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## PRAGMATICS AND PRESUPPOSITION

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This paper examines the claim that the only adequate account of presupposition in natural language must be a contextual one, and that a purely semantic account of this notion is inadequate. We contend that exactly the opposite is the case: there is an adequate semantic account of presupposition in natural language, so that contextual accounts of this notion are unnecessary.

The idea that there are CONTEXTUAL PRESUPPOSITIONS over and above SEMANTIC PRESUPPOSITIONS has been gaining in popularity in both linguistics and philosophy.<sup>1</sup> Some linguists and philosophers even argue that the semantic notion of presupposition should be abandoned in favor of the contextual one. The aim of this paper is to show that, on the contrary, there is no need at all for a contextual notion of presupposition—and moreover that the claims on behalf of this notion are based on a conceptual confusion about the relation between grammar and pragmatics. We will examine the most influential argument for contextual presupposition, namely that of Karttunen 1973,<sup>2</sup> which summarizes and builds on the earlier work. Besides showing that this argument is invalid, we will show why an adequate concept of the relation of grammar and pragmatics makes any such notion as contextual presupposition entirely unnecessary.

**1. SEMANTIC PRESUPPOSITION.** The notion of semantic presupposition enters contemporary philosophy of language and linguistics from the work of the logician and philosopher Frege (1892), who was primarily interested in developing an account of the logical form of sentences in which meaningfulness was not a sufficient condition for statementhood. For him, the condition under which declarative sentences make a statement (bear a truth value) was that each of their referring expressions should succeed in referring to an appropriate object or objects. In Frege's view, the content of such presuppositions (i.e. what properties of an object or objects make them 'appropriate', or what the requirement for success is) was something that depended on the grammatical structure of sentences.

A contextual presupposition differs from a semantic one in that the content of the latter condition is determined by the grammatical structure of a sentence type, whereas the content of the former condition is determined also by features of the context in which a sentence token occurs. Contextual presupposition naturally applies to utterances, while semantic presupposition naturally applies to sentences of a language. Moreover, this difference should not be obscured by the fact that both kinds of presupposition are conditions whose satisfaction normally requires a relation between something linguistic and the world.

Those who first developed a semantic theory within the theory of TG grammar characterized the level of semantic representation as consisting of formal structures from which the semantic properties and relations of sentences can be determined.

<sup>1</sup> See, for example, Green 1968, Lakoff 1971, Horn 1972, Morgan 1973, and Stalnaker 1974.

<sup>2</sup> See also Karttunen 1974, MS.

Thus the optimal semantic representation of a sentence in a grammar is whatever formal structure provides the simplest basis for predicting whether it is meaningful, ambiguous, analytic, synonymous with such-and-such other sentences, etc. (Katz 1972, ch. 1). The specification of such semantic properties and relations was left open-ended, in order to accommodate further cases that might turn out to be predictable from the semantic representations developed to predict meaningfulness, ambiguity, analyticity etc. Presupposition was incorporated into semantic theory on the hypothesis that it is one of these further cases (Katz 1965:597–8, 1966:211–20).

Introducing presupposition as one of the semantic properties and relations that must be predicted from an optimal semantic representation raises questions both about the interpretation of this notion—e.g. whether it should be interpreted logically, situationally, or in some other manner—and about the proper formal devices to use in constructing semantic representations. Both these questions have been discussed (Katz 1972:127–50). A contribution to these discussions was made by Langendoen & Savin (1971), who saw clearly that the formal devices required for constructing semantic representations from which presuppositions could be predicted would have to be part of the same machinery that provides a compositional analysis of the meaning of a sentence. Their empirical survey of the facts about how the presuppositions of the components of a complex sentence are related to the presupposition of the complex sentence as a whole led them to formulate the following hypothesis:

- (1) Each of the presuppositions of a component sentence in a complex sentence is a presupposition of the entire complex sentence.

But counter-examples were soon pointed out. Morgan 1969 observes that 1 fails for sentences like:

- (2) If Jack has children, then all of Jack's children are bald.

As Austin 1963 points out, sentence 3, the consequent clause of 2, by itself presupposes the existence of people who are children of Jack:

- (3) All of Jack's children are bald.

Austin writes (p. 17): 'Not only [3] but equally "[Jack's] children are not bald", presupposes that [Jack] has children. To talk about those children, or to refer to them, presupposes that they exist.'

Yet as Morgan observes, 2 presupposes nothing beyond the existence of Jack; so here the presupposition of a component sentence of a complex sentence is not a presupposition of the entire sentence. Further, as Katz 1972 and Karttunen 1973 observe, the presuppositions associated with an expression in a sentence are not, in general, associated with the complex sentences in which such a sentence appears as a verbal complement, because referentially opaque verbs remove such presuppositions. Thus, in a sentence like 4, there is no presupposition that Santa Claus exists:

- (4) Bob believes that Santa Claus came last night.

As Karttunen (1973:173) puts it, one must distinguish between HOLES, PLUGS, and FILTERS—i.e., positions that let the presuppositions associated with the expressions

appearing in them become presuppositions of the entire sentence, positions that do not let them, and positions that sometimes do and sometimes do not.<sup>3</sup>

To avoid such counter-examples, we might restate the Langendoen–Savin hypothesis as follows:

- (5) Each of the presuppositions of a component sentence in a complex sentence is a presupposition of the entire complex sentence just in case it is associated with an expression that appears in a hole.

But 5 amounts to no more than a triviality, since holes have been characterized so far as positions that let the presupposition of the expression occupying them become presuppositions of the entire sentence. Thus the problem is twofold: an adequate semantic theory must also set up machinery to explicate formally these metaphorical notions of holes, plugs, and filters. That is, it must provide, in terms of such machinery, the projection mechanism that explains 5 and 6, and tells us when the filters are open and closed:

- (6) No presuppositions of a component sentence in a complex sentence are presuppositions of the entire complex sentence if they are associated with expressions that appear in a plug.

This is done by Katz (1972, MS) as part of the formal theory of compositional semantic interpretation. In the next section, we briefly sketch how that machinery works.

**2. FORMALIZATION OF SEMANTIC PRESUPPOSITION.** Katz (1972:167) proposes that the referential positions in propositions (senses of sentences) be formally represented by the notation of enclosure within heavy parentheses, to distinguish them from non-referential positions. Besides non-referential positions created by verbs of propositional attitude, such as *believes* in 4, the subject of *exists* is non-referential in our sense. The position occupied by *poisonous mushrooms* in 7 is non-referential, but its position in 8 is referential:

- (7) Poisonous mushrooms exist.

- (8) Poisonous mushrooms killed the elephant.

Since 7 asserts that there are poisonous mushrooms, it cannot be represented as presupposing the existence of poisonous mushrooms. If it were so represented, it would be described as having its truth condition included in its condition of statementhood, and it would be mistakenly marked as analytic (Katz 1972: 172–8).

The sense of ‘referential’ represented by a pair of heavy parentheses is different from the standard one in terms of substitutivity of identicals (Katz 1972:141)—since, supposing that *toadstools* is coreferential with *poisonous mushrooms*, we can substitute the former for the latter in 7 as well as 8, preserving truth. Yet, as we have just seen, we cannot regard the term position of 7 as referential in the sense of presuppositional reference. Thus the interpretation of heavy parentheses in a reading is simply this: a necessary condition on the (assertive) proposition represented by the reading being a statement (i.e. either true or false) is that the reading

<sup>3</sup> Karttunen actually speaks of the predicates (not the positions of their arguments) as constituting the holes, plugs, and filters. This difference, however, is immaterial to the discussion.

enclosed within these heavy parentheses refers appropriately. The interpretation of a component reading not enclosed within heavy parentheses is, correspondingly, that the statementhood condition of the proposition in question is independent of whether the reading refers. The assertion of 4 makes no claim concerning anyone about whom Bob has a belief, whereas the assertion of 9 does make a claim concerning someone about whom Bob has a belief:<sup>4</sup>

(9) Bob knows that the burglar came last night.

We are now in a position to explicate the notions of 'hole' and 'plug' and to explain 5–6, leaving the question of filters for later. At the lexical level, some verbs, e.g. *believe*, *exist*, *want* etc., will have to be represented by readings in which categorized variables marking term positions are not enclosed by heavy parentheses; others, e.g. *kill*, *know* etc., will have to be represented by readings in which such categorized variables ARE enclosed by heavy parentheses. Thus some parts of lexical readings have the form displayed in 10, while others have the form displayed in 11:

(10)  $\left[ \begin{array}{c} [ ] \\ \dots X \dots \\ \langle \rangle \end{array} \right]$

(11)  $\left[ \begin{array}{c} [ ] \\ \dots ( X ) \dots \\ \langle \rangle \end{array} \right]$

We can formally explicate the notion of a HOLE as a term position in a proposition represented in the form 11, and the notion of a PLUG as a term position in a proposition represented in the form 10. In the semantic representation of 8, the variable in

<sup>4</sup> It is also possible for an entire complement to be in referential position; thus the contrast between referential and non-referential positions in 4 and 9 is matched here:

(a) Alice believes (thinks, etc.) that it is raining.

(b) Alice regrets (realizes, etc.) that it is raining.

The predicates in sentences like (b), in which the reading of the object complement is in referential position, have been called 'factives' by Kiparsky & Kiparsky 1970. We retain their terminology, but not their construal of factive presupposition as a condition on the speaker's beliefs, i.e. one that makes the utterance of the entire sentence anomalous in case the speaker's beliefs do not include the proposition expressed by the complement of the factive predicate. We do this because the adoption of this notion of 'speaker presupposition' leads to absurd consequences (cf. Katz 1973). Rather, we consider that the truth of the complement sentence is a necessary condition for the entire (declarative) sentence in which it occurs to be true or false. The condition, in other words, is a semantic presupposition of the same sort that obtains in the case of ordinary referring expressions.

We can interpret this requirement—that the complement of a factive predicate must be true, in order for the sentence as a whole to be true or false—as equivalent to a requirement that its reading succeed in corresponding to an actual state of affairs. The formal treatment of the presuppositions associated with the complements of factive predicates follows directly. We categorize the variables whose values represent objects of predicates like *regret*, *believe* etc., and subjects of predicates like *be amazing*, *be certain* etc., for readings of the complement sentences; such variables will be enclosed in heavy parentheses just in case they are associated with factive predicates. Thus, in (b) above, the reading for *it is raining* is substituted for a variable enclosed in heavy parentheses; but in (a), the reading for *it is raining* is substituted for a variable not enclosed in heavy parentheses.

the reading for *kill* that is categorized for a reading of the subject of the sentence is enclosed in heavy parentheses; therefore the reading of the subject is placed in referential position by virtue of the projection rule which substitutes the reading of *poisonous mushrooms* for this categorized variable. Essentially the same thing happens in the semantic representation of 9: heavy parentheses enclose the variable in the reading of *know* that marks the position (or one of the positions) for terms that stand for the things about which the sentence asserts something is known. Moreover, it is categorized for a reading of the subject of the embedded sentence, i.e. the reading of *the burglar* in 9. This reading thus is placed in a referential position when the projection rule substitutes it for the aforementioned categorized variable. Hence, on the interpretation of heavy parentheses—that readings enclosed in them must succeed in referring to an appropriate object or objects, if the entire sentence is to make a statement—we can explain 5 with respect to these examples.

The explanation of 6 can be given in terms of exx. 4 and 7. The latter is straightforward: the variable categorized for the reading of the subject of the sentence is not enclosed in heavy parentheses; thus, when the reading of *poisonous mushrooms* is substituted for it by the projection rule, the reading is placed in a non-referential position. In 4, the interpretive process works as follows. The lexical reading for *believe* will contain a categorized variable (or categorized variables) for readings that appear as the terms of the proposition functioning as the object of belief, i.e. the proposition that a sentence like 4 says that someone thinks is true. One such variable will be categorized for the reading of the subject of the sentential complement of *believe*. Now, the sentence that appears as the complement of *believe* in 4 would, outside this context, presuppose the existence of something answering to the description in its subject NP, since *come* will have a lexical reading in which the term of the predicate is enclosed in heavy parentheses. But since it is the reading of a subject of a sentence appearing as the complement of *believe*, this reading will be substituted for the variable in the reading of *believe* categorized for such readings; hence it will be taken out of a position enclosed by heavy parentheses, and put into one not so enclosed. Thus, on the interpretation of heavy parentheses, this projection process explains 6 with respect to these examples (see further Katz, MS).

Before we turn to filters, let us summarize this discussion. The semantic property of presupposition can be formally defined in terms of the occurrence of readings enclosed by heavy parentheses. The definition, which is spelled out in greater detail by Katz (MS), is:

- (12) The presupposition of a proposition  $P$  (sense of a sentence) is the requirement that all and only the readings  $R_1, \dots, R_n$  enclosed in heavy parentheses in the reading  $R$  of  $P$  succeed in referring to their appropriate object(s).

This expresses the condition for the statementhood of sentences like 4, 7, 8, and 9. Moreover, the normal operation of the projection rule, together with independently motivated representations of the semantic structure of particular lexical items, automatically provides a formalization of the metaphorical notions of plugs and holes.

We now take up filters, the notion of which is actually a misleading metaphor. Unlike the notions of holes and plugs—which, though metaphorical, do correspond to a formalism in readings (i.e., holes and plugs have a structural realization in the difference between referential and non-referential positions)—the notion of a filter cannot be expressed in terms of a comparable formal device. The cases covered by this notion are just the ones in which semantic interpretation rules change holes into plugs or plugs into holes.

How did the notion of a filter arise? Compare 13 with 2:

(13) If Jack has sisters, then all of Jack's children are bald.

As Morgan 1969 and Karttunen 1973 both observe, sentences like 13 presuppose that the person referred to by the subject in the antecedent has children. Now this observation, together with the observation that sentences like 2 do not presuppose that there are such children, shows that the term position occupied by the subject in the consequent of such conditionals behaves like a hole on some occasions and like a plug on others. Karttunen jumps to the conclusion that he has found a new type of semantic entity with the properties of both holes and plugs. But another explanation is possible, in which there is no such new entity. We can say instead that in cases like 13, the position in question is a hole, while in cases like 2, it is a plug. If we say this, we must provide a rule of semantic interpretation that converts holes into plugs, i.e. changes referential positions into non-referential ones, under the conditions that obtain in examples like 2.

Such a rule is proposed by Katz (MS). The rule would appear as a reading of a syntactic element in the same manner that antonymy rules appear as the reading of the NEG element (Katz 1972:157–71), and it would operate on a reading in its scope by deleting occurrences of heavy parentheses in the reading. We may refer to this rule as the 'heavy-parentheses wipe-out rule' (HPWR). We shall first provide independent motivation for HPWR, and then show how it can be used to handle cases like 2.

Katz (MS) uses HPWR to explain the semantic fact that generic sentences like 14, in contrast to non-generic ones like 15, do not have referential presuppositions:

(14) The owl is nocturnal.

(15) The owl is awake.

That is, the statementhood of a sentence like 14 does not depend on there being some actual owl(s)—past, present, or future—referred to by its subject. This fact would be explained if the syntactic feature [Generic] (or whatever syntactic element is used instead of such a feature) has HPWR as its lexical reading—and if, at the syntactic level, the genericness of 14 is accounted for by marking the subject NP's (or the whole sentence) as [Generic]. Then the application of HPWR to the reading of the subject in 14 removes the heavy parentheses around the term position of the predicate *is nocturnal*. In contrast, neither the subject NP nor the entire sentence of 15 is marked as [Generic]; thus the heavy parentheses around the term position of the predicate *is awake* are not removed, and they appear in the reading of the sentence. We note further that HPWR must operate on the heavy parentheses around every term position of a predicate in its scope, so that the presuppositional requirement for EVERY term of a relation is canceled if any ONE is. This further

clause is needed to handle the fact that sentences like 16 have no presupposition:

(16) The owl interbreeds with the cat.

Given HPWR, we can employ it to explain why a sentence like 2 does not presuppose the existence of children of Jack, even though the existence of such children would be presupposed by the consequent sentence in isolation. The meaning of a conditional sentence in natural language normally involves the notion of what WOULD BE the case if some possibility were to become an actuality. Let us call this aspect of their meaning their ‘hypotheticality’. It is just this aspect that is lost when conditional sentences of natural language are translated by the material conditional of logic. Thus, if we translate 17 as 18, then any denial of the claim made by 17 must assert that Saul will convert to Islam:

(17) If Saul will convert to Islam, he will get into Egypt.

(18) Saul will convert to Islam (=P)  $\supset$  Saul will get into Egypt (=Q).

That is, on the translation 18, I cannot deny the claim of 17 without asserting that Saul will convert to Islam, which it is absurd to think I assert in denying the claim: the denial of 17 is, *ex hypothesi*,  $\sim(P \supset Q)$ , and this is equivalent to  $\sim(\sim P \vee Q)$  which is  $P \& \sim Q$ , which implies P.

However we choose to represent hypotheticality, it must follow from the representation that the predicate(s) of the antecedent clause(s) of a conditional fall in the scope of hypotheticality; as a consequence, the truth conditions associated with the proposition(s) expressed by these antecedent clause(s)—when they appear as isolated sentences—are nullified. That is, hypotheticality is a plug for truth conditions. The truth conditions of 17, e.g., do not include the truth conditions of 19:

(19) Saul will convert to Islam.

The details of how we represent this plugging do not concern us here (cf. Katz, MS). What is of concern here is that the case of conditional sentences is, as it were, the inverse of the case of generic sentences. In generic sentences, the presupposition is wiped out, but the truth conditions remain; but in the antecedent of a conditional, the truth conditions are wiped out, but the presupposition remains.

This fact raises the question of what happens to constituents in other clauses of a sentence, when they are anaphoric to a constituent in a clause that has had its presupposition or truth-condition contribution wiped out. The anomaly of 20 shows that anaphora relations extend the scope of HPWR:<sup>5</sup>

(20) The owl is nocturnal and it is awake.

HPWR also applies to impose a non-presuppositional characterization on constituents which are anaphoric to ones that have been hypotheticalized; this is clear from the fact that 21 does not presuppose that the pronoun subject of its second clause refers to some actual state of affairs:

(21) If Saul converts to Islam, it will kill his mother.

HPWR is triggered by an anaphoric relation to a constituent whose presupposition or truth-condition contribution has been eliminated. It removes the heavy parentheses

<sup>5</sup> The anomaly of 20 results from the adjective *awake* being inherently non-generic. This can be seen from the fact that 14 is ambiguous between a generic and non-generic sense, but 15 has only a non-generic sense.



around the reading of the anaphoric constituent. Thus this operation of HPWR explains why 2 (*If Jack has children, then all of Jack's children are bald*) does not presuppose that the subject of its consequent clause refers; but in 13 (*If Jack has sisters, then all of Jack's children are bald*) there is no appropriate anaphora relation to cause the subject of the consequent clause to become non-referential.

The situation is somewhat more complex, however. From examples like 22, we see that the application of HPWR does not depend on anaphora as understood in syntax, but rather on meaning inclusion:

(22) If Jack has children, then all of Jack's sons are bald.

Here, as in 2, the subject of the consequent clause is not presupposed to refer; thus the reading of the terms whose heavy parentheses are removed by such applications of HPWR must contain the reading of the corresponding constituent in the antecedent clause whose presupposition or truth-condition contribution has been eliminated. (For further discussion on this point, see the Appendix, below.)

3. THE ARGUMENT FOR CONTEXTUAL PRESUPPOSITION. We have sketched a treatment which accounts for hole and plug phenomena in terms of rules that convert holes into plugs in the process of deriving the semantic interpretation of a sentence compositionally. Thus we can begin to see how the initially heterogeneous behavior of semantic structures classified under the heading of filters will assume regular form, and can be described in a straightforward way by rules of the semantic component. Thus far, then, nothing prevents the full treatment of presuppositional phenomena from being handled entirely within the semantic component of a generative grammar.

However, Karttunen 1973 claims that another filtering phenomenon cannot be handled within the strict confines of formal grammar. He argues that, in sentences like 23—which are parallel in structure to sentences like 13, rather than 2—the presupposition arising from the factive verb *regret* in the consequent may still be filtered out:

(23) If Nixon appoints J. Edgar Hoover to the cabinet, he will regret having appointed a homosexual.

According to Karttunen, in contexts in which it is believed that Hoover is a homosexual, 23 does not presuppose that Nixon will have appointed a homosexual (just as 2 does not presuppose that Jack has children)—even though, by virtue of the fact that *regret* is a factive, like *know* in 24, Nixon's appointing a homosexual is a presupposition of 25:

(24) Bob knows that Nixon was behind Watergate.

(25) Nixon will regret having appointed a homosexual.

Moreover, Karttunen argues that the simplest form of the presupposition filtering mechanism for conditional sentences would treat the filtering of presuppositions under purely semantic conditions as a special case of filtering in context—namely, as the case where the context is null. As he puts it (1973:185):

The effect of these revised filtering conditions is to make the notion of presupposition relative with respect to linguistic contexts, that is, to sets of sentences whose truth is taken for granted. We can no longer talk about the presuppositions of a compound [i.e. complex] sentence in an absolute sense, only with regard to a given set of background assumptions.

It may be observed, prior to considering the validity of this argument, that it fits nicely into the general tendency within generative semantics (as noted by Katz & Bever, *MS*), to attack the notion of a formal grammar in the sense of a system of rules that mechanically assigns structural descriptions to sentences. The assignment of structural descriptions that include a specification of presupposition is made relative, by Karttunen's treatment, to knowledge of whether the context under consideration is null, or whether it is one in which some particular set of background assumptions are true. For Karttunen, although we can formally state various conditionals about a sentence like 23, specifying the belief conditions under which the sentence presupposes the same things that its clauses presuppose, we cannot detach the consequents of such conditionals without destroying the formal character of the system in which the conditionals are expressed. This is because detachment of the consequents would require supplementing these systems with statements expressing truth about the world. Thus Karttunen's argument—that grammars treating presupposition as an absolute property (computable from the grammatical structure of a sentence) should be replaced by grammars treating presupposition as relative to context—implies either that grammars can make no predictions about what the presupposition of a sentence is, or that generative grammars must be abandoned in favor of grammars that determine the assignment of properties like presupposition non-formally. Since it is hardly an attractive course to make no predictions about a property that obviously should be predicted, Karttunen's argument coincides with those that Lakoff and other generative semanticists have been making on behalf of the claim that the absolute notion of grammaticality must be abandoned in favor of a notion of relative grammaticality.<sup>6</sup> Thus the issue here between a contextual and a semantic theory of presupposition is part of the larger issue of whether an adequate grammar of a natural language is a formal system.

**4. PRAGMATICS AND PRESUPPOSITION.** To see what is wrong with Karttunen's argument, we need to begin with the theory of linguistic communication that has developed out of the work of TG grammar over the past two decades. This theory's account of how speakers of a language *L* communicate in their language is based on a model of on-line processing mechanisms for speech production and recognition that embodies a grammar of *L*. The nature of the relation between a grammar (a theory of linguistic competence) and a model of production and recognition (a theory of linguistic performance) has so far been studied most extensively in connection with syntactic and phonological phenomena.<sup>7</sup> It is clear, however, that a complete account of this relation will also require a study of the role of semantic competence in a performance model.

A beginning was made in studying the role of the competence/performance distinction in semantics during the early 1960's, in the first attempts to characterize a semantic component of a transformational grammar. Katz & Fodor (1963:174) suggested that the semantic competence of speakers consists of whatever non-syntactic and non-phonological information they have about the structure of

<sup>6</sup> See, e.g., Lakoff 1971a,b.

<sup>7</sup> See, e.g., Chomsky 1965; Chomsky & Halle 1968; Bever, Katz, & Langendoen, *MS*.

sentences when there is no information at all about their contexts—or alternatively, when they occur in zero contexts, as in an anonymous letter. Katz & Fodor drew a sharp distinction between what may be called ‘grammatical meaning’ (the meaning of a sentence type in the language) and ‘utterance meaning’ (the meaning of a particular token or use of a sentence type on some specific occasion). Within their framework, Chomsky’s distinction of ‘well-formedness’ vs. ‘acceptability’ is paralleled by the distinction of ‘meaningfulness’, which is a property of sentence types, vs. ‘significance’, which is a property of tokens, or utterances. Thus 26 is meaningful—i.e., it has a grammatical meaning in English—but a token of 26 incomprehensibly spoken by nursery school children would not be significant:

(26) I pledge allegiance to the flag of the United States of America.

On the other hand, 27 is not meaningful in the language—but a token of this semantically deviant sentence, used by John’s golfing partners to describe his poor performance, might be fully significant in context:

(27) Golf plays John.

This leads to the following difference between a grammar and a performance theory at the semantic level. A grammar is a system of formal rules that provides a sound–meaning correlation in the language: it associates a grammatical meaning with each sentence type. A semantic performance theory is a system of rules that specifies how contextual factors interact with grammatical structure to determine an utterance meaning for each token of a sentence type: it concerns itself not with sentence types, but with their spatio-temporal tokens, and not with grammatical meaning but with utterance meaning. Thus, we may regard a semantic performance theory as a THEORY OF PRAGMATICS (Katz, MS).

The problem to which a theory of pragmatics addresses itself is how to account for the divergence of utterance meaning from grammatical meaning. Thus the grammatical meaning of 28 is, roughly speaking, that the U.S. president at this time is endowed with extraordinary intellectual ability:

(28) We have a genius in the White House now.

But the utterance meaning of current tokens of 28 might be just the opposite. We may conceive of a theory of pragmatics as taking a function of the form ‘PRAG ( $x, y$ ) =  $z$ ’. The arguments  $x$  and  $y$  are, respectively, a sentence  $S$  together with its structural description in an optimal grammar, and a full specification of the relevant contextual information about a particular token of  $S$ . The value  $z$  is a representation of the utterance meaning of this token in the specified context. Properly constructed, such a function will account for the divergence of utterance meaning from grammatical meaning by providing an utterance meaning that is appropriately different from the grammatical meaning of the sentence in all and only those contexts that themselves determine aspects of the semantic content of the utterance.

The question of how the utterance meaning of a token is represented can be reduced to the question of how grammatical meaning is represented by taking the representation of the utterance meaning of a sentence token to be the grammatical meaning of a sentence type different from the sentence type for this token. Thus a theory of pragmatics, like a grammar, can be regarded as a sound–meaning

correlation—only not one for the language, but one for particular context–utterance pairs. Thus, in certain contexts at the present time, 28 is used to communicate the opposite of its grammatical meaning, and so the value of PRAG should be the semantic representation of 29 in the grammar of English:

(29) We have a moron in the White House now.

It is not important or possible to specify the nature of the rules comprising PRAG. What we have said so far is enough to bring out the fallacy in Karttunen's argument.

This concept of pragmatics, and of its relation to formal grammar, is that knowledge of the grammar of a language provides the speaker with knowledge of all the sentences of the language and of all their correlated meanings; but knowledge of the principles in PRAG provides the speaker with knowledge of how to exploit information about an utterance context to express a meaning, using some sentence of the language with which that meaning is not correlated in the language. Thus knowledge of both grammar and pragmatics provides speakers with the ability to speak ironically or sarcastically (as in our example), their ability to speak concisely, and so on.

There is one feature of this ability—gained by speakers through knowledge of pragmatic principles, in addition to their knowledge of the grammar—which calls for special attention. We normally employ this ability to speak VERY concisely. We say such things as:

(30) John is here.

But by so doing, we express the statement that some specific person with the name 'John' is at some particular location. Thus the sentence whose reading is the output of PRAG should be as fully spelled out as is necessary to specify uniquely the actual statement made on the occasion. On some occasion where a token of 30 occurs, the output of PRAG might be the reading of sentence 31:

(31) The person named 'John Jacob Jingleheimer Smith', who is employed by the Smith and Wesson Company, who is seven feet tall, etc., etc., etc., is at 11:59 A.M., December 31, 1974, at the very center of Times Square in New York City.

The extra information, such as John's middle and last names, his job, his height etc. would be the information that the participants in the speech situation themselves use to pin down the referent of the subject, the time of utterance, and the intended location.

In the context which Karttunen imagines, the participants in the speech situation all believe that J. Edgar Hoover is a homosexual, and each knows that the others share this belief. Thus it is reasonable to suppose that 23 is another instance of concise speech, in that it does not contain some constituent expressing the belief that J. Edgar Hoover is a homosexual—but nonetheless makes the statement that Nixon will regret the appointment of Hoover, because it is the appointment of a homosexual. That is, the token of 23 in the situation Karttunen constructs can be taken to make this statement, even though the sentence used to make it omits the information that Hoover is a homosexual—because we can assume that the information is shared by the participants, that they know it to be shared, and that they can employ PRAG in addition to their knowledge of the grammar. Thus it is

reasonable that the output of PRAG, for the use of 23 in Karttunen's context, is the reading of 32, which represents the utterance meaning of this token of 23:

- (32) If Nixon appoints J. Edgar Hoover—who, as we all know, is a homosexual—to the cabinet, he will regret having appointed a homosexual.

Contrary to Karttunen's claim, then, there is no need for a notion of contextual presupposition to handle the facts about filtering in connection with the critical case. The semantic interpretation of 32 provides exactly the right presuppositions for 23 in the context assumed. HPWR will apply to remove the heavy parentheses around the reading of the complement of *regret* that comes in by virtue of this verb's factivity. HPWR performs this operation because, as in the case of 22, the reading whose heavy parentheses are removed bears the relation of meaning inclusion to the corresponding constituent in the antecedent clause whose truth-condition contribution has been eliminated. Clearly, we must construe *a homosexual* in the consequent of 32 not only to be a specific homosexual, but in fact the same one identified by the name *J. Edgar Hoover* in the antecedent. This construal is also required to obtain the right contextual presupposition on Karttunen's analysis. Hence 32 will not presuppose that Nixon will have appointed a homosexual, and this accounts for the fact that the utterance meaning of 23 in the context that Karttunen supplies does not presuppose it either, even though 23 itself does have the presupposition.

This reply to Karttunen is quite general. Whenever a Karttunen-type argument for a contextual presupposition C is made (i.e. one along the lines he set out for the presupposition about the belief that J. Edgar Hoover is a homosexual), then we may recast C in terms of a constituent of the sentence that expresses the statement made on the occasion—the sentence whose reading is the output of PRAG for the appropriate arguments. Moreover, when such 'presuppositions' do not hold, it will not be possible to justify a correspondingly richer statement. For example, if the participants of the situation do not believe J. Edgar Hoover to be a homosexual, then the use of 23 would be TOO concise to be understood in the intended way. Under these conditions, the utterance of 23 could be understood to mean that, if Nixon appoints Hoover to the cabinet, he will regret having appointed a homosexual—someone other than Hoover—because Hoover's new cabinet post will put him in the position to expose the homosexual Secretary of Agriculture, and Nixon will regret that.

Karttunen obtains his conclusion about the desirability of contextualizing presupposition by holding constant the sound-meaning correlation in the grammar with respect to context; i.e., he uses the meaning correlated with a sentence type as the meaning of any of its tokens. This requires him to contextualize presupposition, since he now must make features of the meaning of utterances vary with the context, such as whether it is Hoover or some Secretary of Agriculture that Nixon is said to regret having appointed. We, on the other hand, contextualize the assignment of meaning to tokens, allowing the meaning of a sentence token to diverge from the meaning of its type. This is the role of PRAG. We thereby require no contextualization of presupposition. We keep as competence what is competence by taking as performance what is performance.

5. **GENERALIZING THE ARGUMENT.** Although the line of argument developed in §4 was used exclusively in connection with the notion of contextual presupposition, its application is far broader. It can be applied generally to show that any contextualized property or relation (as opposed to pragmatic rules that comprise PRAG) is eliminable on the basis of a purely grammatical property or relation, in the way that we eliminated Karttunen's notion of contextual presupposition on the basis of the notion of semantic presupposition. Let us consider one further contextual notion to illustrate the generality of our argument.

Grice 1975 distinguishes **CONVENTIONAL IMPLICATURES**, which rest on the meanings of the words in a sentence, from what he calls **CONVERSATIONAL IMPLICATURES**, which rest also on various principles governing discourses. Conventional implicatures are simply semantic entailments. The example Grice often uses to illustrate this notion is:

(33) He is an Englishman; he is, therefore, brave.

Someone who asserts 33 conventionally implicates that his being brave is a consequence of his being English. This consequence relation rests on the meaning of *therefore*. Sarcasm is one of Grice's examples of conversational implicature, as when someone says 34 to mean that John is a poor friend:

(34) John's a fine friend.

The speaker can conversationally implicate this, according to Grice, because the discourse-governing maxim not to say what you believe to be false is flouted so excessively. When we note that the use of 28 to mean 29, discussed above, is a case of the same sort, the question is raised whether a special notion of conversational implicature is necessary. Might it too be definable on the basis of grammatical notions, within the framework of the concept of pragmatics outlined above?

We can define the notion of a conversational implicature as follows. Someone conversationally implicates P in saying S in the context C just in case (a) PRAG assigns the reading R as its output for a structural description of S and appropriate information about C, and (b) the proposition represented by R semantically entails P. Consider the example where 28 is used to mean 29: the speaker succeeds in denigrating the president's intelligence because the hearers know enough about the speaker's political beliefs to know that he or she cannot be using 28 literally, and that he or she could not hope or want to deceive them with so flagrant a lie. Therefore, they construe the speaker to implicate conversationally that the president is stupid. Now the discourse-governing principles (here taken to be among the rules comprising PRAG) that enable us to account for the hearers' construing the speaker to have implicated sarcastically that the president is stupid would also permit us to assign 29 as the utterance meaning of this use of 28. Hence this case of a conversational implicature can be handled by the notions of utterance meaning and of semantic entailment. An extension of this procedure would say that the notion of a conversational implicature, like that of a contextual presupposition, is unnecessary as a basic construct of pragmatics.

An elimination of conversational implicature as a basic notion of pragmatics does not, of course, deny the usefulness of Grice's hypotheses about discourse-governing principles. These may well be a major part of the PRAG mechanism for

assigning utterance meanings to sentence tokens. However, the possibility of an elimination raises a serious question about the homogeneity of the phenomena in the domain that Grice covers under the notion of conversational implicature. Such an elimination must ignore such things as 'normal input and output conditions' (Searle 1969: 57), e.g. that the speaker believes that the hearer speaks the language the speaker is talking in, that the hearer is not deaf, and so on. These are not part of the utterance meaning of the sentence token, but simply things that the hearer can infer from the speaker's behavior. Let us introduce the notion 'speaker implicature' to cover the various things that the speaker gives the hearer the right to infer about his beliefs, knowledge etc., which are not matters of utterance meaning and hence not conversational implicature in our reconstructed sense. Now the question arises about Gricean cases like uses of 35 in which the hearer infers that the speaker does not know which of the two rooms the woman is in:

(35) My wife is either in the kitchen or in the bedroom.

Grice treats such an inference as turning on a clash between maxims. The speaker infringes on the maxim of quantity by not saying which room. If the speaker is not opting out, he must be presumed to be avoiding a conflict with the maxim of quality, and thus he implicates that he does not know which room she is in. Consider the proposition P that the speaker does not know (have adequate evidence for saying) which room his wife is in. Is P a conversational implicature in our sense, i.e. part of the utterance meaning, or a speaker implicature, i.e. something inferable about the speaker like the fact that the speaker believes the hearer knows English? We do not wish to take a strong stand for either answer. We are aware of various considerations that might establish one or the other. For example, we think one is inclined to say, in the case of a clearly sarcastic use of 34, that the speaker ASSERTED that John is a poor friend; but we think that one is not similarly inclined to say, in the case of a normal use of 35, that the speaker ASSERTED that he did not know which of the two rooms his wife was in. This suggests that P is a speaker implicature. If this is right, then the phenomena covered under 'conversational implicature' are not homogeneous, as Grice's theory supposes. This would show that there are really two distinct phenomena, and that we need new principles to explain the distinction between them.

**6. WHAT PRAGMATIC NOTIONS REALLY ARE.** We have shown that the interpretation of sentences in context does not require the abandonment of the semantic notion of presupposition, or the relegation of semantic presupposition to the status of a special case of contextual presupposition. We have argued further that consideration of the manner in which grammars and pragmatic theories interact shows that it is rather the contextual notion of presupposition that is unnecessary. This interaction between competence and performance theories is exactly what one finds elsewhere in the theory of communication; a competence theory defines grammatical properties and relations (grammaticality, ambiguity, rhyme etc.), while a performance theory assigns tokens to types. For example, the part of the performance model that accounts for sentence recognition is a system for assigning tokens of sentences (utterances) to their proper sentence-types in the grammar. From this viewpoint, it becomes clear that Karttunen's pragmatic notion of presupposition is not even

the same kind of notion as that of semantic presupposition. Semantic presupposition is a condition of statementhood. If the SEMANTIC presupposition P of a sentence S holds in a context C where S is used, then the assertion is either true or false; but if P does not hold in such a context, then the assertion is neither true nor false. On the other hand, if the CONTEXTUAL presupposition P of a sentence S holds in such a context C, then S carries some particular meaning M in C rather than some other meaning, e.g., that it is Hoover whom Nixon regrets appointing, rather than the Secretary of Agriculture. But if P does not hold in such a context C, then S does not carry the meaning M in C; thus the two notions are completely different. Contextual presupposition differs in being a condition for determining the proper utterance meaning of a sentence. It is not a condition of statementhood, but rather part of a theory of how sentence tokens are assigned to semantic types in an account of their utterance meaning.

Finally, with this difference between a grammar and a performance theory that accounts for utterance meaning, we show why grammars and the notions defined in them (like speaker implicature) are not formal. The function of a grammar is to describe the structure of sentence types and to explain grammatical properties (like semantic presupposition) in terms of sentence structure. Since nothing prevents us from representing the structure of a sentence type formally, a grammar is a formal theory. But the function of a performance theory is, as we have seen, to assign sentence tokens to semantic types. Hence such a theory uses contingent truths, both to specify the spatio-temporal events that are assigned to semantic types and to determine to which semantic types these events are assigned; e.g., contingent truths about speakers' intentions and beliefs play a role in every current pragmatic theory. But using such contingent truths immediately renders the theory non-formal, since something other than the form and arrangement of symbols in strings determines the theory's treatment of its subject.

#### APPENDIX

It turns out that even Karttunen's definition of 'semantic' filtering for conditional sentences (1973:178) cannot be accommodated within a formal grammatical theory, since it is stated in terms of deductive entailment. Thus, according to his account, sentences like (a) and (b) also do not presuppose that Jack has children:

- (a) If it is true that Jack has children, then all of Jack's children are bald.
- (b) If Jack has grandchildren, then all of Jack's children are bald.

However, what is made hypothetical in (a) and (b) is not the predicate *have children* (applied to *Jack*), but rather *be true* (applied to the proposition *Jack has children*) and *have grandchildren* (applied to *Jack*). In neither case is there any expression in the consequent clause whose reading is included in the reading of the predicate of the antecedent clause. Hence, by the formal semantic theory sketched in §2, the heavy parentheses around the categorized variable for which *Jack's children* is substituted are not removed, and the presupposition remains that Jack's children exist. If users of sentences like (a) and (b) conclude that that presupposition does not obtain, the carrying out of their deductions must be viewed as being performed outside the grammar itself, along the lines proposed in §4.

Karttunen 1973 claims that presupposition filtering takes place not only in conditional sentences, but also in compound sentences where the connectives *and* or *or* are used. Thus, he argues, the presupposition that Jack has children appears in sentences (c) and (e), but not in (d) and (f):



- (c) Jack has sisters, and all of Jack's children are bald.
- (d) Jack has children, and all of Jack's children are bald.
- (e) Jack has no sister, or all of Jack's children are bald.
- (f) Jack has no children, or all of Jack's children are bald.

This claim, we contend, is false. For simplicity, let us just consider cases with *and*, like (d). Concerning this sentence (= Karttunen's 16a), he says (176): 'The interesting case is (16a). As far as I can see, it does not presuppose that Jack has children. If it should turn out that the first conjunct is false, then the whole conjunction surely ought to be false, not indeterminate or truth-valueless.'

This is all that Karttunen says by way of justifying his claim that sentences like (d), in which the first clause asserts what the second clause presupposes, do not contain a presupposition associated with the second clause; in contrast to the situation with conditional sentences, there is no independent semantic property of the sentence type which can be thought of as providing the basis for the presupposition filtering (such sentences are not hypothetical). Thus the claim that *and* and *or* result in filtering rests ultimately only on the intuitions of the investigator.

Suppose we assert that, in (d), the presupposition that Jack has children remains, and in general that *and* and *or* are never by themselves associated with filtering of presuppositions. We can now show that the two claims make different predictions about the relation between conjoined sentences and their counterparts with conjoined NP's, and that only the latter claim is consistent with the hypothesis that the two sentence types have the same logical form (assuming, as we do, that presupposition is part of logical form). Consider the following:

- (g) Jack has children, and all of Jack's children have children.
- (h) Jack and all of Jack's children have children.

Suppose that Jack does not have children. On Karttunen's analysis, (g) is false and (h) is truth-valueless (fails to make a statement). On our analysis, both (g) and (h) are truth-valueless. Thus (g) and (h), on Karttunen's analysis, cannot have the same logical form; this will force him to give up the generalization that conjoined sentences and their counterparts with conjoined NP's always have the same logical form—a generalization which holds outside this type of case (cf. Harnish, ms). On our analysis, on the other hand, the generalization is secure. A parallel argument holds for cases with *or*. Hence our analysis, in which *and* and *or* are not associated with presupposition filtering, is preferable to Karttunen's.

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