. As such, this fact is not sufficient to uphold that the study of speech acts must be part of a

theory of meaning. However, the following observations indicate the relevance of the study of speech acts in this respect. The form of most instruments is influenced by the purposes it has to serve. The same holds for language. Several functions of language use have influenced the form of language; they are reflected in it in one way or another. It is for this reason that the study of speech acts is relevant for the study of meaning of linguistic expressions and constructions. What are commonly called 'illocutionary acts' are precisely those speech acts which are conventionally reflected in language. That such conventional reflections of certain speech acts in the organization of language exist is evident: one cannot perform any arbitrary illocutionary act with the utterance of any arbitrary sentence of a language. There are restrictions on the kind of illocutionary acts which can be performed by uttering a certain kind of sentence. These restrictions are strongest in the case of explicit performative sentences, which are almost uniquely tied to the performance of one particular illocutionary act. But there are also restrictions connected with certain linguistic constructions, limiting the possible illocutionary acts that can be performed by using a sentence with a certain structure. For example, the interrogative sentence

(1) Is Mary coming tomorrow?

cannot be used to assert that Mary is coming tomorrow. In general, each syntactic mode, indicative, interrogative, imperative, is connected with a certain class of illocutionary acts, which, of course, do have a certain common denominator.

Explicit performative sentences, syntactic modes, certain adverbs and particles are conventional reflections of functions of language use. It will be clear that we are dealing here with phenomena which concern meaning. It is part of the meaning of a particular explicit performative sentence that it can be used to perform a particular illocutionary act, and no other. Likewise, it is part of the meaning of a sentence in the interrogative mode that it can be used to ask a question, or to make a request, and that it cannot be used to make an assertion. On the other hand, it will also be clear that a specification of truth conditions will not be sufficient to account for these aspects of meaning. The truth conditions of an indicative sentence such as

(2) I will be at your place tomorrow at nine o'clock

do not make clear in any way that it can be used to make an assertion, to make a promise, to give a warning, or to make a threat, but that it cannot be used to ask a question or to make a request. So, according to the thesis, these phenomena will have to be accounted for in pragmatics.

John Searle, in his influential work on speech acts, has expressed a similar view (see Searle 1969: 16ff.). He too is of the opinion that it is a function of the mean-

ing of a sentence which speech act or speech acts can be performed by using that sentence. To put it differently: the specification of the meaning of a sentence involves a specification of the speech act or speech acts that can be performed by using it. However, Searle feels that a theory of speech acts is equivalent with a theory of meaning. His main argument in favor of this position is that it is possible, assuming his so-called 'principle of expressibility', to find for every possible speech act a sentence, the meaning of which is such that uttering that sentence is performing that act. However, even if we assume this to be true, it is still obvious that the study of speech acts is not equivalent with the study of meaning. This equivalence would hold only if it were also true that the meaning of every sentence was such that uttering the sentence always was the performance of one and the same particular act. But that this last condition is not met is obvious.

Most probably, the reason that Searle thinks the equivalence between speech act theory and theory of meaning holds, is a confusion of on the one hand, the meaning of a sentence, and on the other what a speaker means by a sentence. It could very well be that the latter is always connected with a unique speech act, but that does not imply that the same holds for the former. This is one reason why speech act theory and theory of meaning are not the same. There is another reason as well. Searle's revision of the Gricean notion of meaning, which plays a central role in his analysis (see Searle 1969: 16ff.) is such that it in fact presupposes an independent specification of the meaning of a sentence. For example, in his analysis of the circumstances under which one makes a promise by uttering a sentence A, it is required that the meaning of that sentence is conventionally associated with the fact that it can be used to make a promise (see Searle 1969: 60ff.). However, this implies that taking the analysis of these circumstances as a specification of the meaning of the sentence A would make his account of meaning circular. [1] So, for this reason too, the study of speech acts and the study of meaning cannot be one and the same.

The conclusion of this discussion is that speech act theory is not equivalent with a theory of meaning, but accounts for certain phenomena which must be accounted for in a theory of meaning as well. In a pragmatic theory this could be done as described in Groenendijk and Stokhof (1976). The main points of the analysis given there can be summarized as follows. Certain sets of correctness conditions are associated with certain illocutionary acts. This is possible because an illocutionary act can be identified by means of a set of correctness conditions, *viz.* those conditions which determine the circumstances under which that act is performed correctly. Pragmatic interpretations are defined in such a way that explicit performative sentences are on every occasion of use associated with one and the same set of correctness conditions. Non-performative sentences are on an occasion of use asso-

[1] It also implies that Searle's speech act theory is restricted to explicit performative sentences, which are connected with the performance of one particular illocutionary act.

ciated with a set of correctness conditions which is chosen from a certain class of such sets. These classes of sets of correctness conditions are associated with the various syntactic modes of sentences. In this way we account for the fact that explicit performative sentences and syntactic modes are conventional reflections of certain functions of language use. The correctness conditions in the various sets partially overlap with Searlean conditions, with the difference that in the pragmatics they are formulated as conditions on the information of language users. The principle that one has always optimal information about one's own mental states plays an important role in this.

It should be noted that the fulfilment of the correctness conditions does not imply that the corresponding act is performed. For this, other conditions must be met. For some explicit performative sentences this condition is simply that they must be uttered. This is often called their 'self-verifying' character. This property, which is also clearly an aspect of their meaning, can be formulated in the semantics. With the aid of these means, in particular with the aid of correctness conditions, a number of interesting phenomena concerning the meaning of performative sentences can be explained. Some examples will be discussed below.

There is another theory, besides speech act theory, which partly deals with certain aspects of meaning which can not be accounted for in the semantics, and therefore have to be accounted for in the pragmatics. This is H.P. Grice's theory of conventional and conversational implicatures (see Grice 1976). This theory starts out with the observation that there are many arguments the validity of which cannot be accounted for in terms of logical consequence. These arguments are not arbitrary or idiosyncratic but belong to the systematic knowledge of every competent language user. They are based either on certain conversational principles, the so-called conversational implicatures, or on the use of certain linguistic expressions and constructions, the so-called conventional implicatures. The latter class in particular, concerns the meaning of the expressions and constructions involved, and thus, should be dealt with in a theory of meaning. The fact that they are not based upon truth conditions implies that these phenomena belong to the realm of pragmatics.

A good example are counterfactuals. If a speaker S utters a counterfactual of the form *If p had been the case, then q would have been the case*, then it is implied that S believes that p is not the case. This is not a logical implication, since the counterfactual is not false if it happens to be the case that S believes that p is the case. This implication has to do with a correctness condition for counterfactuals. And as such, this condition specifies part of the meaning of a counterfactual. [2] It will be clear that conditions such as these can very well be formulated in terms of correctness conditions, since these conditions are conditions on the information of language users.

[2] For an analysis of counterfactuals which runs more or less along these lines, see Veltman 1976.

Correctness conditions can not only be used to express conventional implicatures; they can also be used to account for a number of implicatures which, in Grice's terms, are conversational. In Grice's theory, these are accounted for with the aid of the maxims of quality, quantity, relation, and manner. Consider his maxim of quality. Succinctly put, this maxim amounts to the imperative 'Be sincere!'. This maxim is used to explain that if a speaker S utters an indicative sentence A, it 'follows' that S believes that A is the case. The fact that this kind of implication systematically and conventionally is connected with the use of sentences in the indicative mode is reason enough to say that we are dealing with an aspect of the meaning of such sentences. For, as the old saying has it, the meaning of a sentence is a function of the meaning of its parts [3] and the way in which they are combined. Grice's maxim 'Be sincere!', thus interpreted as 'Only say an indicative sentence A if you believe A to be the case!', accounts for these implications in a reasonable way in case we are dealing with non-compound indicative sentences. However, stating a maxim and leaving it at that is not adequate in this connection: more can and should be said, as becomes evident if one considers compound sentences.

Consider a conjunction. The maxim says nothing more than that a compound sentence *p and q* is to be used only if one believes this compound sentence *p and q* to be true. Nothing is said about what it means to believe such a compound sentence to be true. This is, to be sure, an inadequacy although in case of a conjunction perhaps not such a striking one, because of the fact that there is a direct analogy between the truth conditions and the correctness conditions of a conjunction. Where a conjunction *p and q* is true if and only if both conjuncts are true, it is correct if and only if both conjuncts are correct. Correct, that is, in the sense of sincerity. That this is not implied by the maxim 'Be sincere!' is an inadequacy which is concealed by the fact that someone who knows the truth conditions of a conjunction and applies the maxim, could conclude from that that a conjunction is correct if and only if both conjuncts are. However, the same line of reasoning cannot be applied in case of a disjunction. Here too, the maxim does not say what it means to utter a disjunction sincerely, but in this case there is not direct analogy between correctness conditions and truth conditions. And therefore, it is impossible to derive the correctness conditions of a disjunction from its truth conditions and the maxim 'Be sincere!'. The relation between the truth value of a disjunction and the truth values of its disjuncts differs from the relation between the correctness value of a disjunction and the correctness values of its disjuncts. The truth of a disjunction requires the truth of at least one of its disjuncts, but the correctness of a disjunction does certainly not require the correctness of one of its disjuncts. To utter correctly a disjunction as

(3) John is in London or in Paris

[3] This principle is traditionally attributed to Frege, and hence is called Frege's principle.

one does not have to know in which of these two cities John actually is. What one does have to know is that John must be in either one of them, and not somewhere else.

Disjunction is not the only case in which there is an asymmetry between correctness conditions and truth conditions. Other examples are conditionals, counterfactuals and modal expressions. The conclusion must be that a pragmatic theory which gives a recursive characterization of the correctness conditions of all sentences of a given language is clearly more adequate than a theory which just formulates a general principle. It gives insight in the interconnections between the correctness values of sentences and it enables one to derive the implicatures which hold on the basis of these conditions in a formal and explicit way.

The pragmatic theory not only accounts for implicatures which hold on the basis of the maxim of quality, but also for a number of implicatures which hold on the basis of the maxim of quantity. An example of a correctness condition which expresses such an implicature is the condition which states that a disjunction is incorrect if one of its disjuncts is correct. For example, if one knows that John is in Paris, then it would be incorrect to utter sentence (3), because in uttering that disjunction one gives less information than one could and one thereby violates the maxim of quantity. This holds at least for the standard situation of normal, straightforward assertion. Later we shall say something about 'non-standard' interpretations of incorrect utterances.

Other phenomena with respect to the maxim of quantity which are accounted for in the pragmatics concern mainly possible conclusions one can draw about the information the speaker has about the information of the hearer. For example, from the correct use of the sentence

(4) John visited the Eiffel tower last week

one can conclude that the speaker believes that the hearer does not yet believe that John visited the Eiffel tower last week. That this implicature is conventional in this sense that it depends on the meaning of (4) is clear from the fact that the same implicature does not hold in case of the correct use of the corresponding interrogative sentence

(5) Did John visit the Eiffel tower last week?

Correctness conditions such as these are not only connected with the syntactic modes, indicative, interrogative and imperative, but also with certain linguistic expressions. In many languages (for example, in Dutch and German) particles exist which serve as indications of a certain opinion about the beliefs of the hearer on part of the speaker. [4] Another expression which has this kind of correctness condi-

[4] Franck 1977 contains a detailed study of such particles.

tion is the verb *to know that*. The difference in use between the sentences *I know that p* and *p* can be characterized in terms of such a condition. *I know that p* requires the speaker to believe that the hearer believes that *p* is the case, whereas the opposite requirement is made for the correct use of *p*.

As far as the other two Gricean maxims, those of relation and manner, are concerned, in all cases we know of there is no conventional relation between the implicatures based on one of these maxims and any aspect of the meaning of expressions or constructions involved.

So much for the more theoretical part of our argumentation. We have indicated that there are at least two theories, speech act theory and Grice's theory of conversation, in which phenomena which clearly concern meaning, and which therefore have to be accounted for in an adequate theory of meaning are studied. These phenomena cannot be explained in a semantic theory, and we have indicated that a pragmatic theory would be the place to deal with them. This indicates how a theory of meaning which consists of both a semantic and a pragmatic theory could connect consistently insights from quite different approaches in the philosophy of language. We hope that what we will say in the remainder of this paper will give a little more substance to these rather programmatic remarks. But first let us turn to the empirical arguments for adopting the thesis we are defending. These arguments concern specific phenomena which cannot be accounted for in either syntactic or semantic terms, and which, since they have to do with meaning, must be accounted for in pragmatics.

3. Empirical arguments

Consider the following sentence:

(7) *The cat is on the mat, but I do not believe it

This sentence, Moore's famous paradox, is unacceptable, as opposed to:

(8) The cat is on the mat, but Fred does not believe it

It is evident that someone who does not recognize the unacceptability of (7) does not know its full meaning. Since the unacceptability of (7) concerns its meaning, it should be accounted for in an adequate theory of meaning. It will be clear, though, that such an account cannot be given in the semantics. Sentence (7) is a contingent statement, it is neither truthvalueless nor a contradiction. The semantic status of (7) does not differ from that of (8). So, the unacceptablility of (7) must be accounted for in the pragmatics, if a theory of meaning is to consist of a semantics and a pragmatics.

A similar observation can be made with respect to sentences such as:

(9) *It isn't raining in Chicago now, but it may be raining there now

As pointed out by Karttunen (1972), this sentence is unacceptable, as opposed to sentences (10) and (11):

(10) It isn't raining in Chicago now, but it might have been raining there now
(11) I believe that it isn't raining in Chicago now, but it may be raining there now

In this case too, it holds that the unacceptability of (9) is not of a semantic nature, it is a normal contingent statement, just as (10) and (11) are. And thus, since the unacceptability concerns the meaning of (9), it has to be accounted for in the pragmatics. (For a discussion of these sentences and their pragmatic analysis, see Groenendijk and Stokhof 1975.)

Another group of examples concerns certain sentences containing explicit performatives, such as:

(12) *I promise to be there in time, but I do not intend to be there in time

This sentence, too, is unacceptable, but again not for semantic reasons. That it is not a contradiction might require some explanation. The condition that one must intend to do what one promises to do, is a correctness condition which concerns the sincerity of the utterance. That it is not a truth condition is evident from the fact that one cannot deny to have made a promise to do X by pointing out that, although one has said that one promised to do X, one did not intend to keep one's promise. Even insincere promises count as promises. The reason for this is obvious. If whether or not a promise is made would depend on such not publicly observable mental states as intentions, then it would in principle be impossible to decide whether or not a promise is made, and this would render the entire institution of promising socially worthless. A similar argument can be applied to any condition requiring the presence of certain mental states on part of the speaker, showing it to be a correctness condition rather than a truth condition. So, the unacceptability of (12) has to be accounted for in the pragmatics. An example analogous to (12) is

(13) *I warn you that there is a bull in that field, but I do not believe there is one

In Groenendijk and Stokhof (1976) the explanation of these unacceptabilities is discussed in more detail.

A fourth group of examples concerns disjunction. Consider the following sentence:

(14) *John is in London or in Paris, but I believe that he is not in London and I believe that he is not in Paris.

This sentence is unacceptable, as opposed to:

(15) John is in London or in Paris, but I believe that he is not in London.

Again, (14) as well as (15) are contingent statements, so the unacceptability of (14), partly an aspect of the meaning of disjunction, has to be accounted for in the pragmatic component of a theory of meaning.

Yet another group of examples concerns sentences in which expressions occur which induce a pragmatic presupposition. A sentence A has the pragmatic presupposition that p if and only if the utterance of A as well as the utterance of not-A implies that the speaker believes that p. An example, of such a sentence is:

(16) *John knows that it is raining in Chicago, but it isn't

Since the expression *know that* also induces the semantical presupposition of truth of its complement, one might be tempted to think that the unacceptability of (16) could be explained by showing that it is a contradiction. However, the fact that sentence (17):

(17) *I do not know that it is raining in Chicago

is unacceptable for intuitively the same reasons as (16), shows that this explanation would be inadequate. For (17) is not a contradiction, but a contingent sentence. This pragmatic diagnosis of the unacceptability of (16) and (17) is further supported by sentences such as:

(18) *John knows that it is raining in Chicago, but I do not believe that it is
(19) *John does not know that it is raining in Chicago, and I do not know whether it is

Like (17), (18) and (19) are unacceptable, but contingent. Therefore, a uniform pragmatic account of these unacceptabilities has to be given, using the fact that the expression *know that* induces also a pragmatic presupposition of the truth of its complement. Besides expressions such as *know that* which induce both semantic as well as pragmatic presuppositions, [5] there are also expressions which induce only a pragmatic presupposition. An example of a sentence containing such an expression, namely *regret that*, is:

(20) *I regret that Bill resigned, but he didn't

[5] The following generalization seems to be valid: every semantic presupposition has a pragmatic counterpart, but not vice versa. For this reason some have proposed that the notion of a semantic presupposition could be dispensed with altogether. See e.g. Kempson 1975 and Gazdar 1976.

As opposed to sentence (21):

(21) I regretted that Bill resigned, but it later turned out that he didn't

this sentence is unacceptable. The acceptability of (21) and its contingency show that the unacceptability of (20) cannot be explained in semantic terms. The expression *regret that* is an interesting one, since the pragmatic presupposition it induces is not an assumption on the part of the speaker about reality as such, but an assumption on the part of the speaker about the information of the subject of *regret that* about reality. In (20), this amounts to the same thing, since the subject of *regret that* and the speaker are one and the same. In (22) and (23) (taken from Delacruz 1976), this is not the case:

(22) Believing Bill to have resigned, John regretted that Bill resigned
(23) *Not believing Bill to have resigned, John regretted that Bill resigned

All phenomena we have mentioned up to now concern correctness conditions which could be called 'sincerity' conditions. But, as we have already noticed, there are also correctness conditions which concern other aspects of language use. One such condition plays a role in the explanation of the following examples:

(24) *You know that Mary is leaving tomorrow
(25) *You do not know that Mary is leaving tomorrow

Taken as straightforward assertions about the knowledge or lack of it of the hearer, these sentences are clearly unacceptable. They are evidently not contradictions, so an explanation of their unacceptability has to be given in the pragmatics. This kind of unacceptability arises from a conflict between sincerity-type correctness conditions and correctness conditions which run more or less parallel to what Searle calls preparatory conditions. These conditions concern the informativeness of the utterance, the sharing of presuppositions, etc. In contrast to Searle, who formulates conditions such as these objectively, we formulate them in the pragmatics as conditions on the information of language users.

An example of an unacceptable sentence from this category which involves a performative is:

(26) *You do not want me to leave, but I promise you that I will

In general, unacceptabilities from this category seem to be somewhat less serious than those involving only sincerity-type correctness conditions. It is easier to find an interpretation under which they are acceptable. For example, (26) can be reinterpreted as a threat, and (24) can be reinterpreted as an accusation of dis-

honesty of the hearer, as an attack on his pretending not to know, or as a reminder. Such reinterpretations are facilitated by special intonation patterns. However, it should be noted that these acceptable reinterpretations are non-standard: they deviate from the standard informative use of the sentences in question, and are only possible because under the standard interpretation these sentences are unacceptable.

All the phenomena we have discussed in this section concern aspects of meaning which have to be accounted for in the pragmatic part of a theory of meaning, if such a theory is to consist of a semantics and a pragmatics. It should be noted that we could also have presented these phenomena in a different way. Instead of pointing out the unacceptability of:

(7) *The cat is on the mat, but I do not believe it

we could have stated that, from sentence

(7a) The cat is on the mat

one can, under the assumption that it is used correctly, conclude that the speaker of (7a) believes that the cat is on the mat. Likewise, we could have pointed out the fact that from the sentence

(13a) I warn you that there is a bull in that field

one can infer, under the assumption that the speaker uses (13a) correctly, that he believes that there is indeed a bull in that specific field.

We can formulate this as a general principle: if, from the correct use of a sentence A it can be inferred that the use of sentence B would be correct, then a sentence of the form *A and –B* is unacceptable. In other words, it makes no difference whether we present these phenomena by pointing out the unacceptability of certain sentences, or by pointing out the validity of certain inferences. Of course, dealing with actual language use we are more likely to observe these inferences than the corresponding unacceptable sentences, but theoretically there is no difference.

It should be noted that the notion of correctness that we are talking about is a notion of *subjective* correctness. For the uttering of a sentence to be correct it is required that the utterer of the sentence has certain beliefs about reality, about the beliefs of other speech participants, etc. It is this notion of subjective correctness that is essential for the explanation of the phenomena we have discussed. Besides this notion, one could also formulate, in terms of it, a notion of objective correctness, requiring not only the presence of certain beliefs, but also the truth of some of these beliefs. Of course, various modifications are possible. Such notions are of interest for the analysis of the successfulness of communication.

4. Some elements of the pragmatic theory

In this section we will discuss, still rather informally but in some detail, the explanation of the unacceptability of some of the example sentences given above, in order to clarify what kind of notions and principles form the basis of the pragmatic theory.

Let us consider again sentence (7):

(7) *The cat is on the mat, but I do not believe it

This sentence is of the form p *and* $-B_s p$, where p stands for 'the cat is on the mat', B_x is an indexed operator reading 'x believes that', and s is a special index representing the first person personal pronoun. The unacceptability of this sentence is explained by showing that it is *structurally incorrect*. We say that a sentence is structurally incorrect if and only if its correctness conditions are such that they can never be all fulfilled consistently at the same time. What are the correctness conditions of (7)? Sentence (7) is a conjunction and a conjunction is correct if and only if both its conjuncts are correct. In this case, both p and $-B_s p$ should be correct. In order to show the structural incorrectness of (7) it suffices to consider the sincerity-type conditions. A non-compound formula p is correct if and only if the speaker, s, has the information that p is the case. It is important to notice that the phrase 'x has the information that p' is completely neutral as to the truth value p actually has, it does not imply that p is in fact the case, nor that it is not. $-B_s p$ is a negation and it is correct if and only if $B_s p$ is not correct. When is $B_s p$ not correct? $B_s p$ is correct, roughly stated, if s has the information that p is the case, and not correct if s does not have that information. So, $B_s p$ is not correct if it is not the case that p belongs to the information of s. In other words, the correctness of $-B_s p$, the second conjunct of (7), requires that p does not belong to the information of s, and the correctness of p, the first conjunct of (7), requires that p does belong to the information s has. These are imcompatible conditions and the conjunction as a whole can, therefore, never be correct. There is, in other words, no situation possible in which sentence (7) could be used correctly. And that explains why it is considered to be unacceptable.

The idea behind this explanation is, of course, not totally new. Something like it can be found in several discussions of Moore's paradox. What we are concerned with, however, is the development of a formal theory of pragmatics in which this idea can be made explicit. From the discussion of this example some elements of such a theory emerge quite naturally. First of all, the theory must give a recursive specification of correctness conditions of sentences. Second, for this purpose it needs an apparatus to represent the information of language users. One could use sets of formulas, as is done e.g. in Groenendijk and Stokhof (1975), but for a general formulation it is more convenient to have a function, call it the *epistemic*

function, which assigns to ordered pairs consisting of a formula and a language user a value which is called the *epistemic value* of that formula for that language user. There are three such values, one indicating that the formula in question belongs to the information of the language user, one indicating that its negation belongs to his information, and one indicating that neither the formula nor its negation belong to his information.

Correctness of a formula with respect to a language user can be associated with that situation in which the epistemic function assigns a designated epistemic value to this formula and this language user. The first value described above is the natural candidate for the status of designated value. The epistemic function can be defined recursively within a set-theoretical framework. That is to say, the epistemic value of a compound formula with respect to a certain language user can be defined in terms of the epistemic values of its compounds with respect to that language user. We do not bother to state the formal definitions here, since the purpose of this paper is to argue for the development of a theory such as this one and to give an idea of its general set-up, not to present it in full detail. (This will be done in Groenendijk and Stokhof (in preparation).) Associating correctness with a designated value automatically gives the recursive characterization of correctness which is required of an adequate pragmatic theory.

Evaluating formulas with respect to one language user suffices for the formulation of correctness conditions which concern sincerity. However, as we have pointed out earlier, there are also correctness conditions which concern the information the speaker has about the information the hearer has. There is, for example, the condition which requires that if an indicative sentence is to be correct it has, according to the speaker, to contain information which is new to the hearer. This means that we must be able to talk about the epistemic value which according to an individual x a formula has for another individual y. It should be noted that this value is not necessarily the same as the epistemic value of the formula in question for the individual y. For one can have incomplete or false information about the information someone else has. Neither needs this value to be related to the epistemic value of the formula in question for the individual x.

Epistemic valuation with respect to more than one individual not only plays a role in the formulation of this kind of correctness conditions, it is also needed for the formulation of the sincerity-type correctness conditions of those sentences in which explicit reference is made to the information of one or more individuals. Examples of such sentences are sentences containing epistemic expressions such as *know that* and *believe that*. A sentence of the form *John knows that p*, for example, is correct, as far as sincerity is concerned, if according to the information of the speaker p belongs to the information of John. So, in these cases too, we must be able to refer to the epistemic value of a formula with respect to more than one individual. It will be clear that this is not limited to the case of two individuals. In order to adequately handle sentence (28):

(28) John knows that Fred knows that Mary is leaving tomorrow

we must be able to refer to the epistemic value which, according to the speaker the sentence 'Mary is leaving tomorrow' has for Fred according to John. And since there is in principle no upper bound on the number of iterated epistemic operators that may occur in a sentence, this implies that for any arbitrary number of individuals n we must be able to refer to the epistemic value of a formula with respect to such an n-tuple of individuals. So, the epistemic function should be generalized to a function which assigns an epistemic value to an ordered pair consisting of a formula and an n-tuple containing an arbitrary but finite number of individuals. It should be noted that the number of epistemic values increases as the number of individuals, with respect to which a certain formula is evaluated, increases. With respect to one individual there are three epistemic values, with respect to two individuals there are seven epistemic values, exhausting all possible situations. To give one example of what kind of situations the values indicate: in case we are dealing with two individuals, x and y, and a proposition p, then one of the values represents the situation in which the individual x has the information that the individual y either has the information that p is the case, or neither has the information that p is the case nor the information that –p is the case.

Another feature of the pragmatic theory to which we want to draw attention, is the principle, already mentioned in section 1, which states that one has optimal information about one's own conscious mental states. Consider the following formulas: $-p$ *and* $B_s p$ and $-p$ *and* $B_x p$. The first formula represents an unacceptable sentence, since it is structurally incorrect. The second formula, however, represents a possibly correct sentence. The correctness conditions of the second formula require that –p belongs to the information of s and that p belongs to the information s has about the information of x. These are in principle compatible conditions. The correctness conditions of the second formula require analogously that –p belongs to the information of s and that p belongs to the information of s about the information of s. This last requirement is incompatible with the first one under the assumption that something belongs to the information of an individual about his own information if and only if it belongs to his information. Assuming the 'optimal information principle', we can equate the epistemic value which according to an individual x has a formula for x with the epistemic value which that formula has for x. Note that in our discussion of the unacceptability of sentence (7) we have used the optimal information principle implicitly.

Implications of our optimal information principle, or something like it, are sometimes challenged. [6] However, the arguments which are adduced do not concern us, for the following reason. Even if it were the case – which in our opinion is very implausible – that it is sometimes possible for someone to know something without

[6] See some of the arguments discussed in Lehrer 1974: ch. 3.

knowing that he knows it, then still this could be no argument against upholding the optimal information principle within the framework of the present theory. For the theory is designed to explain, by the use of (among other things) this principle, certain phenomena concerning the meaning of sentences. The fact that a sentence such as (7) is judged to be unacceptable by every competent language user shows that the correctness conditions of language proceed on the basis of this principle. Clearly, the rules of language are such that it is required that language users fulfill the optimal information principle. And seen in the light of the main function of language use, communication, this is a very reasonable requirement indeed. For if it were not met, it would hardly be possible to communicate anything about one's beliefs, knowledge, and other conscious mental states. The situation is, in fact, quite similar to the situation we encountered earlier with respect to semantics In section 1 we have pointed out that, although semantics deals with the relation between language and reality, semantic analysis does not reveal reality as it is. Likewise, although pragmatics is a theory about the relation between language and language use, pragmatic analysis will not reveal language users as they actually are. What it will reveal is what language users should be according to the rules of language.

Another feature of the pragmatic theory is that it distinguishes between degrees of reliability. Not every piece of information a language user has will, according to him, have the same degree of reliability. Of some he may be totally convinced, about others he may not feel so strongly, while still accepting them as positive information. This distinction is necessitated by the distinction in correctness conditions between sentences containing the expression *know that* and sentences containing *believe that*. If one does not distinguish between different degrees of reliability, then one has to say that a sentence of the form *I know that p* is correct if the speaker has the information that p is the case, and that a sentence of the form *I believe that p* is correct if s neither has the information that p is the case nor the information that $\neg$p is the case. This is not a very plausible condition and besides it would make the wrong prediction that a sentence of the form *I believe that p and I believe that* $\neg p$ could be correctly used. To avoid this, one must be able to distinguish more than just the following three situations: an individual x has the information that p is the case; x has the information that $\neg$p is the case; x neither has the information that p is the case nor has the information that $\neg$p is the case. This can be done quite naturally by distinguishing information with different degrees of reliability. Again limiting ourselves to sincerity-type conditions, it is sufficient for the correctness of a sentence of the form *I believe that p* that the speaker has with some, though not maximal degree of reliability the information that p is the case. But for the correctness of a sentence of the form *I know that p* the information that p is the case should be of maximal reliability.

To distinguish between the correctness conditions of sentences containing *know that*, and similar ones containing *believe that* it suffices to have two degrees of

reliability. But since it may be the case that sometimes more distinctions are expressed in language, and because we want to formulate the pragmatic theory in as general a way as possible, we state the definitions for an arbitrary number of degrees of reliability. One of the consequences of the introduction of degrees of reliability is that the number of epistemic values assigned by the epistemic function increases again, and that the situations which they represent become more complex. For example, we will need an epistemic value to represent the following complex epistemic state: x has with maximal reliability the information that it is the case that y has either with maximal reliability or with some, though not maximal, reliability the information that p is the case, and x has with some, though not maximal, reliability the information that it is the case that y has with maximal reliability the information that p is the case. In such a situation it would be correct for x to utter a sentence of the form *I know that y believes that p and I believe that he knows that p.*

The last, and one of the most interesting, features of the pragmatic theory that we want to discuss in this paper is the treatment of disjunction, implication and modal expressions. As we already have remarked, the epistemic value, and consequently the correctness value, of a disjunction cannot be worked out simply in terms of the epistemic values of the disjuncts. To put it differently, disjunction is non-extensional as far as correctness is concerned. If we want to know whether or not a speaker has correctly used a disjunction of the form $p \vee q$, then it will in general not be sufficient to consider just the information he has about the truth values of p and q in the actual world. Informally stated, a disjunction can be correct if the speaker is convinced neither of p nor of q, but, on the basis of his information, is convinced that either p or q must be the case. Within the pragmatic theory, this is accounted for as follows. A disjunction of the form $p \vee q$ is correct with respect to the actual world if and only if it holds for every possible world with respect to which the speaker has at least the same information he has with respect to the actual world (but possibly more or stronger information) that for every such world, either the speaker has with respect to that world the information that p is the case, or the speaker has with respect to that world the information that q is the case. So, the epistemic value of a disjunction of the form $p \vee q$ is, in the actual world, determined by the epistemic values of p and q in all those possible worlds about which the speaker has at least the same information that he has about the actual world. The epistemic function now becomes a function with three arguments. It assigns an epistemic value to a formula with respect to an n-tuple of of individuals and a possible world.

Other expressions such as the modal expressions *may* and *must* can be handled analogously. A sentence of the form *maybe p* is correct with respect to a world w and a speaker s if and only if there is a possible world w' with respect to which s has the same information of maximal reliability that he has about w and with respect to which s has the information that p is the case. The information s has with less than

maximal reliability may be changed. That this is as it should be can be illustrated by the fact that a sentence such as:

(29) I believe that Mary is leaving tomorrow, but maybe she isn't

can be used correctly. This would be excluded if for the epistemic value of *maybe p* we had to look for a world about which s has the information that p is the case and also the same information that he has about the actual world with less than maximal reliability.

5. Final remarks

We would like to conclude by making two short remarks. If the reader is familiar with Hintikka's work in epistemic logic (see e.g. Hintikka 1962) he might wonder what the difference is between his notion of *epistemic indefensibility* and our notion of *structural incorrectness*. As far as the explanation of some phenomena is concerned, the two notions do indeed more or less coincide. However, at several important points the notion of structural incorrectness has more explanatory power. First of all, correctness conditions which concern the information of language users about the information of other language users, or rather the unacceptabilities to which a violation of these conditions gives rise, are outside the scope of Hintikka's notion of indefensibility. Second, Hintikka's notion cannot be used to explain the unacceptability of sentences such as:

(30) *John tells me that it is raining in Chicago now, but as far as John tells me it may not be raining there now

in which no knowledge, or belief, is mentioned, neither of the speaker nor of John. Other unacceptable sentences which cannot be explained by means of Hintikka's notion are sentences such as:

(31) *I know that you are not able to do so, but I order you to open that window

The reason for all this is quite general: the notion of epistemic indefensibility can only be used to explain unacceptabilities which result from the violation of correctness conditions which are mirrored in truth conditions, so to speak. Correctness conditions of explicit performatives are, in general, not so mirrored in truth conditions. For example, believing that someone is able to do X is a correctness condition, and not a truth condition, for ordering him to do X. This also explains why an analysis such as Hintikka's cannot be applied to expressions which do not contribute anything at all to the truth conditions of the sentences in which they occur, such as the expression *even*. Neither can it be applied to explain the difference in

meaning between two expressions which make the same contribution to truth conditions, but which make a different contribution to correctness conditions, such as the connectives *and* and *but*. And finally, the correctness conditions of disjunctions, or rather the unacceptabilities to which a violation of them gives rise, cannot be explained in terms of Hintikka's notion of epistemic indefensibility.

The last remark we would like to make concerns the relation between semantics and pragmatics. So far, we have used the terms 'semantics' and 'pragmatics' as if they denoted two completely distinct parts of the theory of meaning. In fact, there are some interesting interrelations. The information of language users not only plays a role in the pragmatics, but also in the semantics of epistemic expressions, modal expressions (see Groenendijk and Stokhof 1975), counterfactual conditionals (see Veltman 1976), among others. In fact, the propositional part of semantics, i.e. the semantics of propositional connectives and propositional operators, can be defined in terms of the same epistemic system as the pragmatics. This suggests that further development of the pragmatic part of the theory of meaning might, initially at least, follow the lead of semantics. Further study is directed towards the analysis of the contribution which expressions below the propositional level make to the correctness conditions of the sentences in which they occur. It might turn out, for example, that certain aspects of the meaning of definite and indefinite terms which so far have resisted a satisfactory semantic analysis, in fact belong to the realm of pragmatics. Besides this line of further development, there is another one, leading away from the analysis of the meaning of specific expressions to a further analysis and characterization of conversations. The notions and principles developed in pragmatics seem to offer a promising starting point for an analysis of the way in which conversations run, the conditions under which they are succesful, given a certain goal, etc.

We are aware of the fact that much of what we have said has remained more or less informal and programmatic. However, a more elaborated statement would have required a rather detailed exposition of the definitions and principles involved. And that would have been beyond the scope of this paper, which was to give some arguments for the incorporation of a pragmatic theory into a theory of meaning. Our ideas about the form and content of such a theory, which could only be hinted at in this paper, will be presented in detail in Groenendijk and Stokhof (in preparation).

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