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A CRITICAL EXAMINATION OF

FREGE'S THEORY OF PRESUPPOSITION

AND

CONTEMPORARY ALTERNATIVES

by

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B.A., STANFORD UNIVERSITY

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A CRITICAL EXAMINATION OF FREGE'S THEORY OF PRESUPPOSITION AND CONTEMPORARY ALTERNATIVES

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SCOTT SOAMES

Submitted to the Department of Philosophy on January 14, 1976, in partial fulfillment of the requirements for the degree of Doctor of Philosophy.

ABSTRACT

This thesis consists of two separate but related studies on the notion of presupposition as it occurs in philosophy and linguistics. In the first study I examine the theory of logical presupposition found in the work of Gottlob Frege. In the second I examine the theories of Deirdre Wilson and Lauri Karttunen. These theorists reject the notion of logical presupposition in favor of pragmatic and non-logical conceptions. There are important problems with all three theories. Frege's theory fails to account for the presuppositions of compound sentences. Wilson's and Karttunen's fail to demonstrate conclusively that the presuppositions of simple sentences and their negations are non-logical.

FREGE'S THEORY OF PRESUPPOSITION

Frege's theory of presupposition is a consequence of his more general semantic theory. In Part 1 I show how two different notions of presupposition can be reconstructed from his semantics; one applies directly to sentences, and the other applies directly to thoughts. This distinction is used to clarify Frege's discussion of presupposition in "On Sense and Reference."

In Part 2 I maintain that a speaker who utters a sentence with a false presupposition typically succeeds in making a statement. I argue against those who interpret Frege as denying this and show how a proper understanding of his semantics eliminates one of the main problems that have led theorists to erroneous interpretations.

In Part 3 I examine the relationship between negation and presupposition. I show that Frege's account of internal negation is inadequate and must be supplemented with

an account of external negation. However, when external negation is introduced, his theory of logical presupposition conflicts with his theory of truth. Finally, I show that Frege's theory makes incorrect predictions about the presuppositions of compound sentences. This undermines his view that sentences are special kinds of "proper names".

In the essay on Frege I also consider certain issues that apply to any theory of logical presupposition. I argue that logical presupposition in natural languages should not be defined in terms of what is entailed by a sentence and its negation. I also argue that redundancy theories of truth and falsity conflict with theories of logical presupposition.

TWO THEORIES OF NON-LOGICAL PRESUPPOSITION

In the second essay I investigate Wilson's and Karttunen's theories of non-logical presupposition. These theorists hold the following two theses:

A. Theories of natural language require an account of non-logical presupposition.

B. The notion of logical presupposition should be eliminated from theories of natural language.

(A) is correct, but the arguments for (B) are not conclusive.

In Part 1 of this essay I present Karttunen's notion of presupposition that applies to conjunctions, disjunctions, and conditionals. In Part 2 I argue that this notion is non-logical, but that this result is compatible with restricted theories of logical presupposition based on simple sentences and their negations. In Part 3 I examine the importance of negation for such theories and evaluate Wilson's argument that negative sentences do not bear logical presuppositions.

Parts 4 and 5 are concerned with the pragmatic accounts of Wilson and Karttunen. In Part 4 I demonstrate that Wilson's theory is incorrect and argue that it cannot be repaired. In Part 5 I indicate several difficulties with Karttunen's view and propose modifications to resolve them.

ACKNOWLEDGEMENTS

I would like to thank the members of my committee--Dick Cartwright, George Boolos, and Noam Chomsky--for their help in discussing the issues in this thesis with me. Their valuable suggestions improved the content of my work considerably. In addition, as my teachers, they, along with Judy Thomson, James Thomson, Jerry Katz and Dave Perlmutter, provided instruction, encouragement, and inspiration in my years at M.I.T.

Special thanks go to my advisor Sylvain Bromberger. The idea for this thesis arose out of a seminar given by him in the spring of 1974. Since then he has worked with me at every stage in the preparation of the thesis. He has spent countless hours helping me work my ideas into final form, and my debt to him is very great. Fortunately for him, he is not responsible for any errors that may remain.

Finally, I want to express a very personal thanks to my wife Jane. She helped me in every conceivable way. Without her support, encouragement, and plain hard work, this thesis would never have been written.

To my wife Jane with all my love

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FREGE'S THEORY OF PRESUPPOSITION

PART 1

WHAT IS FREGE'S THEORY OF PRESUPPOSITION?

Many philosophers and linguists are currently attempting to construct theories of presupposition for natural language. The aim of a theory of presupposition is to explain a special class of inferences that arise from the use of a wide variety of different sentence types and constructions. Among the facts that such theories attempt to explain is why assertively uttering (1a) or (1b) is normally taken to commit the speaker to the truth of (1c).

1. a. The founder of the university is a Republican.
   b. The founder of the university is not a Republican.
   c. Exactly one person founded the university.

According to many theories of presupposition, (a) and (b) bear a *logical* relation to (c). Such theories claim that (c) expresses a necessary condition for (a) and (b) to be either true or false. According to these theories, (a) and (b) *logically presuppose* (c).

The notion of logical presupposition has long been a controversial one in philosophy. Recently the controversy has intensified as philsophers and linguists have tried to incorporate accounts of presupposition into comprehensive empirical theories of natural language. Contemporary theorists have brought new data to this controversy--e.g.,

(2-4). As in the case of (1), a speaker who assertively utters (a) or (b) is normally taken to be committed to the truth of (c).

2. a. All of John's children are asleep.
   b. Not all of John's children are asleep.
   c. John has children.

3. a. I realized that the grass needed cutting.
   b. I did not realize that the grass needed cutting.
   c. The grass needed cutting.

4. a. It was John who was elected.
   b. It was not John who was elected.
   c. Someone was elected.

Philosophers and linguists have tried to develop theories of presupposition that account for sentences like (1-4). Unfortunately, competing theories have proliferated, and little agreement has been secured.

One reason for the present confusion and controversy is that theories of presupposition often arise from fundamentally different conceptions of semantics and pragmatics. Consequently, there is a need to examine basic assumptions underlying alternative accounts. In this paper, I will investigate one of the most important accounts of presupposition--namely, the one that emerges from the work of Gottlob Frege.

Frege was the first modern theorist to deal with presupposition in natural language. Although he was concerned

with this notion, he did not give it much special attention. In fact, natural language was not his central concern. One of his primary objectives was to construct a scientific language that would avoid what he took to be logical imperfections in natural languages. Along the way he developed a semantic theory that accounts for many features of natural language, including facts involving the notion of presupposition. However, he didn't give a formal definition of presupposition, nor did he explore a wide range of data to determine all of the different kinds of presupposition that there might be.[1]

The lack of prominence that Frege gives to presupposition makes his account of this notion easy to miss. This may explain why some philosophers seem not to have noticed it at all. For example, in his discussion of Frege in "On Denoting," Russell failed to mention Frege's theory of presupposition even though it was directly relevant to Russell's central concerns.[2] Moreover, in "On Referring" Strawson was apparently unaware that the theory of presupposition that he introduced into the philosophy of language

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[1] Although Frege believed (1) to be an instance of presupposition, he did not consider other possible candidates like those in (2-4).

[2] Although Russell saw that Frege's distinction between sense and reference solves some of the problems that motivated the theory of descriptions, he did not see that Frege's theory of presupposition also resolves Russell's puzzle about the present King of France.

See Russell, "On Denoting," in Logic and Knowledge, ed. Robert C. Marsh (New York: Capricorn Books, 1956), pp. 45-47.

had a precursor in the work of Frege.[3]

Frege's lack of emphasis had another effect. Philosophers who have tried to characterize his view have tended to focus almost entirely on the brief sections in which he talks explicitly about presupposition, most notably the famous section in "On Sense and Reference" where he discusses the examples (5) and (6).[4]

5. Kepler died in misery.

6. Whoever discovered the elliptic form of the planetary orbits died in misery.

There are two shortcomings with this approach. First, as I will try to show, Frege's explicit comments on presupposition in "On Sense and Reference" are fragmentary and incomplete; second, by focusing on these limited remarks, one is apt to overlook the relationship between Frege's account of presupposition and his general semantic theory.

In this essay, I will adopt a different approach. I will begin with Frege's compositional semantics and show how two different theories of presupposition can be reconstructed from it. I will then turn to Frege's

---

[3]This is not, of course, to say that Frege's and Strawson's theories of presupposition are identical.

[4]Gottlob Frege, "On Sense and Reference," in Translations from the Philosophical Writings of Gottlob Frege, eds. Peter Geach and Max Black (Oxford: Basil Blackwell, 1960), pp. 68-70.

Here and throughout I speak of Frege's views about English. Although he wrote in German and never explicitly considered English, I will assume that what he said about German he would also have said about English.

explicit remarks on presupposition in which he apparently vacillates between the two theories. Finally, I will point out a number of difficulties that plague both Fregean views.

II. Frege's Semantics

An important notion in Frege's semantic theory is the notion of a singular term, or as he puts it, "a proper name." The class of such expressions includes both ordinary proper names like 'Bertrand Russell' and singular definite descriptions like 'the author of Ivanhoe'. All ordinary proper names and singular definite descriptions, including those which fail to designate are proper names for Frege.[5] Thus, 'the greatest prime number' is a Fregean proper name even though there is no greatest prime.

One of Frege's central theses is that the meaning (sense) of a proper name is distinct from its referent. We have already seen one reason for holding this when we noted that there are meaningful proper names (e.g.,

---

[5] In what follows I will use "refer" and "designate" interchangeably.

'the greatest prime number') that fail to refer to anything. However, the distinction is also motivated for terms that have a referent. 'The first planet visible in the evening sky' is coreferential with 'the first planet visible in the morning sky', but their meanings are different. Thus, it cannot be that the sense of *each* of these expressions is identical with its referent. Of course, to have shown this is not to have shown that the sense of *neither* of these names is identical with its referent.[6] However, if the sense of one of the expressions is distinct from its referent, then it is reasonable to hold that the sense and referent of the other are also distinct. Thus, this argument leads to the conclusion that for proper names generally, sense and reference are not identical.[7]

---

[6]This point is made by Richard Cartwright in "Propositions Again." Richard Cartwright, "Propositions Again," Nous, No. 2. (1968)

[7]The argument given here is a reconstruction of Frege's account. His own argument is based on a comparison of true sentences of the form

(i) a = a
(ii) a = b

Frege claims that although sentences of the form (i) and (ii) may have different "cognitive values," this difference cannot be attributed to any difference in reference (each sentence being true). Rather it is the result of the different "cognitive values" of the names that occupy the places of 'a' and 'b'. Thus, he concludes that the "cognitive value" of an expression is distinct from its reference.

Three points should be noted about this argument. First, although it is presented as an answer to a puzzle about identity,

Frege also distinguished between simple and compound proper names.[8] Examples of the former in English are: 'France', '2', '3', and 'John'. Examples of the latter are: 'the king of France', the'sum of 2 and 3', and 'the father of John'. Compound proper names result from combining a term or terms with an expression that stands for a function (e.g., 'the king of _____', 'the sum of ___ and ___', 'the father of _____').[9] The reference of the entire compound is the value of the function denoted by its function sign at the arguments designated by the proper names that occur in it. What confirmed this

---

any two sentences differing only in singular term position would do just as well. Second, if, in addition to abstracting away from any particular sentence form, we render Frege's "cognitive value" as meaning or sense, then we have the argument given above in the text. Third, although the conclusion of the argument is that *each* proper name has a sense that is distinct from its reference, important problems arise when this thesis is applied to ordinary grammatically proper names (like 'Aristotle'). These problems are discussed by Kripke in "Naming and Necessity," Semantics of Natural Language, edited by Donald Davidson and Gilbert Harman, (Dordrecht-Holland: Reidel Publishing Co., 1972). Here he argues that grammatically proper names do not have meaning in Frege's sense, but rather are "rigid designators." Fortunately, the difference between Kripke and Frege is irrelevant to our present concerns and need not be considered here.

[8]Gottlob Frege, "Function and Concept," Philosophical Writings of Gottlob Frege, pp. 24-25; 31-32.

[9]The account of the formation of compound proper names will be extended in Section VI.

analysis for Frege was the fact that substituting coreferential terms in a compound proper name preserves reference. For example, 'the father of Cicero' refers to the same man as 'the father of Tully'.[10]

The thesis that the reference of a compound proper name is a function of the reference of its parts[11] was

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[10] Of course, expressions that stand for function signs (like 'the father of _____') not only denote functions, but also express senses. Similarly, just as substitution of coreferential terms in a compound proper name preserves reference, so substitution of synonymous terms in such an expression preserves meaning. However, this fact did not lead Frege to say that the sense of an expression such as 'the father of _____' is, like its referent, a function. Instead, he says that the sense of a compound proper name is in some way *composed* of the senses of its parts.

[11] It is important for what follows to state this thesis a little more carefully. Frege held that each compound proper name can be exhaustively analyzed into an expression P that stands for a function, and expressions $\alpha_1,\ldots,\alpha_n$ that purportedly designate arguments of the function. Let R be a function that assigns reference to expressions. We can now reconstruct two of Frege's theses about the reference of compound proper names. (Since some expressions fail to designate anything, R is a partial function.)

Thesis 1: There is a function f such that for all compound proper names α, $R(\alpha) = f\ (R(P),\langle R(\beta_1),\ldots,R(\beta_n)\rangle)$ where P, $\beta_1,\ldots,\beta_n$ is an exhaustive analysis of α.

Thesis 2 is stronger than thesis 1. In thesis 2 the relevant function f is identified as the application function. This function is defined as follows:

The Application Function: For all functions g and arguments $a_1,\ldots,a_n$, $App(g,\langle a_1,\ldots,a_n\rangle) = g(a_1,\ldots,a_n)$.

Thesis 2: $R(\alpha) = App\ (R(P),\langle R,(\beta_1),\ldots,R(\beta_n)\rangle)$ where P, $\beta_1,\ldots,\beta_n$ is an exhaustive analysis of α.

Some of the arguments that follow require thesis 2. Consequently, in what follows when I refer to Frege's thesis that the reference of a compound proper name is a function of the reference of its parts, I will have thesis 2 in mind. I am indebted to George Boolos for a discussion of this point.

a central tenet of Frege's semantic theory which played an important role in the development of other semantic views. Having adopted this thesis, Frege observed that in a large number of cases, the *truth value* of a sentence is a function of the reference of *its* constituents. For example, replacing singular terms in (7) with other coreferential expressions preserves truth value.

7. a. John kissed Mary.
   b. New York is larger than Boston.
   c. Socrates is wise.
   d. 2 is odd.

This was one of the factors which suggested to Frege that sentences[12] are themselves a special kind of compound proper name. According to this view, truth and falsity are the referents of true and false sentences respectively, and predicate expressions denote functions that take arguments into truth values. For example, the predicate '___ is odd' denotes a function that assigns truth to each of the integers 1, 3, 5, 7,... and falsity to every other integer. Therefore, '2 is odd' refers to the False.[13]

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[12] Here, and in what follows, I use "sentence" as short for "declarative sentence."

[13] Frege argues for this analysis in "Function and Concept," pp. 28-31, and in "On Sense and Reference," pp. 62-65. It is in the latter that the argument receives fullest expression, where it proceeds in two stages. Frege first argues that if a sentence has

For Frege, sentences are not the only things that have truth value. Senses of sentences, or, as he would say, "thoughts" can also be either true or false. Consider, for example, the claim that Plato believed that two plus three equals five. According to Frege, what Plato believed was neither the English sentence, "Two plus three equals

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a reference, its reference is not its meaning (or sense). This is established by noting that replacement of one constituent in a sentence by another which has the same reference but a different sense alters the meaning of the entire sentence. Thus, if the reference of an expression is a function of the reference of its parts, then it cannot be that for every sentence S, the meaning of S = the reference of S. Since it would be arbitrary to hold that the referents of only some sentences = their meanings, it is natural to conclude that for all sentences S, the meaning of S ≠ the reference of S.

Next, Frege tries to show that sentences do, in fact, refer and, in particular, that they refer to truth values. Here he leans heavily on the preservation of truth value in cases of substitution under coreference and also on what he takes to be the consequences of reference failure in compound singular terms and sentences. With regard to the latter, he claims that just as a compound singular term lacks reference when one of its constituents does, so a sentence lacks truth value if one of its constituents fails to refer (p. 62). Though one may doubt that we have clear intuitions about lack of truth value (as opposed to falsity), the form of the arguments employed by Frege is clear. In each case his justification for construing sentences as proper names is that it allows him to bring a large class of data under a single generalization. (Church makes this justification explicit in Chapter 1 of his Introduction to Mathematical Logic, Vol. 1, (Princeton, New Jersey: Princeton University Press, 1956), p. 29. There he adopts a Fregean view of sentences "as a means of simplifying and unifying the theory.")

An additional argument of a similar form can be found in "Function and Concept," pp. 30-31. There Frege argues that predicates denote functions. His justification for this analysis is that it allows the notions of concept and relation to be reduced to the independently needed notion of a function.

five," nor its Greek equivalent, but rather the thought that is expressed by these sentences. Since what Plato believed is true, thoughts, as well as sentences, can have truth values.

Of course, to say that a thought is true (false) is not to say that it *refers* to truth (falsity). Expressions refer; thoughts do not. This means that the relationship between a true thought and truth, on the one hand, and a true sentence and truth, on the other, is not the same. Since sentences are proper names for Frege, the relation which the thought that 2 + 3 = 5 bears to truth is that which holds between the sense of a proper name and the referent of that name. Although Frege had no name for this relation, it is clear that it occupied an important place in his system. The sense of a proper name is that by which we determine the reference of the name. In fact, Frege sometimes referred to the sense of a name as "the mode of presentation" of its referent.[14] Thus, whether or not a given sentence refers to truth depends upon the thought that it expresses.

Let us now turn to some consequences of Frege's compositional semantics. We have already seen that a proper name may fail to designate anything; that the

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[14] In Church's terminology, the sense of a name is "a concept of" the denotation of the name. Introduction to Mathematical Logic, Vol. 1, p. 6.

reference of a compound proper name is a function of the reference of its parts; and that sentences are compound proper names. From this it follows that a sentence containing a proper name lacking a referent must itself lack a referent. Such a sentence is truth-valueless.

Consider, for example, a simple sentence of subject/predicate form. Suppose that the subject lacks a referent and that the predicate denotes a function f. In such a case, there is no such thing as the value of f at the argument designated by the subject for there is no such argument at all. Hence, the sentence must be truth-valueless. Of course, this does not mean that it fails to express a thought, but rather that the thought expressed is also truth-valueless.

This situation is illustrated by sentence (8).

8. The greatest prime number is odd.

Here the function f denoted by the predicate is one which assigns the integers 1, 3, 5, 7, ... truth and all other integers falsity. However, since the subject of (8) fails to refer to anything, there is nothing for f to assign a truth value. Therefore, (8) fails to have a truth value.

In this example, we were concerned with a simple sentence--one which did not contain another sentence as

one of its constituents. What about compound sentences? In particular, what about sentences formed from other sentences with the help of truth functional connectives? We can illustrate the relevant facts by concentrating on 'not'.

According to Frege, 'not' is a truth functional sentential operator. Thus, the truth value of ⌜not S⌝ is a function of the truth value of S. Since sentences are proper names for Frege, truth functional sentential operators are treated in exact analogy with ordinary predicates. Both take arguments and denote functions into truth values. In particular, the operator 'not' denotes a function that takes the truth values truth and falsity respectively into the values falsity and truth.[15] Thus, if a sentence S lacks a reference--i.e., is truth-valueless--then ⌜not S⌝ must also lack a referent, since there is no argument for the function denoted by 'not' to assign a truth value. Analogous results hold for each of the other truth functional connectives. What this means is that reference failure anywhere in a compound sentence deprives the entire sentence of truth value.[16] This result has important consequences to which I will return later on.

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[15] Frege, "Function and Concept," pp. 33-35.

[16] Compound sentences with non-truth functional elements also obey this principle. These sentences will be discussed in Section V.

III. Two Notions of Presupposition

We are now in a position to construct an account of presupposition from Frege's semantic theory. On this account presupposition is a *logical* relation that is defined in terms of truth value. Central to the account is the claim that certain sentences (and thoughts), together with their negations, are neither true nor false. The theory of presupposition is an attempt to explain how this is possible and to predict when such truth-valuelessness arises.

Frege's compositional semantics implicitly incorporates just such a theory. We have seen that for Frege both sentences and thoughts can be truth-valueless. We have also been given an account as to when such truth-valuelessness arises. All that is needed to turn this into a theory of presupposition is the notion of a thought T' being a necessary condition for a sentence S (or thought T) to have a truth value.[17] T' is that which is presupposed.

---

[17] Textual support for the view that the entities that are presupposed are thoughts can be found in the passage in "On Sense and Reference" in which Frege discusses the sentence 'After the separation of Schleswig-Holstein from Denmark, Prussia and Austria quarrelled'. He says

> "...it is surely sufficiently clear that the sense is not to be taken as having as a part *the thought that Schleswig-Holstein was once separated from Denmark*, but that *this* [namely the thought] is the necessary presupposition in order for the expression 'After the separation of Schleswig-Holstein from Denmark' to have any reference at all." (p. 71) (my emphasis)

S (or T) is that which does the presupposing. A given sentence (or thought) has a truth value if and only if all of the thoughts that it presupposes are true.

Actually, there are at least two different notions of presupposition that can be reconstructed from Frege's semantics--one pertaining directly to sentences, the other to thoughts. I will first examine the relation that holds between *sentences* and thoughts.

9. Definition 1: Sentential Presupposition

A *sentence* S presupposes a thought T in a language L iff the rules of L require that T be true if S is to have a truth value in L.

To say that the rules of L require that T be true in order for S to have a truth value is to say that, given these rules, the truth of T is a necessary condition for S to be either true or false. Thus, if S presupposes T in L, then the truth of T follows from a statement of the rules of L together with the claim that S is either true or false in L.

The definition of sentential presupposition, together with the claim that English incorporates a Fregean semantics, entails the following version of what I will call "the Frege rule."[18]

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[18] In a fully developed theory, this rule would have to be modified

10. <u>The Frege Rule</u>$_S$

For all declarative sentences S of English and expressions α, if α is a proper name in S, and β is the quote name of α, then S presupposes (in English) the thought expressed by $\ulcorner\beta$ has a referent (in English)$\urcorner$.[19]

(11) follows from the Frege rule as a special case.

---

to take into account the possibility that a proper name might be ambiguous or might have different referents in different sentences. One reason for modifying the rule in this way will be discussed in Section V.

The terminology "the Frege rule" is Sylvain Bromberger's.

[19] The clause stipulating that β is the quote name of α is needed for a technical reason involving the nature of corner quotes. Where γ is an expression $\ulcorner\gamma$ has a referent$\urcorner$ is the sentence that consists of γ followed by 'has a referent'. If γ = 'France', then $\ulcorner\gamma$ has a referent$\urcorner$ is 'France has a referent'. Since expressions, not countries, have referents, this sentence is false. On the other hand, if γ is the quote name of 'France' (i.e., if γ = ''France''), then $\ulcorner\gamma$ has a referent$\urcorner$ is ''France' has a referent'. This sentence is true.

We want the Frege rule to provide us with instances like (i).

(i) 'France is a country' presupposes (in English) the thought expressed by ''France' has a referent (in English)'.

(10) does this. However, if (10') rather than (10) were adopted, then (ii) rather than (i) would be an instance of the Frege rule.

10'. For all declarative sentences S of English and expressions α, if α is a proper name in S, then S presupposes the thought expressed by $\ulcorner\alpha$ has a referent (in English)$\urcorner$.

(ii) 'France is a country' presupposes (in English) the thought expressed by 'France has a referent (in English)'.

For this reason, the Frege rule is formulated as (10) rather than (10').

11. For all sentences S of English and expressions α, if α is a proper name in S, β is the quote name of α, and T is the thought expressed by $\ulcorner\beta$ has a referent (in English)$\urcorner$, then both S and $\ulcorner$Not S$\urcorner$ presuppose T (in English).

Finally, the Fregean semantics of negation yields (12), which is a central characteristic of virtually all accounts of presupposition.[20]

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[20] Conditions analogous to (12) follow from Frege's semantics for other truth functional connectives (e.g., 'and', 'or', 'if then', and 'if and only if'). This point is independent of another feature of the theory that I have developed thus far--namely that all presupposition failure is traced back ultimately to a failure of reference on the part of some subsentential constituent. In fact, the only type of presupposition that Frege was concerned with was referential presupposition. However, nothing in his central semantic views dictates that this is the only type of presupposition that there is. Thus, nothing dictates that all presupposition failure be traceable back to the failure of some subsentential constituent to refer.

For example, 'the King of France' lacks a referent even though the proper name occurring in argument position successfully refers. On Frege's account this must be due to the failure of the function denoted by the 'King of _____' to assign its argument a value. Thus, lack of argument is a sufficient, but not necessary, condition for lack of reference. There is no reason why the same should not hold for sentences.

One class of sentences that might be treated in this manner are "factives" like "Ford knows that the earth is flat." If the function denoted by 'know' is defined only over true propositions, then the alleged failure of both this sentence and its negation to have a truth value would be predicted. Although this is not the analysis that Frege suggests for such sentences, ("On Sense and Reference," pp. 75-76) there is nothing in his central semantic views that precludes it. Thus, there is no need for a Fregean to force all presuppositions into a referential mode.

I am indebted to Sylvain Bromberger for a discussion of this point.

12. For any sentence S of English and thought T, if S presupposes T (in English), then so does ⌜not S⌝.

The Fregean theory of sentential presupposition characterizes a relation that holds between sentences and thoughts. For example, if English incorporates a Fregean semantics, then the sentence 'France is a country' presupposes the thought that 'France' has a referent (in English).[21] On this analysis, the sentence 'France is a country' can have a truth value only if the presupposed thought is true--i.e., only if 'France' really does refer.

In what follows, I will refer to (9-12) as "Frege's theory of sentential presupposition" (relativized to English). If his semantics of English is correct, then many sentences carry such presuppositions. However, there is a different presupposition relation that can be reconstructed from Frege's semantics--one in which the entities that do the presupposing are thoughts.

13. Definition 2: Propositional Presupposition

A *thought* T presupposes a thought T' iff the truth of T' is a necessary condition for T to have a truth value.[22]

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[21] Here I assume that the rules of English specify that 'France' is a (Fregean) proper name in 'France is a country'. Thus, the rules referred to in the definition of sentential presupposition [(9) above] include the syntactic rules of the language.

[22] Given a propositional presupposition, we could, of course,

It should be noted that this definition makes no mention of what is required by the rules of any language. This is because, for Frege, thoughts are not linguistic objects, but rather are what sentences of a language are used to express. The same thought may be expressed by sentences of different languages and the logical relations that hold between thoughts are independent of the sentences that express them.[23]

We have already seen that thoughts as well as sentences can be truth-valueless. Frege's compositional theory of reference specifies the structure of sentences and states the conditions under which they are truth-valueless. What we need to complete our theory of

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also define a derivative relation holding between sentences--i.e.,

> A sentence S presupposes a sentence S' in a language L iff S expresses a thought T in L and S' expresses a thought T' in L and T presupposes T'.

The difference between the various definitions will be pointed out in the next section.

[23] According to Frege, *sentences* enter into logical relations only in a derivative sense. He makes this clear in "The Thought: A Logical Inquiry" in Philosophical Logic, edited by P. F. Strawson, (United States: Oxford University Press, 1967), pp.17-38. Here he holds that

> (i) The job of logic is to discover the laws of truth.
> (ii) Thoughts are the primary (proper) bearers of truth value.
> (iii) To say that a sentence is true is to say that the thought it expresses is true.

See especially pp. 17-20 in the article.

For comments about the ability of expressions in different languages to express the same sense, see "On Sense and Reference," pp. 58-59, and "Concept and Object," Philosophical Writings of Gottlob Frege, eds. Geach and Black, (Oxford: Basil Blackwell, 1960), pp. 42-55.

propositional presupposition is a similar account of the structure of thoughts and a specification of the conditions under which they are truth-valueless.

Fortunately, the materials for such an account are ready at hand. Just as sentences are constructed out of expressions, so, Frege maintains, thoughts are constructed out of senses of expressions.[24] Similarly, just as the relationship between a Fregean proper name and its referent is the key to understanding *sentential* presupposition, so the relationship between the sense of a proper name and the referent of that name is basic to the Fregean theory of *propositional* presupposition. Consider, for example, the expression 'the only even prime number'. For Frege, this is a

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[24] "The world of thoughts has a model in the world of sentences, expressions, words, signs. To the structure of a thought there corresponds the compounding of words into a sentence ("Negation," p. 123)."

"For not all parts of a thought can be complete; at least one must be 'unsaturated', or predicative; otherwise they would not hold together. For example, the sense of the phrase 'the number 2' does not hold together with that of the expression 'the concept prime number' without a link. We apply such a link in the sentence 'The number 2 falls under the concept prime number'; it is contained in the words 'falls under' which need to be completed in two ways--by a subject and an accusative; and only because their sense is thus 'unsaturated' are they capable of serving as a link. Only when they have been supplemented in this twofold respect do we get a complete sense, a thought ("Concept and Object," p. 54)."

See also "Negation," in Philosophical Writings of Gottlob Frege, eds. Geach and Black, (Oxford: Basil Blackwell, 1960), pp. 117-136.

proper name that has a sense--S--and a referent--2. S, in effect, "picks out" or "presents" the referent. It is in virtue of the fact that the name expresses S that it refers to the number 2.

This point can be made perfectly general. A proper name α refers to an object O iff α expresses a sense that presents or picks out O. Moreover, what object is picked out by a sense does not depend upon which name expresses it. Consequently, two names with the same sense must always refer to the same object; however, a single object may be designated by names with different senses.[25] In fact, a sense may pick out an object even if there is no linguistic constitutent which expresses it. Thus, according to Frege, the sense of 'the only even prime number' must have picked out 2 long before people began speaking languages at all.[26]

Finally, it should be pointed out that for Frege, the sense of the proper name 'the only even prime number' is not the same as the sense of any predicate. Frege believed that senses of proper names are different in kind

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[25]Frege, "On Sense and Reference," p. 58.

[26]This follows from the fact that for Frege thoughts (and hence their constituents) are "timeless, eternal, and unchanging" (Frege, "The Thought: A Logical Inquiry," p. 37).
Also see Frege, "Negation," p. 134.

from senses of predicate expressions. The former he called "complete," the latter "incomplete." For example, the thought that the only even prime is less than three is a complete sense which is somehow composed out of the incomplete sense of the predicate and the complete sense of the subject.[27]

We can now formulate a Frege rule that applies to thoughts.

14. The Frege Rule$_t$

For all thoughts T and complete senses S, if S is a proper constituent of T, and T' is a thought the truth of which is a necessary and sufficient condition for S to pick out (present) a referent, then T presupposes T'.[28]

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[27] For Frege, the only expressions with complete senses are proper names. See Frege, "Concept and Object," especially pp. 54-55.

[28] Frege Rule$_t$ could also be stated this way:

> For all thoughts T and complete senses S, if S is a proper constituent of T, and T' is a thought that is true in all and only those possible worlds in which S picks out or presents a referent, then T presupposes T'.

A consequence of the Frege Rule$_t$ is that it is possible for a thought to have a truth value only if each of the complete senses that it contains presents a referent. Thus, it might seem that the rule could be stated more directly as (14').

> 14'. For all thoughts T and complete senses S, if S is a proper constituent of T, then T presupposes the thought that S presents a referent.

Unfortunately, (14') is ill-formed. To understand it, we must

The analogues of (11) and (12) in the case of propositional presupposition are (15) and (16).

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make sense of expressions of the form (i).

(i) For all N, x, the thought that x ... (where 'N' stands in the place of nouns like 'senses', 'men', etc)

However, we can't make sense of such expressions. For example, we cannot make sense of (ii).

(ii) For all men, x, the thought that x is a philosopher...

In (ii) we are purportedly quantifying over men. What then is *the* thought that x is a philosopher for Frege as value?

Note, Frege = the author of "On Sense and Reference" = the founder of the predicate calculus. Thus, if it makes sense to talk about *the* thought that x is a philosopher (where the value of 'x' is an individual man), then the thought that x is a philosopher must be the same for Frege, the author of "On Sense and Reference" and the founder of the predicate calculus as values. What is this thought? Is it (iii), (iv), or (v)?

(iii) Frege is a philosopher.
(iv) The author of "On Sense and Reference" is a philosopher.
(v) The founder of the predicate calculus is a philosopher.

There is no clear answer to this question. Each of these thoughts might be said to be about Frege (and hence to be about the author of "On Sense and Reference" and the founder of the predicate calculus). Thus, we might admit that *each* thought says of Frege (the author of "On Sense and Reference" and the founder of the predicate calculus) that he is a philosopher. However, none is *the* thought that x is a philosopher for Frege as value, just as none is *the* thought that x is a philosopher for the author of "On Sense and Reference" as value. For a more complete discussion of this point, see Richard Cartwright, "Identity and Substitutivity," Identity and Individuation, ed. Milton K. Munitz, (New York: New York University Press, 1971), pp. 129-133.

This suggests that constructions of the form (i) are ill-formed. Since (14') contains a construction of this form, it must be rejected. For this reason, I have formulated the Frege Rule$_t$ as (14) rather than (14').

Note, it would not help to replace 'the thought that S presents a referent' in (14') with 'every thought to the effect that S presents a referent'. Although we might be able to make sense of a rule formulated in this way, such a rule would be incorrect. Not every thought that S presents a referent is a necessary condition for a thought containing S to be either true or false. For example, the thought expressed by (vi) could have been true even if the thought expressed by (vii)

15. For all thoughts T and complete senses S, if S is a proper constituent of T, and T' is a thought the truth of which is a necessary and sufficient condition for S to pick out (present) a referent, then both T and the negation of T presuppose T'.

16. For any thoughts T and T', if T presupposes T', then so does the negation of T.[29]

The Fregean theory of propositional presupposition characterizes a relation that holds between thoughts. For example, according to Frege, (17) expresses a complete sense S that is a proper constituent of the thought expressed by (18).

17. The founder of the predicate calculus

18. The founder of the predicate calculus was a great philosopher.

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had been false.

(vi) The thirty-eighth President of the United States is a Republican.

(vii) The sense of the subject of (vi) of footnote 28 of this paper presents a referent.

A Republican could have been President even if I had never written this footnote.

[29]Similar conditions hold for conjunctions, disjunctions, conditionals, and biconditionals.

A necessary and sufficient condition for S to pick out a referent is for exactly one person to have founded the predicate calculus.[30] Consequently, the Frege Rule$_t$ predicts that the thought expressed by (18) presupposes the thought expressed by (19).

19. Exactly one person founded the predicate calculus.

According to Frege, the truth of this thought is a necessary condition for the thought expressed by (18) to be either true or false.[31]

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[30] S picks out a person in a possible world W if and only if that person (and that person alone) founded the predicate calculus in W.

[31] Before leaving this section, I should point out two facts about the theory of propositional presupposition reconstructed here. First, the definition of propositional presupposition has the consequence that every thought trivially presupposes all necessary truths. Second, although Frege Rule$_t$ is not formulated to predict that necessary truths are presupposed, it does predict that if T presupposes T', and T'' is logically equivalent to T', then T presupposes T''. Thus, Frege Rule$_t$ predicts that the thought expressed by (17) presupposes the thought expressed by (i).

(i) Exactly one person founded the predicate calculus and everything is self-identical.

In this paper, I will not be concerned with these two features of the Fregean theory.

IV. Frege's Explicit Remarks on Presupposition

One advantage of distinguishing two different relations of presupposition is that it allows us to make sense of some of Frege's explicit remarks. Although he does not offer a formal definition of presupposition, he does mention the notion in certain passages. The place where he talks about presupposition most explicitly and at greatest length is in the famous section in "On Sense and Reference" where he considers sentence (20).[32]

20. Whoever discovered the elliptic form of the planetary orbits died in misery.

According to Frege, this sentence says of a certain man that he died in misery. (21) must therefore be a proper name that designates Kepler.

21. Whoever discovered the elliptic form of the planetary orbits

The problem that worried Frege was that (21) is a subordinate

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[32]The translation of Frege's sentence into English is somewhat problematic. The key point is that the subject in (20) is to be taken as having the force of a singular definite description. This is clear in German.

"Der die elliptische Gestalt der Planeten bahen entdeckte, starb in Elend."

clause. Thus, one might think that, like other subordinate clauses that he examines in the essay, it designates either a truth value or a thought. Frege argues that this is not so.

He first suggests that (21) doesn't express a thought because "The grammatical subject 'whoever' has no independent sense and only mediates the relation with the consequent clause 'died in misery.'"[33] However, he realizes that this observation is not enough, since "One might object that the sense of the whole [i.e., (20)] does contain a thought as its part, viz. that there was somebody who discovered the elliptic form of the planetary orbits; for whoever takes the whole to be true cannot deny this part.[34] It is in response to this objection that Frege explicitly invokes the notion of presupposition.

> This is undoubtedly so: [i.e., that one cannot affirm (20) and deny that someone discovered the elliptic form of the planetary orbits] but only because otherwise the dependent clause 'whoever discovered the elliptic form of the planetary orbits' would have no reference. If anything is asserted there is always an obvious presupposition that the simple or compound proper names used have reference. If one therefore asserts [(22)]
>
> [22.] Kepler died in misery.
>
> there is a presupposition that the name 'Kepler' designates something; but it does not follow that the sense of the

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[33] Frege, "On Sense and Reference," p. 69.

[34] Ibid.

> sentence 'Kepler died in misery' contains the thought that the name 'Kepler' designates something. If this were the case, the negation would have to run not
>
> [23.] Kepler did not die in misery
>
> but
>
> [24.] Kepler did not die in misery, or the name 'Kepler' has no reference.[35]

Frege regards this consequence as absurd. Thus, he concludes that the thought expressed by (22) does not contain the thought that 'Kepler' has a referent.

Frege runs a similar argument for (20).

> Now languages have the fault of containing expressions which fail to designate an object (although their grammatical form seems to qualify them for that purpose) because the truth of some sentence is a prerequisite. Thus, it depends on the truth of the sentence:
>
> [25.] There was someone who discovered the elliptic form of the planetary orbits
>
> whether the subordinate clause
>
> [21.] Whoever discovered the elliptic form of the planetary orbits
>
> really designates an object or only seems to do so while having in fact no reference. And thus it may appear as if our subordinate clause contained as a part of its sense the thought that there was somebody who discovered the elliptic form of the planetary orbits. If this were right the negation would run:
>
> [26.] Either whoever discovered the elliptic form of the planetary orbits did not die in misery or there was nobody who discovered the elliptic form of the planetary orbits.[36]

Since he also regards this consequence as absurd, Frege concludes that the thought expressed by (20) does not

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[35] Ibid.

[36] Ibid, pp. 69-70.

contain the thought that there was someone who discovered the elliptic form of the planetary orbits.

Later I will evaluate this argument and ask whether the data that Frege cites establishes the need for positing a relation of presupposition. For the present, however, I wish only to determine what sort of presupposition he is talking about.

The two examples we are given are:

27. a. Kepler died in misery.
    b. The name 'Kepler' has a referent (in English).

28. a. Whoever discovered the elliptic form of the planetary orbits died in misery.
    b. Someone discovered the elliptic form of the planetary orbits.

Each of these pairs is supposed to be an instance of presupposition. However, there is something odd about this. What is presupposed in (27) says something about language--in particular about the name 'Kepler'. In (28), on the other hand, the presupposed thought says nothing about language, but rather makes a claim about the non-linguistic world. How can this be?

The problematic instance here seems to be (28). Early in the passage Frege says that "If anything is asserted

there is always an obvious presupposition that the simple or compound proper names used have reference."[37] (27) is an example of just this sort. Thus, what we expect in the second case is not (28b) but (28c).

28. c. The expression 'whoever discovered the elliptic form of the planetary orbits' has a referent (in English).

It is important to realize that the thoughts expressed by (28b) and (28c) are not equivalent. Surely someone (e.g., Kepler) could have discovered that the planets have elliptic orbits even if the expression (21) had never existed. Thus, the thought expressed by (28b) does not entail the thought expressed by (28c); nor is there an entailment in the other direction. Imagine a possible world W just like the actual world except that in W the English word 'elliptic' means 'circular'; and the planets have circular orbits. Suppose further that in W there is someone who discovered the circular form of the planetary orbits. Since 'whoever discovered the *elliptic* form of the planetary orbits' means the same thing in W as 'whoever discovered the *circular* form of the planetary orbits' does in the actual world, the former designates

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[37] Ibid, p. 69.

something in W and the thought expressed by (28c) is true in W. However, there is no one who discovered the *elliptic* form of the planetary orbits in W since, by hypothesis, the planets have circular orbits in that world. Thus, the thought expressed by (28c) does not entail the thought expressed by (28b).

The principle upon which this argument is based is trivial but true. The connection between a linguistic expression and its meaning is contingent.[38] The word 'elliptic' could have had a sense and reference different from the sense and reference that it actually has. Thus, the truth of the thought expressed by (28b) is not a necessary (or sufficient) condition for the truth of the thought expressed by (28c); nor should this be surprising. Since the thought expressed by (28b) is about non-linguistic reality, we should not expect it to have significant consequences for linguistic facts.

We are left then with our original question. Why is there a discrepancy between Frege's two examples of presupposition? It may be that he failed to noticed the difference between (28b) and (28c), or that he thought them equivalent. If so, his mistake was an uncharacteristic one.

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[38]This is evidenced by the fact that individual words in English sometimes undergo a change in meaning and that different speakers of English sometimes assign different senses to individual words or phrases.

He begins "On Sense and Reference" by distinguishing sentences like (29) and (30).

29. The morning star is the evening star.
30. 'The morning star' is coreferential with 'the evening star'.

He recognizes the former to be about the world and to express genuine non-linguistic knowledge. He holds the latter to be about signs and to express "no proper knowledge."[39] It follows that on his view (29) and (30) are not equivalent. Consequently, his failure to distinguish (27) and (28) in talking about presupposition is surprising.

What happened, I think, is that in the passages quoted above, Frege uncritically slipped back and forth between the notions of sentential and propositional presupposition. (27) [but not (28)] is an instance of *sentential* presupposition. (28) [but not (27)] is an instance of *propositional* presupposition. Let's see why this is so.

27. a. Kepler died in misery.
    b. The name 'Kepler' has a referent (in English).
28. a. Whoever discovered the elliptic form of the planetary orbits died in misery.
    b. Someone discovered the elliptic form of the planetary orbits.

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[39]Frege, "On Sense and Reference," p. 57.

First consider sentential presupposition. The *sentence* (27a) presupposes (in English) the thought expressed by (27b). This follows automatically from Frege's semantics and is predicted by the sentential version of the Frege rule. (28), on the other hand, is not predicted by this rule. Moreover, even if we suppose that English incorporates a Fregean semantics, the truth of the thought expressed by (28b) is not required in order for *sentence* (28a) to have a truth value. All that is necessary is for (21) to have a referent.

21. Whoever discovered the elliptic form of the planetary orbits

We have already seen that this could have been the case even if no one had discovered the elliptic form of the planetary orbits. Thus, *sentence* (28a) does not presuppose the thought expressed by (28b).[40]

Next consider propositional presupposition. Surely Kepler could have died in misery even if he hadn't been named 'Kepler'. He could have died in misery even if nothing had been named 'Kepler'. Consequently, the thought expressed by (27b) is not a necessary condition for the truth, let

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[40]This argument assumes that the rules of language mentioned in the definition of sentential presupposition [(9)] include Frege's *compositional* semantic principles, but not individual rules specifying the meaning of particular vocabulary items. Frege's semantics requires proper names to have referents in order for sentences containing them to have a truth value. It does not specify the sense and reference of syntactically simple expressions. The main reason for making this assumption is that it allows me to pinpoint the source of Frege's confusion regarding (27) and (28).

alone the truth or falsity of the *thought* expressed by (27a). Therefore, (27) is not an instance of propositional presupposition. All that remains to be shown is that (28) is.

Let S be the sense of (21). Although S *is* expressed by (21), we can consider S irrespective of which expression might, in some possible world, be used to express it. S picks out someone in any such world if and only if that person (and that person alone) discovered the elliptic form of the planetary orbits in that world. Thus, the thought expressed by (31) is true in all and only those worlds in which S picks out a referent. The truth of this thought is a necessary and sufficient condition for S to pick out a referent.

31. Exactly one person discovered the elliptic form of the planetary orbits.

Consequently, Frege Rule$_t$ predicts that the thought expressed by (28a) presupposes the thought expressed by (31). Since the thought expressed by (31) entails the thought expressed by (28b), and since the set of presuppositions of a thought is closed under entailment,[41]

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[41]Here and throughout I use 'entails' in the same way that Van Frassen uses 'necessitates'.

A thought T $\{^{\text{entails}}_{\text{necessitates}}\}$ a thought T' iff the truth of T' is a necessary condition for the truth of T.

This definition together with the definition of propositional presupposition has the consequence that the set of presuppositions of a thought is closed under entailment--i.e., if T_1 presupposes T_2, and T_2 entails T_3, then T_1 presupposes T_3.

the thought expressed by (28a) also presupposes the thought expressed by (28b). Thus, (28a,b) is an instance of *propositional* presupposition.[42]

What this analysis shows is that the apparent confusion in Frege's explicit remarks results from failing to distinguish two different but closely related notions of presupposition. Although both notions are implicit in his semantics, Frege never formalized them and consequently ran them together.[43]

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[42]It should also be clear that (28) but not (27) is an instance of the derivative notion of presupposition defined in footnote 22.

[43]Another passage in which this happened is the following:

> "The sense of the sentence 'After Schleswig-Holstein was separated from Denmark, Prussia and Austria quarrelled' can also be rendered in the form 'After the separation of Schleswig-Holstein from Denmark, Prussia and Austria quarrelled.' In this version it is surely sufficiently clear that the sense is not to be taken as having as a part *the thought that Schleswig-Holstein was once separated from Denmark*, but that this [i.e., the thought] is the necessary presupposition in order for *the expression 'after the separation of Schleswig-Holstein from Denmark'* to have any reference at all." (Frege, "On Sense and Reference," p. 71) (my emphasis)

Here in talking about expressions, Frege puts himself on the linguistic level. However, what he claims to be presupposed is not a necessary condition for *the expression* to have a referent, but rather for *the thought* in question to have a truth value. In short, in specifying the entity that does the presupposing, Frege here seems to have in mind *sentential* presupposition; however, the presupposition he gives arises from *propositional* presupposition.

It should not be thought, however, that because Frege failed to distinguish these two notions that only one of them is truly Fregean. If his semantics is correct, then there can be no question as to which relation is "real" or which theory is correct. Of course, Frege did hold that thoughts are the *primary* bearers of truth value and that sentences are either true or false only derivatively. Consequently, he would probably have claimed that thoughts are the *primary* bearers of presupposition and that the most significant notion of presupposition is propositional. Still, if his semantics is correct, then both sentential and propositional theories of presupposition are also correct and both relations have many instances. In comparing the two theories, we must simply take care not to confuse them.[44]

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[44]Let L be a language for which a Fregean semantics holds, and let L* be the set of thoughts expressed by the language. Since both theories of presupposition are constructed from the same semantics, any phenomena about L (or L*) that can be explained by one theory can be explained by the other, *together with a specification of which expressions express which senses*. Consequently, there can be no question of a Fregean accepting one theory and rejecting the other.

V. Customary Reference, Indirect Reference, and Presupposition

One aspect of Frege's semantics about which I have so far said nothing is his theory of oblique contexts and his distinction between customary and indirect reference. An example of an oblique context is provided by the verb 'believe'.

32. Frege believed that the universal set contains every set.

Sentences like this are a problem for the theory of presupposition that we have developed thus far. The problem is that (32) is true. However, since there is no universal set, it might seem that the proper name 'the universal set' lacks a referent in this sentence, and hence, that Frege's semantic theory must incorrectly characterize (32), and the thought expressed by it, as truth-valueless.

As we shall see, Frege's distinction between direct and indirect reference allows him to avoid this incorrect prediction. For him, an oblique context is one in which expressions refer not to what they normally designate, but rather to their customary senses.[45] Thus, the referent of

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[45]Frege, "On Sense and Reference," pp. 59; 65-67.

'the 38th President of the United States' in (33) is not the same as its referent in (34).

33. The 38th President of the United States is a Republican.

34. Many people believe that the 38th President of the United States is a Republican.

In (33), the proper name carries its customary sense and refers to its customary referent--Gerald Ford. In (34), according to Frege, it designates its customary sense, which is said to be its indirect or oblique referent.

Frege never mentioned presupposition as motivating the distinction between customary and indirect reference. He had, however, several independent reasons for making this distinction. First, he held that what (34) reports to be believed is not a sentence, but a thought. Thus, the sentential complement in (34) must somehow be seen as making reference to its own sense. Because of this, it was natural for him to conclude that the constituents of the complement also designate their own senses.

Second, the distinction between customary and indirect reference is important for Frege's theory of compositional semantics. According to this theory, the referent of a compound proper name (and in particular the truth value of a sentence) is a function of the reference of

its parts. However, consider sentences like (35-37).

35. Jones believes that the head of the Mafia is a criminal.

36. Jones' neighbor is the head of the Mafia.

37. Jones believes that his neighbor is a criminal.

If 'the head of the Mafia' had its customary reference in (35) and (37), then Frege's compositional principle would incorrectly predict that the truth of (35) and (36) is a sufficient condition for the truth of (37).[46] Frege avoids this falsehood by postulating that the referents of the proper names in the complements of (35) and (37) are their customary senses. Thus, according to Frege, substitution of synonymous expressions is guaranteed to preserve truth value in oblique contexts; substitution of expressions with the same customary reference is not.[47]

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[46] I am following Frege here in considering only the opaque interpretation of these sentences.

[47] Although Frege did not explicitly offer this argument, he clearly grasped the essential issue (Frege, "On Sense and Reference," pp. 67-68). Further, it should not be thought that his distinction between customary and indirect reference was merely an expedient to handle apparent cases in which substitution of coreferential expressions fails to preserve truth value. Frege recognized that there are contexts in which such substitution fails even though the expressions in question carry their customary sense and reference. For example, although (i), (ii), and (iii) are true, substitution of (iii) for

One consequence of Frege's view is that when we speak of the reference of an expression, we must relativize our remarks to particular contexts. There simply is no such thing as *the* referent of 'the 38th President of the United States'. Instead, we must speak of at least two different designata--its direct and indirect referents.

This in turn requires a slight modification in the statement of Frege's theory of sentential presupposition.

38. The Frege Rule$_S$

For all declarative sentences S of English and expressions α, if α is a proper name in S, β is the quote name of α, and S' is the quote name of S, then S presupposes (in English) the thought expressed by $\ulcorner\beta$ has a referent (in English) *in the sentence S'*$\urcorner$.[48]

(ii) in (i) does not preserve truth.

(i) Because ice is less dense than water, it floats on water.
(ii) Ice is less dense than water.
(iii) Iron is denser than water.
(iv) Because iron is denser than water, it floats on water.

Nevertheless, Frege maintained that the expressions in (i) and (iv) occur with their customary sense and reference (For Frege's account of these sentences, see Frege, "On Sense and Reference," pp. 76-78). The objects of propositional attitudes, on the other hand, were regarded to be thoughts on independent grounds (See Frege, "The Thought: A Logical Inquiry").

[48](38) provides us with instances like (i) and (ii).

(i) 'Transylvania is a country' presupposes (in English) the thought expressed by ''Transylvania' has a referent (in English) in the sentence 'Transylvania is a country'.'

(ii) 'Many people believe that Transylvania is a country' pre-

This modification of the Frege rule, together with Frege's distinction between direct and indirect reference, allows him to account for (32). According to the modified Frege Rule$_S$, what sentence (32) presupposes is not that 'the universal set' has a referent, but rather that it has a referent *in* (32). This presupposition is satisfied since in this context 'the universal set' designates its customary sense. Thus, for Frege, sentences of the form 'A believes that ...α...' have presuppositions, but their presuppositions are guaranteed not to fail.[49]

In the case of thoughts the situation is slightly different. In "On Sense and Reference" Frege holds that in addition to a distinction between customary and indirect *reference*, there is also a distinction between customary and indirect *sense*. For example, he says that

> The case of an abstract noun clause, introduced by 'that', includes the case of indirect quotation, in which we have seen the words to have their indirect reference coinciding with what is customary their sense. In this case, then, the subordinate clause has for its reference a thought, not a truth value; *as sense not a thought but the sense of the words 'the thought that ...'* which is only a part of the thought

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> supposes (in English) the thought expressed by ''Transylvania' has a referent (in English) in the sentence 'Many people believe that Transylvania is a country'.'

According to Frege's semantics, the presupposed thought is true in (ii) and false in (i).

[49]Except for the presupposition that the subject of 'believe' has a reference.

> in the entire complex sentence.[50]
> (my emphasis)

If the indirect sense of an expression is distinct from its customary sense, then there is no need to relativize the notion of *the referent presented by a sense* to the context in which the sense occurs. Thus, there is no need to modify the propositional version of the Frege rule.

On the other hand, it might be claimed that there really is no distinction between direct and indirect *sense*. If so, then the sense of an expression in an oblique context like (32) must be seen as presenting itself. On this view, the propositional version of the Frege rule would have to be modified in just the way that the sentential version was. Hwoever, whether or not one distinguishes between customary and indirect *sense*, the basic fact about presupposition and propositional attitudes remains. For Frege, the thought expressed by a sentence of the form 'A believes that ...' has presuppositions, but its presuppositions are guaranteed not to fail.[51]

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[50] Frege, "On Sense and Reference," p. 66. See also pp. 74, 77-78.

[51] Again, with the exception of the presupposition corresponding to the subject of the verb 'believe'.

PART 2

PRESUPPOSITION AND ASSERTION

VI. Presupposition and Assertion

> If anything is asserted there is always an obvious presupposition that the simple or compound proper names used have reference. If one therefore asserts 'Kepler died in misery,' there is a presupposition that the name 'Kepler' designates something...[52]

In this passage, Frege uses the notion of assertion about which I have so far said nothing. Several philsophers have taken the passage as indicating that, for Frege, acts of asserting a thought or assertively uttering a sentence are the entities that do the presupposing.[53] Since acts are different from both sentences and thoughts, it might seem that this interpretation must inevitably conflict with my own. This is not so. The interpretation of Frege presented thus far is capable of accommodating acts of assertion as bearers of presupposition. However, I would hold that such acts presuppose thoughts only in a derivative sense. Given sentential and propositional presupposition, we can define the notions applying to assertion as follows:

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[52] Frege, "On Sense and Reference," p. 69.

[53] e.g., Max Black, "Presupposition and Implication," Models and Metaphors, (Ithaca: Cornell University Press, 1962), and Richard Garner, "'Presuppositions' in Philosophy and Linguistics," Studies in Linguistic Semantics, edited by Charles J. Fillmore and D. Terence Langendoen, (New York: Holt, Rinehart and Winston, Inc., 1971), pp. 23-44.

39. An act of assertively uttering a sentence S presupposes$_s$ a thought T iff S presupposes T.

40. An act of asserting a thought T presupposes$_t$ a thought T', iff T presupposes T'.

Not all interpreters of Frege would be happy with this account. Black and Garner, for example, seem to hold that acts of assertion presuppose thoughts (or "states of affairs") in some primary sense and that the penalty for presupposition failure is that no assertion gets made.[54] Black sums up his interpretation by saying that "when the presupposition is not the case, we have no assertion, but only the utterance of a form of words . . ."[55] This consequence is not predicted by (39) and (40).

There is no reason to accept the interpretation given by Black and Garner. For one thing, the view they attribute to Frege is patently false. Imagine a student ignorant of Russell's paradox assertively uttering, "The set of all (and only) non-self-membered sets has many members." Are we to say, on the grounds that there is no such set (or on the grounds that 'the set of all (and only) non-self-membered sets' does not have a referent),

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[54]For closely related views, see J.J. Katz, Semantic Theory, (New York: Harper and Row, 1972), and D. Terence Langendoen and Harris B. Savin, "The Projection Problem for Presupposition," Studies in Linguistic Semantics, pp. 55-62.

[55]Black, "Presupposition and Implication," p. 51.

that the student has failed to assert anything--i.e., that he has made no statement and hence claimed nothing at all? Of course not. To be sure he has failed to say something true. If Frege is correct, he has failed to say anything which is either true or false. But this just shows that it is possible to assert a proposition which, on Frege's view, is truth-valueless.

There is no indication that Frege would have denied this. Aside from the passage quoted above, I know of no textual evidence which supports Black and Garner. Moreover, the above passage can easily be interpreted without claiming that, for Frege, presupposition failure results in there being no assertion at all. What he wanted to explain was why, even though the thought expressed by (28a) does not contain the thought expressed by (28b), one cannot affirm the former and deny the latter.

28. a. Whoever discovered the elliptic form of the planetary orbits died in misery.

    b. Someone discovered the elliptic form of the planetary orbits.

His explanation was that the former thought *presupposes* rather than contains the latter and that anyone who *asserts* a thought is thereby committed to that which is required in order for it to be true. Here, the reference

to assertion is simply to rule out instances like those in which a person merely entertains a thought, puts forth a thought by way of giving an example, or presents a thought in the way that an actor does in performing a play. A commitment to that which is presupposed comes about when one has undertaken a commitment to that which does the presupposing. This is precisely what happens in the case of assertion.[56]

Why, then, have some interpreters of Frege been led to erroneous views about the consequences of presupposition failure? One factor may be an uncertainty about what he means when he says that one thought does not *contain* another. Since the thought expresed by (28a) conveys the information expressed by (28b), it might seem that the former thought must *somehow* include the latter. However, according to Frege, the thought expressed by (28a) does not have the form (41).[57]

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[56] It should be clear that we can construct a notion of a speaker's presupposition from the notions of presupposition we have already defined--e.g.,

> A speaker S presupposes a thought T iff S asserts a thought T' which presupposes T.

[57] It also does not have the form (i) or (ii).

(i) Exactly one person discovered the elliptic form of the planetary orbits, and he died in misery.

(ii) At least one person discovered the elliptic form of the planetary orbits and at most one person discovered the elliptic form of the planetary orbits and each person who discovered the elliptic form of the planetary orbits died in misery.

41. Someone discovered the elliptic form of the planetary orbits and he died in misery.

Hence, the information expressed in (28b) is not present as one conjunct of a conjunction. How, then, is it included?

Some theorists have resolved this question by attributing to Frege a complex view of the nature of thoughts. On this view, the thought expressed by (28a) *does* contain a constituent thought. However, the thought expressed by (28a) is divided into two components--one which constitutes the presupposition (i.e., the thought that exactly one person discovered the elliptic form of the planetary orbits) and one which constitutes the assertion (i.e., the claim that this individual died in misery). According to this interpretation, the two components are not on a par. If a sentence is negated, what is negated is not the entire thought that it expresses, but only the assertion. The two components also play different roles in determining the content of what is said. The presupposition, though not contributing to the assertion, is said to be a necessary condition for an utterance of the sentence to succeed in making any assertion at all.

In recent years this view has become very influential. For many theorists it has provided *the* model for under-

standing presupposition.[58] For example, a sentence like (42) has commonly been assumed to assert the thought expressed by (43) and presuppose the thought expressed by (44).

42. Sam stopped smoking on January 1st.

43. After January 1st, Sam did not smoke.

44. Before January 1st, Sam smoked.

If the thought expressed by (44) is true, then assertively uttering (42) is said to make the assertion expressed by (43). However, if the thought expressed by (44) is untrue, then assertively uttering (42) is supposed to make no assertion whatsoever.

Application of this model to sentences like (45) yields similar results.

45. The man in the next room is a philosopher.

If there is exactly one man in the next room, then an assertive utterance of (45) is supposed to make the assertion that he is a philosopher. However, if there is not exactly one man in the next room, then such an utterance fails to assert anything.

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[58] For example, see: Charles Fillmore, "Types of Lexical Information," Studies in Syntax and Semantics, edited by F. Kiefer, (Dordrecht: Reidel Publishing Co., 1969) and "Verbs of Judging: An Exercise in Semantic Description," Studies in Linguistic Semantics; D.T. Langendoen and H.B. Savin, "The Projection Problem for Presuppositions;" and J.J. Katz, Semantic Theory.

In addition to adopting this model, some theorists have attributed it to Frege. Jerrold J. Katz apparently takes this view.[59] According to him, Frege holds that sentences like (27a) express thoughts which

> . . . contain a condition that referential occurrences of names designate and that this condition is not part of their assertion. In the case of [27a], the presuppositional condition is that the occurrence of the name "Kepler" has a referent, and the assertion (whose statement depends on "Kepler" having a referent) is no more than that the referent is someone who died in misery.[60]

Katz says that he is adopting a position close to Frege's in holding that "The presupposition of an assertion will be taken to be a condition found in the meaning of the sentence expressing the proposition."[61]

Katz presents this doctrine as an alternative to Russell's theory of definite descriptions. On this theory (again quoting Katz),

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[59] I say 'apparently' because the section in Semantic Theory on presupposition is unclear in certain respects. For example, in some passages, Katz says that assertions carry presuppositions. In others he seems to indicate that the bearer of presuppositions is the entire proposition, of which the assertion is only a part. Similarly, it is not clear to me whether he means that presupposition failure results in there being no assertion at all or only in there being no assertion which is either *true* or *false*.

[60] Katz, Semantic Theory, p. 129.

[61] Ibid, p. 130.

> . . . sentences of the form 'The so-and-so is P' are to be understood as a conjunction with essentially three conjuncts: 'There is something which is a so-and-so', 'It is unique in being a so-and-so', and 'It has the property P'. . . Sentence [46] is regarded as the assertion [47], while [48] is regarded as the assertion [49].[62]

46. The present King of France is bald.

47. There is something which is a present King of France and which is unique in being such and which is bald.

48. The President of the United States is under six feet tall.

49. There is something which is a president of the United States and which is unique in being such and which is under six feet tall.

Frege, on the other hand, is said to hold that, in the case of a sentence like (46)

> . . . the existence of an individual who is unique in being king of France at the time of the utterance is logically prior to and taken for granted in the statement, which is the assertion that that individual is bald. If there is no such individual, then there is no such statement since there is no one of whom the predication "is bald" or "is not bald" can hold.[63]

Finally, Katz claims that

> A Fregean analysis says that the three conjuncts that form "separate but equal" components in a Russellian analysis . . . are *ordered*. They are not each on a par with one another as

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[62] Ibid, p. 131.

[63] Ibid.

> individual clauses in the formulation of the truth conditions; rather, the first two components, the existential and the uniqueness clauses, jointly comprise a condition that is ordered logically prior to the third component, the predicative clause, and forms the condition under which it can express a true or false assertion.[64]

In a moment I will argue that this is an inaccurate interpretation of Frege. At this time, however, one problem with it should be noted. Katz seems to maintain that the assertion component of a thought is separate from its presupposition component. He also seems to hold that what one asserts by assertively uttering a sentence S is the assertion component of the thought expressed by S. One consequence of this view is that there is often no way of saying what assertion is made by assertively uttering a given sentence (i.e., for many sentences S there is no sentence S' that expresses that which one asserts when one assertively utters S).

For example, what is the assertion made by assertively uttering (48)?

48. The President of the United States is under six feet tall.

It cannot be the thought that is expressed by this sentence

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[64]Ibid, p. 132-133. Additional passages which indicate that Katz interprets Frege as proposing a division of thoughts into presupposition and assertion components can be found on pages 135, 136, and 141 of Semantic Theory.

since this thought includes *both* presupposition *and* assertion. Katz tells us that the existence and uniqueness claims contained in this thought are not part of the assertion component, but rather constitute presuppositions. Thus, the only remaining candidates for the assertion seem to be those expressed by 'is under six feet tall', 'X is under six feet tall', and 'He is under six feet tall'.

The first two of these are not complete sentences of English and do not express thoughts. The third appears to be more promising. However, it is indefinite and in need of supplementation. Presumably, it won't do to say that a speaker who assertively utters (48) makes the same assertion as a speaker who assertively utters (50)--namely the assertion that he is under six feet tall.

50. The governor of California is under six feet tall.

However, if we claim that assertively uttering (48) and (50) respectively make the assertions that the President of the United States is under six feet tall and that the governor of California is under six feet tall, then we will have come full circle, having again lumped assertion and presupposition together.

One possible response to this difficulty is suggested

by an early view of Russell's. On this view, people (and other objects in the "real" world) are constituents of certain propositions. Thus, one might define the notion of *the assertion corresponding to a sentence* (of the form 'The so-and-so is P') as consisting of the so-and-so (the actual object) together with the sense of the predicate expression. Presupposition failure would then result in there being no assertion at all *in this sense*, because if there were no so-and-so, then one of the constituents necessary to make up the assertion would be missing.

Whatever the merits of this view, it is clearly not Fregean. For Frege, thoughts do not contain objects as constituents, but are made up entirely of senses. Thus, such newly defined "assertions" could be neither Fregean thoughts nor parts of such thoughts. Moreover, on the view just outlined, it would be necessary to distinguish between the newly defined notion of *the assertion corresponding to a sentence* and our ordinary notion of assertion. For example, there is no assertion, in the sense just defined, corresponding to the sentence, "The set of all (and only) non-self-membered sets has many members." Nevertheless, the thought expressed by this sentence may be the content of an assertion--i.e., it is possible to assert that the set of all (and only) non-self-membered sets has many members. But then it is

hard to see that the *new* notion of assertion does any work at all.

This can be made clearer by contrasting the above erroneous interpretation with Frege's actual analysis. The fact which gave rise to the interpretation was that thoughts like those expressed by (28a) and (48) convey the information present in (51) and (52) respectively.

28. a. Whoever discovered the elliptic form of the planetary orbits died in misery.

48. The President of the United States is under six feet tall.

51. Exactly one person discovered the elliptic form of the planetary orbits.

52. There is exactly one president of the United States.

What made this seem problematic was Frege's contention that the former thoughts do not *contain* the latter. The above interpretation resolved this apparent difficulty by claiming that the thoughts expressed by (51) and (52) *are* parts of the thoughts expressed by (28a) and (48). However, since they are presuppositions, they are not contained in the *assertion component* of the relevant thoughts.

All of this is foreign to Frege. He does not accept an analysis in which the thought expressed by (48) is divided up into separate Russellian parts--not even when

those parts are said to be in different "components." Rather, (48) is a subject-predicate sentence which is analyzed as having the form (53).

53. P f(n)

Since (48) does not contain a constituent sentence, but rather a (non-sentential) compound proper name, the thought that it expresses does not contain a constituent thought, but rather the sense of a (non-sentential) compound proper name. Nevertheless, this thought conveys the information that there is a President of the United States. It does so because the function f, presented by the sense of the expression 'the President of _____', is defined as assigning presidents to countries that have them. A necessary condition for the thought expressed by (48) to be true is that f assign a value to the argument--the United States. Therefore, assertion of this thought conveys the information that the United States has a (unique) president.

Essentially, the same analysis works for (28a). There is, however, a new wrinkle. Compound proper names like

54. Whoever discovered the elliptic form of the planetary orbits

and

55. The man who discovered the elliptic form of the planetary orbits

are not most naturally analyzed as the result of combining a singular term with a function sign. To give the structure of these expressions, we need to introduce a new process for forming compound proper names. This process involves the Fregean notions of a complex predicate and a second level function.[65]

A complex (one place) predicate is an expression that is formed from a sentence by removing one or more occurrences of the same proper name--e.g.,

56. a. ____ died in misery.
    b. ____ discovered the elliptic form of the planetary orbits.
    c. __α__ is a man and __α__ discovered the elliptic form of the planetary orbits.
    d. ____ is shorter than Sam and taller than Bill.
    e. Sam is a brother of ____.
    f. Bill gave ____ to Susan.
    g. __α__ killed __α__.

Like all predicates, these express senses and denote functions whose values are truth values. *Second level functions,*

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[65]For further discussion of these notions, see Frege's Begriffsschrift, Chapter 1, translated by P. T. Geach in Philosophical Writings of Gottlob Frege, eds. Geach and Black, especially pp. 12-20. See also Frege, "Function and Concept," Writings of Frege, esp. pp. 35-41; and Michael Dummett, Frege: Philosophy of Language, Chapters 2 and 3, (New York: Harper and Row, 1973).

on the other hand, are functions that take functions as arguments. Such functions, together with complex predicates, constitute the core of Frege's account of quantification.[66]

For example, on Frege's view, the quantifier 'everyone' denotes a second level function which takes the functions denoted by predicates as arguments and gives either truth or falsity as value. Thus a sentence like

57. Everyone likes Susan.

is seen as constructed from the quantifier 'everyone' and the complex predicate 'likes Susan'. The latter denotes a function that assigns truth to all and only those who like Susan. The former ('everyone') denotes a function that assigns truth to all and only those functions which assign truth to each of their arguments. Consequently, Frege correctly accounts for the fact that (57) is true if and only if everyone likes Susan.

In addition to second level functions whose values are truth values, Frege also recognizes second level functions whose values are not truth values. One such function is the definite description operator. We may represent this operator as (58), and the result of

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[66]Dummett, Frege: Philosophy of Language, Chapter 2.

combining it with a complex (one place) predicate as (59).

58. ιx

59. ιxΦx (where 'Φx' represents the one place predicate)

'ιx' is like a quantifier in that it combines with a complex predicate. However, it is unlike a quantifier in that the resulting expression is not a sentence but a (non-sentential) compound proper name. The function denoted by 'ιx' takes as argument a function denoted by a (one place) predicate and gives as value the unique object that satisfies the predicate.[67] If there is no such object, then, in natural language, the compound proper name lacks a referent.

We can now handle compound proper names like (55).

55. The man who discovered the elliptic form of the planetary orbits

This expression is seen as formed from the complex predicate (56c) and the definite description operator (representence by 'the').

56. c. $\underline{\alpha}$ is a man and $\underline{\alpha}$ discovered the elliptic form of the planetary orbits

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[67] i.e., the unique object which the function denoted by the predicate assigns truth.

On this analysis, (60) is seen as having the logical form (61).

60. The man who discovered the elliptic form of the planetary orbits died in misery.

61. $\Psi\iota x \Phi x$ (where 'Ψ' represents the predicate 'died in misery' and 'Φx' represents the complex predicate (56c))

The key point here is that although the subordinate clause can be seen as formed from a sentence, it is not itself a sentence, but a complex predicate. Consequently, just as (60) does not contain a constituent sentence, but rather a complex predicate, so the thought expressed by (60) does not contain a constituent thought, but rather the sense of a complex predicate. Nevertheless, this thought conveys the information that exactly one man discovered the elliptic form of the planetary orbits. It does so because the function f, presented by the sense of (56c), is defined as assigning truth to all and only those men who discovered the elliptic form of the planetary orbits; because the second level function denoted by the definite description operator assigns a value to only those functions which assign truth to exactly one object. A necessary condition for the thought expressed by (60) to be true is that the function denoted by the

definite description operator assign a value to f. Therefore, assertion of this thought conveys the information that exactly one man discovered the elliptic form of the planetary orbits.[68]

The upshot of all of this is a confirmation of my earlier interpretation of Frege regarding the relationship between presupposition and assertion;[69] and a refutation of the interpretations of Black, Garner, and Katz. Presupposition failure does not lead to there being no assertion at all. Moreover, when Frege claimed that the thought expressed by (28a) does not contain the thought expressed by (28b), he meant just what he said; not that the thought contains separate assertion and presuppo-

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[68]Frege hints at the possibility of this kind of analysis when he says:

"Adjective clauses also serve to construct compound proper names, though, unlike noun clauses, they are not sufficient by themselves for this purpose. The adjective clauses are to be regarded as equivalent to adjectives. Instead of 'the square root of 4 which is smaller than 0' one can also say 'the negative square root of 4'. *We have here the case of a compound proper name constructed from the expression for a concept with the help of the singular definite article.* This is at any rate permissible if the concept applies to one and only one single object.

"Expressions for concepts can be so constructed that marks of a concept are given by adjective clauses as, in our example, by the clause 'which is smaller than 0'. It is evident that such an adjective clause cannot have a thought as sense or a truth value as reference, any more than the noun clause could. Its sense, which can also be expressed in many cases by a single adjective, is only a part of a thought. Here, as in the case of the noun clause, there is no independent subject and therefore no possibility of reproducing the sense of the subordinate clause in an independent sentence. (Frege, "On Sense and Reference," pp. 70-71)" (my emphasis)

[69]Pages 56-57 in the text.

sition components.[70] We can see this because our account of his theory of presupposition is grounded in his general semantics. The failure of some interpreters to arrive at the same conclusion seems to be the result of concentrating too much on his brief remarks in "On Sense and Reference" and paying too little attention to his overall semantic theory. This failure is made more significant by the fact that many contemporary theorists of presupposition have adopted essentially the view that Katz attributes to Frege. We have seen that, at least in the case of existential presupposition, there is no need to do so.[71]

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[70] $\ulcorner\Psi(\iota x \Phi x)\urcorner$ does not contain $\ulcorner\exists x \Phi x\urcorner$. Thus, Frege concludes that the thought expressed by $\ulcorner\Psi(\iota x \Phi x)\urcorner$ does not contain the thought expressed by $\ulcorner\exists x \Phi x\urcorner$.

[71] See Deirdre Wilson, Presupposition and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), for arguments against this version of the presupposition-assertion distinction in the case of non-existential and compound sentences.

PART 3

PRESUPPOSITION, NEGATION, AND TRUTH

VII. Presupposition and Negation

We come now to a topic that is vital to any theory of presupposition--the relationship between presupposition and negation. One reason why this relationship is important is that it provides a basis for distinguishing presupposition from entailment. Like most theorists of logical presupposition, Frege holds that presupposition is always preserved under negation--i.e., if A presupposes B, then the negation of A does so as well. Entailment, on the other hand, is not always preserved. Although there are instances in which both A and the negation of A entail B, this is the case only when B is either logically presupposed by A or is a necessary truth.[72]

Historically, this fact has provided the chief test for logical presupposition. To show that A logically presupposes some contingent proposition B, most theorists have tried to demonstrate that B is a necessary condition for the truth of both A and its negation.[73] Frege himself

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[72]Although logical presupposition is a different relation from entailment, every instance of the former is also an instance of the latter. See footnote 41 for my definition of entailment.

[73]It might be thought that we could determine whether or not A logically presupposes B simply by finding out if B is a necessary condition not only for the truth, but also for the falsity of A. The

argued in this way when he claimed that (22) presupposes that the name 'Kepler' has a referent.

22. Kepler died in misery.

He said that if this were not so, then

> . . . the negation would have to run not
>
> [23.] Kepler did not die in misery
>
> but
>
> [24.] Kepler did not die in misery, or the name 'Kepler' has no reference.[74]

He argued that this is absurd since

> That the name 'Kepler' designates something is just as much a presupposition for the assertion
>
> [22.] Kepler died in misery
>
> as for the contrary assertion [i.e., (23)].[75]

Despite its importance, the relationship between presupposition and negation is often treated much too casually. Consider, for example, the Fregean theory of sentential presupposition that I have explicated thus far. In presenting this theory, I have had occasion to refer to ⌜not S⌝ where S is any sentence. However, ⌜not S⌝ is not always grammatical. If S is 'The present King of

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problem is that we have no reliable intuitions distinguishing falsity from truth-valuelessness. Consequently, some other test is needed. Negation has been thought to provide this test. This assumes that whereas negation carries falsity into truth, it preserves truth-valuelessness.

[74] Frege, "On Sense and Reference," p. 69.

[75] Ibid.

France is wise' then ⌜not S⌝ is 'not' followed by 'the present King of France is wise'--i.e., *'Not the present King of France is wise'.[76] Since this sentence is ungrammatical in English, (12) must be modified.[77]

12. For any sentence S of English and thought T, if S presupposes T (in English), then so does ⌜not S⌝.

12. a. For any sentence S of English and thought T, if S presupposes T (in English), then so does the grammatical negation of S.

(12a) arises from (12) by replacing '⌜not S⌝' with 'the grammatical negation of S'. The virtue of this replacement lies in its vagueness. (12a) doesn't purport to say anything about the syntax of negation. All it claims is that whatever sentence counts as the grammatical negation of S shares the presuppositions of S.

(12a) exploits the division of labor between syntactic and semantic theories. However, it requires

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[76] I prefix '*' to a sentence to indicate that it is ungrammatical.

[77] In a fully developed theory principles like (12) or (12a) would have to be modified to take into account the relativization of Fregean referential presupposition to context discussed in Section V. However, since this point is irrelevant to the issue involving negation that I want to discuss now, I have used (12) and (12a) to simplify the discussion. The relativization of referential presupposition to context will become relevant to the discussion of negation only in the latter half of this section and in Section IX. In both of these cases I will make explicit reference to such relativization where it is needed.

every sentence that presupposes something to have exactly one grammatical negation. This is problematic. Both (63)and (64) are grammatical negations of (62).

62. The present King of France is wise.

63. It is not the case that the present King of France is wise.

64. The present King of France isn't wise.

Thus, not every sentence has a unique grammatical negation.[78]

We can put aside these grammatical worries by adopting (12b).

12. b. For any sentence S of English and thought T, if S presupposes T (in English), and S' is a grammatical negation of S, then S' presupposes T (in English).

(12b) has all the virtues of its predecessor without its vices. What it tells us is that *every* grammatical negation of a sentence S shares the presuppositions of S.

At this point a different question arises. Is it the case that all grammatical negations of a sentence

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[78] Note, a proponent of (12a) cannot deny that ⌜it is not the case that S⌝ is a grammatical negation of S. If (i) has any grammatical negations at all, then (ii) is one of them.

(i) The present King of France is wise and the present Queen of France is beautiful.

(ii) It is not the case that the present King of France is wise and the present Queen of France is beautiful.

are logically equivalent? Although (12b) might lead one to expect that the answer is 'yes', it is easy to see that for Frege, the answer must be 'no'.[79]

Consider again (62), (63) and (64).

62. The present King of France is wise.

63. It is not the case that the present King of France is wise.

64. The present King of France isn't wise.

Because Frege defines presupposition in terms of truth value gaps, he regards (62) and (64) (and the thoughts expressed by them) as being neither true nor false. Thus, he is committed to the truth of (65).

65. The thought that the present King of France is wise is not true.

However, if (65) is true, then (66), (67) and (63) must also be true.

66. That the present King of France is wise is not true.

67. It is not true that the present King of France is wise.

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[79] According to (12b), each grammatical negation of S shares the presuppositions of S. Thus, if S is truth-valueless, then each grammatical negation of S must also be truth-valueless. But this is not true.

63. It is not the case that the present King of France is wise.

If this argument is sound, then (63) is true, and (64) is truth-valueless. Since both count as grammatical negations of (62), then some sentences have non-equivalent grammatical negations.[80]

It seems to me that Frege has to accept this conclusion. However, since this conclusion might trouble proponents of logical presupposition, I will look at the argument just given a little more closely. In what follows I will construct what seems to me to be the strongest case a theorist like Frege might make for rejecting the argument. Although an initially plausible case can be made on Frege's behalf, I will argue that it ultimately fails.

The argument just given rests on three premises.

68. Premise 1: If (65) is true, then so is (66).

69. Premise 2: If (66) is true, then so is (67).

70. Premise 3: If (67) is true, then so is (63).

In general, our intuitions about the distinction between truth and untruth are reliable. Insofar as we are guided by these intuitions in evaluating sentences (63-67),

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[80] For arguments similar to the one just given, see Deirdre Wilson, ibid, pp. 44-45; and Michael Dummett, "Truth," in Philosophical Logic, pp. 53-54.

premises (1-3) seem to be acceptable. Thus, if one of the premises were to be rejected, it would have to be as the result of a general argument that forced us to abandon an otherwise plausible assumption.

In the case of premises 1 and 3, I know of no such argument. Premise 2 is somewhat more problematic. A possible argument that might be used against it is based on the distinction between semantical predicates and statement operators that is drawn by Quine in "Three Grades of Modal Involvement." Quine's example of a semantical predicate is the verb 'is necessary'. His example of a statement operator is the adverb 'necessarily'. For Quine, the former attributes necessity to sentences and hence is attachable to *names* of sentences. For example, each of the sentences in (71) is well-formed and each attributes necessity to that which is named by the subject of the verb 'is necessary'.

71. a. The sentence 'Nine is greater than five' is necessary.
    b. 'Nine is greater than five' is necessary.
    c. The first sentence on page 157 of Ways of Paradox is necessary.

Examples like these are to be distinguished from those in (72).

72. a. Necessarily nine is greater than five.
    b. Necessarily mathematicians are rational.

c. Necessarily bicyclists are two-legged.

Here, we don't have a semantical predicate but rather a statement operator. The adverb 'necessarily' attaches not to names of sentences but to sentences themselves. Quine notes that in this respect 'necessarily' functions like negation. Thus, the expressions in (73) are ill-formed in the same way that the expressions in (74) are.

75. a. *Necessarily 'Nine is greater than five'
    b. *Necessarily 'Squares are four-sided'
    c. *Necessarily 'Mathematicians are rational'

76. a. *Not 'All philosophers are empiricists'
    b. *Not 'Many linguists have studied Frege'
    c. *Not 'Many politicians are honest'

The distinction between semantical predicates and statement operators to which Quine draws attention is both real and important. The specific use to which he puts this distinction in discussing modal logic is not relevant to us. What is relevant is the possibility that this distinction might be used to cast doubt on (69) (Premise 2), and more generally, that it might be used in arguing for (75).

75. Sentences of the form (76) are not equivalent to sentences of the form (77).
76. That S is true.

77. It is true that S.[81]

Suppose that someone were to maintain that sentences of the form (76) contain a semantical predicate 'is true', whereas sentences of the form (77) contain a statement operator 'it is true that'. Anyone taking this line would have to hold that expressions occupying the place of 'that S' in sentences of the form (76) are names of sentences or thoughts. This would be no problem for Frege since he holds that, in general, noun clauses introduced by 'that' designate thoughts. On this analysis, the expressions making up the subject in (66) would name their own senses.

66. That the present King of France is wise is not true.

Consequently, as in the case of belief sentences, there would be no possiblity of presupposition failure and (66) would come out true. However, if 'it is true that' is a statement operator like 'not', then the sentences to which it is appended need not be seen as designating thoughts, but rather can be seen as designating truth

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[81] If sentences of the form (76) are false when the corresponding sentences of the form (77) are truth-valueless, then sentences of the form (i) would be true (on Frege's account of negation) when the corresponding sentences of the form (ii) are truth-valueless.

(i) That S is not true.
(ii) It is not true that S.

If this is the case, then (on Frege's account of negation) (69) (Premise 2) is false.

values. On this analysis, 'it is true that' is a truth functional operator mapping truth onto truth, and falsity onto falsity. Thus, the context

78. It is true that . . .

will be non-oblique. But if this is the case, then (79) will be truth-valueless, and Frege's account of negation will predict that (67) is also truth-valueless.

79. It is true that the present King of France is wise.

67. It is not true that the present King of France is wise.

Consequently, there is a way of construing (66) and (67) so that the former is true and the latter is not.[82]

What can be said for this analysis? First, the expression 'is true' is clearly a grammatical predicate in sentences of the form 'That S is true'. This is not so obvious in sentences of the form 'It is true that S'. Thus, the supposition that 'is true' has a different semantic function in the two cases might seem to have a foundation in (surface) grammatical structure. Second, the set of expressions that can occur in the frame '____

[82] I am indebted to Richard Cartwright for pointing out this possiblity to me.

is true' is not identical with the set of expressions that can occur in the frame 'It is true (that) _____'. Non-sentential noun phrases can be subjects of 'is true'. Such noun phrases cannot follow 'it is true (that)'.

80. a. The sentence 'The earth is round' is true.
    b. 'The earth is round' is true.
    c. The proposition that the earth is round is true.
    d. The first sentence in this essay is true.

81. a. *It is true (that) the sentence 'The earth is round'.
    b. *It is true (that) 'The earth is round'.
    c. *It is true (that) the thought that the earth is round.
    d. *It is true (that) the first sentence in this essay.

These examples might be seen as providing evidence for the following generalization:

82. Expressions occupying the place of 'α' in well-formed sentences of the form

    α is true

    are names of sentences or thoughts. Expressions occupying the place of 'β' in well-formed sentences of the form

    It is true that β

    are not names of sentences or thoughts.

If (82) is correct, then, for Frege, the context 'That _____ is true' will be oblique, whereas the context 'it

is true that _____' will not. On this analysis, sentences following 'it is true that' do not name sentences or thoughts. For Frege, such sentences would name truth values. Consequently, ⌜That S is true⌝ would not be equivalent to ⌜It is true that S⌝. Although these sentences would be true together, the former would be false whenever the latter were truth-valueless. Thus ⌜That S is *not* true⌝ would be true whenever ⌜It is *not* true that S⌝ were truth-valueless.

This is, I think, the best case that Frege could make for rejecting the conclusion that (63) and (64) differ in truth value.

63. It is not the case that the present King of France is wise.

64. The present King of France isn't wise.

Unfortunately, the analysis that would allow him to reject this conclusion won't stand up.

First consider the argument for (82). It is based on the fact that non-sentential noun phrases can be subjects of 'is true', but cannot follow 'it is true that'. However, if this fact justifies (82), then the fact that non-sentential noun phrases can be subjects of $\left\{\begin{matrix}\text{'is incorrect'}\\ \text{'is unprovable'}\\ \text{'is plausible'}\\ \text{'is unbelievable'}\end{matrix}\right\}$,

but cannot follow 'it is $\left\{\begin{matrix}\text{incorrect}\\ \text{unprovable}\\ \text{plausible}\\ \text{unbelievable}\end{matrix}\right\}$ that' ought to justify (83).[83]

83. Expressions occupying the place of 'α' in well-formed sentences of the form

$$\alpha \text{ is } \left\{\begin{matrix}\text{incorrect}\\ \text{unprovable}\\ \text{plausible}\\ \text{unbelievable}\end{matrix}\right\}$$

are names of sentences or thoughts. Expressions occupying the place of 'β' in well-formed sentences of the form

$$\text{It is } \left\{\begin{matrix}\text{incorrect}\\ \text{unprovable}\\ \text{plausible}\\ \text{unbelievable}\end{matrix}\right\} \text{ that } \beta$$

are not names of sentences or thoughts.

(83) has unacceptable consequences when combined with other aspects of Frege's semantics. If he were to adopt it, then the subject of (84) would be seen as

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[83] Relevant data is provided by sentences like (i)-(iii) below. In these sentences I use 'adj' to stand for 'incorrect', 'unprovable', 'plausible', and 'unbelievable'. A set is ordinary if and only if it is non-self-membered.

(i) (a) The sentence 'The set of all non-ordinary sets is ordinary' is adj.
(b) 'The set of all non-ordinary sets is ordinary' is adj.
(c) The proposition that the set of all non-ordinary sets is ordinary is adj.
(d) John's thesis is adj.

(ii) (a) *It is adj (that) the sentence 'The set of all non-ordinary sets is ordinary'.
(b) *It is adj (that) 'The set of all non-ordinary sets is ordinary'.
(c) *It is adj (that) the proposition that the set of all non-ordinary sets is ordinary.
(d) *It is adj (that) John's thesis.

(iii) It is adj that the set of all non-ordinary sets is ordinary.

designating its own sense.

84. That the set of all non-ordinary sets is ordinary is $\left\{\begin{matrix}\text{incorrect}\\ \text{unprovable}\\ \text{plausible}\\ \text{unbelievable}\end{matrix}\right\}$.

Consequently, the thought expressed by this sentence would neither presuppose nor entail that there is a set of all (and only) non-ordinary sets. (85), on the other hand, would not be oblique.

85. It is $\left\{\begin{matrix}\text{incorrect}\\ \text{unprovable}\\ \text{plausible}\\ \text{unbelievable}\end{matrix}\right\}$ that the set of all non-ordinary sets is ordinary.

According to (83), (86) does not name a sentence or a thought in (85).

86. The set of all non-ordinary sets is ordinary.

If Frege were to accept (83), then, given the rest of his semantics, he would have to hold that the expressions in (86) have their customary sense and reference. This analysis predicts that the thought expressed by (85) presupposes (and hence entails) that there is a set of all (and only) non-ordinary sets. Since this prediction is incorrect, Frege must reject (83). Since the argument

for (82) parallels the argument for (83), the argument for (82) must also be rejected.[84]

This result undermines the rationale for regarding sentences of the form 'That S is (not) true' and 'It is (not) true that S' as non-equivalent. If they are equivalent, then (67) is true and my original argument goes through.

67. It is not true that the present King of France is wise.

Finally, there is an independent reason for claiming that (67) and (63) are true.

63. It is not the case that the present King of France is wise.

This reason is based on sentences of the form (87) and (88).

87. Since P, Q

88. Q because P

The thoughts expressed by such sentences entail the thoughts expressed by sentences occupying the places of 'P' and 'Q'. Now notice that (89) and (90) are true.

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[84] My argument doe not show that (82) is incorrect. Rather it shows that Frege must reject the *argument* for (82).

89. Since there is no King of France, it is not {true / the case} that the present King of France is wise.

90. It is not {true / the case} that the present King of France is wise because there is no King of France.

Since (89) and (90) are true, (67) and (63) must also be true.[85] Consequently, if (64) is truth-valueless, we must conclude that some sentences have non-equivalent negations.[86]

64. The present King of France isn't wise.[87]

This result applies to virtually all truth value gap theories of presupposition. Curiously, it is something that many theorists--Frege included--seem to have ignored.[88]

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[85] The idea for this argument was suggested by Wilson, Presuppositions and Non-Truth-Conditional Semantics, p. 26.

[86] This argument can obviously be generalized to cover other cases.

[87] It might be claimed that, in addition to (89) and (90), (i) and (ii) are also true.

(i) Since there is no King of France, the present King of France isn't wise.

(ii) The present King of France isn't wise because there is no King of France.

If these sentences are true, then either sentences like (64) do not have failing logical presuppositions, or they are ambiguous. If the former is the case, then the chief motivation for a theory of logical presupposition is eliminated. If the latter is the case, then (64) has two interpretations--one in which it has failing presuppositions and one in which it does not. This is the view that would be adopted by proponents of logical presupposition. According to it, (64) occurs in (i) and (ii) with an interpretation that it shares with (63).

[88] For Frege's views on negation, see "Function and Concept," pp. 33-35; and "Negation" esp. pp. 131-135 in Writings of Frege.

What it shows is the need to distinguish between two kinds of negative sentences. Sentences like (64) are instances of what has been called "internal negation." According to theories of logical presupposition, these sentences suffer from presupposition failure whenever their corresponding affirmatives do. Sentences like (63), on the other hand, are instances of what has been called "external negation." These sentences never suffer from presupposition failure.[89]

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[89]In this discussion I have focused on *sentential* presupposition. However, similar points can be made regarding *propositional* presupposition. The above argument shows that the thoughts expressed by (63) and (64) are not equivalent. Hence, it is also necessary to distinguish between two different kinds of negative *thoughts*. Thoughts like those expressed by (64) are examples of "internal negation" and are seen as having failing presuppositions whenever their corresponding affirmatives do. Thoughts like those expressed by (63), on the other hand, are examples of "external negation" and are characterized as never suffering from presupposition failure. For more on this, see Section VIII.

VIII. Internal Negation and the Definition of 'Presupposition'

In Section IX I will explore the implications of the distinction between internal and external negation for Frege's semantics. However, the importance of this distinction is not confined to Fregean views. The need to separate these two kinds of negation has consequences for virtually all truth value gap theories. One such consequence concerns the way in which presupposition is defined. Some theories, like the Fregean theory explicated thus far, define presupposition directly in terms of the conditions necessary for a sentence (or thought) to have a truth value. The relationship between presupposition and negation is then derived from independent principles of the theory. Other theories define this notion differently, building into the definition the claim that a sentence (or thought) and its negation(s) share the same presuppositions.

91. A sentence S (thought T) presupposes a sentence S' (thought T') iff both S(T) and the negation(s) of S(T) logically entail S'(T')[90]

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[90]For present purposes, the distinction between sentences and

Whatever other difficulties there may be with this definition, it is useless unless we are told what constitutes the negation(s) of a given sentence or thought. The distinction between internal and external negation makes the definition problematic. As it stands, it fails to make the distinction. Moreover, it is not obvious that it can be successfully disambiguated.[91]

Consider sentential presupposition. If "the negation(s) of S" in (91) is taken to mean "the external negation(s) of S," then the definition must be rejected since it predicts that all and only necessary truths can be presupposed.[92] On the other hand, if "the negation(s) of S" is taken to mean "the internal negation(s) of S,"

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thoughts is unimportant. No matter how (91) is read, the point about negation holds. It should also be noted that defenders of definitions like this typically go on to claim that anything entailed by both a sentence (thought) and its negation is a necessary condition for the sentence (thought) to be either true or false. For an example of this kind of view, see E. Keenan, "Two Kinds of Presupposition in Natural Language," Studies in Linguistic Semantics, pp. 45-46.

[91] This point was discovered independently by Fred Katz (personal communication).

[92] ⌜It is not the case that S⌝ is true iff S is not true. Consequently, if S' is a necessary condition for the truth of both S and ⌜It is not the case that S⌝, then S' is a necessary truth.

See J. J. Katz, "On Defining 'Presupposition'," Linguistic Inquiry, Volume 4, No. 2.

then the definition predicts that every sentence that has a presupposition must also have an internal negation. This is questionable.

Consider sentence (92).

92. The present King of France is wise and the present Queen of France is beautiful.

According to a theory of logical presupposition, the conjuncts of (92) have failing presuppositions and hence are truth-valueless. Thus, it would seem that the entire conjunction must also have failing presuppositions and must itself be truth-valueless. However, the most natural negation of (92) is (93).

93. It is not {true / the case} that the present King of France is wise and the present Queen of France is beautiful.

Since it is doubtful that (93) can be construed as anything other than an external negation, it is not clear that (92) has any internal negation at all.

There are, of course, other sentences that might be thought to be internal negations of (92). Any such sentence would have to be true if and only if (92) is false; false if and only if (92) is true; and truth-valueless if and only if (92) is truth-valueless. However, not all sentences in this category would naturally be regarded as negations of (92). For example, if the

truth table for conjunction is (94), then (95) has the truth functional properties we are looking for.

94.

and	T	F	*
T	T	F	*
F	F	F	*
*	*	*	*

('*' means 'truth-valueless'.)

95. The present King of France is a king, and the present Queen of France is a queen, and it is not the case that both the present King of France is wise and the present Queen of France is beautiful.

Nevertheless, I suspect that proponents of definitions like (91) would not regard (95) as an internal negation.

There are other less farfetched examples that might be claimed to be true if and only if (92) is false; false if and only if (92) is true; and truth-valueless if and only if (92) is truth-valueless. Two such candidates are (96) and (97).[93]

96. Either the present King of France isn't wise, or the present Queen of France isn't beautiful.
97. It is false that the present King of France is wise and the present Queen of France is beautiful.

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[93] In Section X, I argue that disjunctions are true if and only if one of their disjuncts is true. If this is correct, and if the truth table (94) is adopted, then (96) cannot be an internal negation of (92) (since (96) can be true even if one of the conjuncts of (92) is truth-valueless). Sentences like (97) are also discussed in greater detail in Section X.

However, even if these sentences have the relevant truth functional properties, it is not obvious that they are *negations* of (92) in any interesting sense. (96) is syntactically neither a negation nor a conjunction, but rather a disjunction. (97) doesn't even contain a negation operator. Thus, if we require the notion of an internal negation of an English sentence to have intuitive syntactic content, then (96) and (97) are not internal negations of (92).

This points up the central problem with definitions like (91). Such definitions invoke the notion of negation as if it were both familiar and precise. This would be understandable if we were talking about standard logical systems in which the negation of a sentence is formed by prefixing '¬' to it. However, the rules involving negation in English are much more complex. Sometimes the negative element is found in the verb phrase; other times it is prefixed to a sentence. Sometimes it substitutes (in surface form) for a quantifier; in other cases, it is embedded in the frame ' it is _____ $\{^{\text{true}}_{\text{the case}}\}$ that'.

98. a. The book in the corner is new.
    b. The book in the corner isn't new.
99. a. All of the books in the corner are new.
    b. Not all of the books in the corner are new.

100. a. Some linguists are philosophers.
b. No linguists are philosophers.

101. a. It sometimes rains.
b. It never rains.

102. a. Some linguists are in the kitchen and some philosophers are in the living room.
b. It is not the case that some linguists are in the kitchen and some philosophers are in the living room.

The requirement that theories of logical presupposition distinguish between internal and external negation complicates matters still further. Moreover, it is not clear that there is any need to pair *every* sentence with an internal negation. Conceivably, there might be some independent theoretical reason for doing so. However, none has ever been demonstrated. Unless such a case can be made, definitions like (91) should be rejected.

It is not so much that these definitions are incorrect as that they are unnecessarily problematic and obscure. In their place a proponent of logical presupposition could adopt a Fregean definition in which presupposition is defined directly in terms of the conditions necessary for a sentence (or thought) to have a truth value. The relationship between presupposition and negation could then be left open and defined by independent principles of the theory. Viewed from this perspective, the question

"Do all sentences with failing presuppositions have negations with failing presuppositions?" demands interpretation rather than a straightforward 'yes' or 'no'. If one places few constraints on what counts as a negation of a sentence, then the question is trivial and the answer is 'yes'.[94] On the other hand, if one restricts the notion of negation more sharply, then the question becomes interesting and, I suspect, the answer is 'no'.[95]

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[94]The question assumes, of course, that there are logical presuppositions.

[95]In this section I have again focused on sentences rather than thoughts. The reason for this is that structural notions like negation are most easily discussed at the level of expressions. Assuming that there are logical presuppositions, the question of whether or not every thought with a failing presupposition has a negation with a failing presupposition is even more obscure than the corresponding question for sentences. In general, our only guide to the structure of thoughts is the structure of the sentences that express them. Since this correspondence is itself problematic, the task of determining whether or not the thought expressed by (92) has an internal negation involves all the problems already discussed and then some.

IX. External Negation, Frege's Theory of Reference, and Truth

Distinguishing two different types of negative sentences (or thoughts) also has interesting consequences for Frege's semantic theory. Instances of what I have called "internal negation" share the presuppositions of their corresponding affirmatives. These instances are unproblematic for Frege since his theory predicts that presupposition is preserved under negation. It is external negations like (103) that cause problems.

103. It is not {true / the case} that the present King of France is wise.

We have already seen that Frege's truth value gap theory commits him to the truth of (103). Thus (103) must not have any failing presuppositions. There are two ways in which this might come about. Either (103) has no presuppositions at all, or else all its presuppositions are satisfied. To see what is involved in the choice between these two alternatives, we must look more closely at Frege's theory of direct and indirect reference.

First, suppose that the expressions in (103) occur

with their customary sense and reference. If this is correct, then at least one of Frege's central semantic views must be given up.

104. Sentences are compound proper names whose customary referents are truth values.

105. The reference of a compound proper name is a function of the reference of its constituents.

106. The proper name 'the present King of France' has no customary referent.

If 'the present King of France' lacks a referent in (103), then Frege's theory falsely predicts that the complement clause lacks a referent also and hence that entire sentence is truth-valueless. Since we know that (103) is true, at least one of these assumptions must be abandoned.

We could give up either (104) or (105) or both, allowing ourselves to define a negation operator that takes sentences with no truth value into truths. If this were done, then sentences like (103) would be seen as having no presuppositions. However, this would scarcely have appealed to Frege since he viewed both (104) and (105) as central tenets of his semantic theory.

Alternatively, we might try rejecting (106). For example, we might adopt an artificial convention in which the proper name 'the present King of France' is assigned

some arbitrary referent like the null set, or the number zero. Frege himself suggested that in a *perfectly constructed language* proper names should be assigned referents in this way.[96] However, for him, this meant that such languages would be bivalent. Moreover, he held that natural languages are *not* perfectly constructed and that expressions like 'the present King of France' really do fail to refer--a natural conclusion since speakers of English don't use such expressions to talk about zero or the null set.

This leads us to consider the possibility that (103) is an oblique context in which expressions designate their customary sense. If this is the case, then 'the present King of France' has a reference in (103), as does the complement clause. Under this alternative, (103) has presuppositions, but its presuppositions are satisfied. Thus, we are not forced to the incorrect conclusion that (103) is truth-valueless.

It might, of course, be objected that

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[96]Frege, "On Sense and Reference," p. 70. Frege held that languages that allow the possibility of reference failure are not *logically* perfect languages. The imperfection that he seems to have had in mind involves the statement of formal rules of inference in giving an effective characterization of the notion of proof. If singular terms (constants, definite descriptions, etc) were allowed to lack reference, then rules like Universal Specification and Existential Generalization would require considerable complication.

107. It is not $\{^{\text{true}}_{\text{the case}}\}$ that ...α...

is an ordinary rather than an oblique context on the grounds that substitution of terms with the same customary reference preserves truth value. In this respect, (107) differs from belief contexts and from other contexts which are typically characterized as oblique. However, this argument against the obliqueness of (107) is weak. The same kind of substitution that preserves truth value in sentences of the form (107) also preserves truth value in sentences of the form (108).

108. '...α...' is a true sentence.

But we know that expressions occupying the place of 'α' in sentences of the form (108) do not have their customary reference. The fact that similar substitution preserves truth value in sentences of the form (107) is therefore no proof that they are not oblique.

One might even construct an argument on Fregean grounds that (107) must be an oblique context. For example, Frege holds that (109) reports that Jones believes a certain thought.

109. Jones believes that the present King of France is wise.

Similarly, it might be claimed that (103) says that a

certain thought is untrue. If so, the complement clause must name its own sense, and its constituents must also name their senses.

There are, then, some grounds for holding that (107) is an oblique context. Unfortunately for Frege, although this result would allow him to save (104-106) above, it conflicts with what he says about truth .

> One might be tempted to regard the relation of the thought to the True not as that of sense to reference, but rather as that of subject to predicate. One can, indeed, say: 'The thought, that 5 is a prime number, is true.' But closer examination shows that *nothing more has been said than in the simple sentence* '5 is a prime number.' The truth claim arises in each case from the form of the declarative sentence, and when the latter lacks its usual force, e.g., in the mouth of an actor upon the stage, even the sentence 'The thought that 5 is a prime number is true' contains only a thought *and indeed the same thought as the simple* '5 is a prime number'.[97] (my emphasis)

In this passage Frege appears to be advocating a kind of redundancy theory of truth, according to which (110) and (111) express the same thought.

110. The present King of France is wise.

111. It is true that the present King of France is wise.

Since (110) doesn't predicate truth of anything, (111) is supposed not to predicate truth of anything either.

One difficulty created by this theory is that it

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[97] Ibid, p. 64.

undermines the argument that (107) is oblique. This argument assumes that (103) says a certain thought isn't true. However, if (111) doesn't affirm that this thought is true, (103) can hardly be said to deny that it is. The problem is that the redundancy theory predicts that (111) is an ordinary rather than an oblique context. Since it cannot be maintained that (103) is oblique and (111) is not, Frege's theory of truth conflicts with the view that the expressions in (103) designate their indirect rather than their customary reference.[98]

The upshot of this is that external negations are a serious problem for Frege. If he holds that they create oblique contexts, then he must give up his redundancy theory of truth. If he claims that they are non-oblique, then he must give up at least one of his central semantic views.

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[98]Note also that if (111) is oblique, it is possible to construct an argument that (110) and (111) differ in truth value. If (111) is oblique, then there will be no reference failure in the complement clause. If the predicate 'is true' is defined over the thought in question (and there is no reason in Frege's semantics why it shouldn't be) then (111) will have a truth value--false--even though (110) is truth-valueless.

A version of this argument is given by Dummett in "Truth," Philosophical Logic, edited by P.F. Strawson, p. 53.

X. Redundancy Theories and the Characterization of Negation

The argument just given might suggest a stronger conclusion--that generally (and not just in the case of Frege (truth value gap theories conflict with redundancy theories of truth.[99] In her book Presupposition and Non-Truth-Conditional Semantics, Deirdre Wilson argues for just such a thesis. She attempts to demonstrate that if a theory of logical presupposition is correct, then sentences of the form

112. It is true that S

cannot share the presuppositions of sentences occupying

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[99] In addition to Frege, redundancy theories of truth have been held by F. P. Ramsey in "Facts and Propositions," in Truth, edited by George Pitcher, (Englewood Cliffs, N.J.: Prentice-Hall, Inc., 1964), pp. 16-17; A. J. Ayer, in Language, Truth and Logic, (New York: Dover Publications, Inc., 1936); and P. F. Strawson in "Truth," in Truth, pp. 32-53. Although there are different versions of the redundancy theory, most proponents of this theory hold that in uttering assertively ⌜It is true that S⌝ one asserts the statement expressed by S; moreover, one asserts no other statement. Whether or not an utterance of a sentence of the form 'It is true that S' carries any other illocutionary force is a question that will not concern us.

Note, the fact that both Frege and Strawson have advocated redundancy views of truth is interesting since both are leading exponents of logical presupposition. If redundancy theories conflict with theories of logical presupposition, then the work of several philosophers will be affected.

the place of 'S'. If this is the case, theories of logical presupposition cannot be combined with redundancy theories of truth.

Wilson's argument is based upon the interaction of logical presupposition and a specially defined notion of entailment.

113. Strong Entailment

"A sentence S entails another sentence P iff if S is true P must also be true and if P is false, S must also be false."[100]

114. Logical Presupposition

A sentence S logically presupposes a sentence P iff the truth of P is a necessary condition for S to have a truth value.[101]

The central premise upon which her argument is based is (115).

115. No sentence Q which is capable of being false can be both strongly entailed and logically presupposed by the same sentence P.[102]

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[100] Wilson, Presupposition and Non-Truth-Conditional Semantics, p. 4.

[101] This is a simplification of Wilson's definition (ibid, p. 16). Her definition brings in extra clauses about negation that are irrelevant for our purposes.

[102] In giving Wilson's argument I will follow her practice of talking about sentences rather than thoughts. The same argument could be reconstructed (perhaps more neatly) for thoughts. For Wilson a sentence S entails (presupposes) a sentence S' if and only if the statement expressed by S entails (presupposes) the statement expressed by S'. Hence, no issue of principle is involved in talking about sentences rather than thoughts here.

This premise is easily established, for if any such sentence Q were false, then P would have to be both false and truth-valueless. This is impossible.[103]

It is important not to confuse (115) with (116).

116. No sentence Q which is capable of being *untrue* can be both strongly entailed and logically presupposed by the same sentence P.

Although (115) is demonstrably true, (116) is not. Suppose that P both strongly entails and logically presupposes Q, and that Q is truth-valueless. From this we can conclude only that P is truth-valueless--not that it is also false. No contradiction is forthcoming. Thus, if a sentence is capable of being truth-valueless, but not false,[104] then it may be both strongly entailed and logically presupposed by the same sentence. It is important to bear this in mind when evaluating Wilson's argument.

Wilson states her argument as follows:

> If *It is true that S* presupposes what S presupposes, then *It is true that S* presupposes that S has a truth value, according to my definition of presupposition. But it seems to me demonstrable that *It is true that S* [strongly] entails, rather than presupposes, that S has a truth value. Both sides of the entailment relation seem to be satisfied. First, if *It is true that S* is true, then clearly *S has a truth value* must also be true. Second, if *S has a truth value* is false, equally clearly *S has a truth value* must be false. But if *It is true that S* [strongly] entails that S has a truth value, it cannot, as I have repeatedly emphasized, simultaneously presuppose it if, as seems to be true, *S has a truth value* is a contingent sentence.[105]

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[103] Ibid, p. 24.

[104] According to theories of logical presupposition, there are such sentences. For example, 'The greatest odd number is prime'.

[105] Ibid, p. 46.

This argument includes three major premises, each of which is true.

117. For any sentence S, if ⌜It is true that S⌝ shares the presuppositions of S, then it presupposes ⌜that S has a truth value⌝.

118. For any sentence S, ⌜It is true that S⌝ strongly entails ⌜that S has a truth value⌝.

115. No sentence which is capable of being false can be both strongly entailed and logically presupposed by the same sentence.

We have already seen that (115) is true. (117) results from the fact that every sentence logically presupposes that it has a truth value. This is obvious since a necessary condition for a sentence to have a truth value is simply that it have a truth value. (118) is also true. It could be denied only if a sentence of the form (112) is truth-valueless when the corresponding sentence of the form (119) is false.

112. It is true that S

119. That S has a truth value

However, it would be most implausible to claim that sentences of the form (112) carry logical presuppositions that sentences of the form (119) do not.[106]

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[106] We may assume that for any sentence S

Consequently, Wilson's premises (115, 117, and 118) must each be accepted as true.

Nevertheless, her argument does not go through. To arrive at the desired conclusion a fourth premise must be added.

120. If S logically presupposes a contingent sentence Q, then ⌜That S has a truth value⌝ is capable of being false.

Wilson slurs over this, confusing it with (121).

121. If S logically presupposes a contingent sentence Q, then ⌜That S has a truth value⌝ is contingent, and hence capable of being *untrue.*

(121) is uncontroversial. However, it is not what is needed.

⌜That S has a truth value⌝

is equivalent to

⌜Either it is true that S or it is false that S⌝ .

We may also assume that a disjunction has a truth value only if at least one of its disjuncts does. Finally, it is natural to suppose that for any sentence S

⌜It is true that S⌝

and

⌜It is false that S⌝

have the same logical presuppositions; hence, one of them has a truth value if and only if the other one does. From these assumptions, it follows that if a sentence of the form (119) is false, then the corresponding sentence of the form (112) is also false. Thus, Wilson's premise (118) is true.

(120), on the other hand, would allow Wilson to draw her conclusion.[107] However, it cannot be established without begging the question.

Note first that for any sentence S

⌜That S has a truth value⌝

is equivalent to

⌜Either it is true that S or it is false that S⌝.

If S is true or false, then the entire disjunction is true. On the other hand, if S is truth-valueless, then anyone who believes that

⌜It is true that S⌝

and

⌜It is false that S⌝

share the presuppositions of S will hold that these sentences are also truth-valueless.[108] However, if *both* disjuncts of a disjunction are truth-valueless, then it is natural to conclude that the entire disjunction is truth-valueless. Thus for any sentence S

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[107] (115, 117, 118, and 120) entail that either there are no contingent logical presuppositions or, if S logically presupposes a contingent sentence Q, then ⌜It is true that S⌝ does not share the presuppositions of S. This is tantamount to the claim that theories of logical presupposition cannot be combined with redundancy theories of truth.

[108] This is the position Wilson wishes to argue against. Hence, it cannot simply be *assumed* to be incorrect.

⌜Either it is true that S or it is false that S⌝

and

⌜That S has a truth value⌝

are not capable of being false, but rather must be either true or truth-valueless. Consequently, the necessary premise (120) cannot be established, and Wilson's argument collapses.

One difficulty with Wilson's argument was that it relied heavily on intuitions about truth values--in particular, intuitions about the distinction between falsity and truth-valuelessness. When these intuitions are pressed, it is clear that a theorist who holds both a redundancy theory and a theory of logical presupposition has sufficient room to maneuver. Since his claims about truth-valuelessness cannot be falsified by direct appeal to intuition, some other line of argument must be found to show that theories of logical presupposition conflict with redundancy theories of truth. For this reason, it is useful to turn our attention to negation.

If a redundancy theory of truth is combined with a theory of logical presupposition, then external negations of the form (122) do not have the logical structure (123) (where 't' is defined by (124)).

122. It is not true that S

123. $\sim$(t(s))

124.

S	t(s)
true	true
false	false
*	false

The virtue of this analysis is that it allows us to handle instances of internal and external negation with only one negation operator--the one defined in (125).[109]

125.

A	$\sim$A
true	false
false	true
*	*

However, this analysis is incompatible with a redundancy theory of truth since, according to (124), when S is truth-valueless ⌜It is true that S⌝ is false. Thus, the combination of a truth value gap theory and a redundancy view of truth leads to the postulation of two different negative elements--the one defined in (125) and the one defined in (126).[110]

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[109] Larry Horn adopts this analysis in his thesis, "On the Semantic Properties of Logical Operators in English," (Ph.d. dissertation, U.C.L.A., 1972) p. 10.

[110] I assume that an internal negation operator in a theory of

126.

A	A
true	false
false	true
*	true

This result allows one to combine a redundancy theory of truth with a theory of logical presupposition, but only at the cost of accepting two negation operators. If these operators are incorporated into a contemporary linguistic theory, a further problem arises. One of the tasks of such a theory is to characterize the class of entailments of sentences of natural language. If there are logical presuppositions, then the distinction between internal and external negation is relevant to this task. Consequently, positing two negation operators would force the linguist to specify the environments in which each can appear.

Sentences of the form (127) and (128) are unambiguous examples of external negation.

127. It is not true that S

128. That S is not true

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logical presupposition would be a sentential (rather than a predicate) operator. This assumption is made to handle the (alleged) logical presuppositions of sentences like (i)-(iii).

(i) John didn't know that you left.

(ii) Bill doesn't regret mowing the lawn.

(iii) Not many people like my neighbor.

Thus, a linguistic theory that posits two negation operators must specify that the internal negation operator cannot occur in the frames 'It is _____ true that S' and 'That S is _____ true'. The linguist can do little more than list the relevant environments. For example, he cannot claim that the internal negation operator never precedes the adjective 'true'.

129. a. Stalin's assertion that the Communist party represents the will of the people is true.
b. Stalin's assertion that the Communist party represents the will of the people is not true.
c. Stalin asserted that the Communist party represents the will of the people.

130. a. Stalin's last assertion is true.
b. Stalin's last assertion is not true.
c. Stalin asserted something.

If there are any logical presuppositions at all, then the (a) and (b) statements above logically presuppose the corresponding (c) statements. This would be impossible unless the (b) statements were internal negations.[111]

Consequently, a linguistic theory that includes both a redundancy theory of truth and a theory of logical presupposition must specify restrictions on the occurrence of the internal negation operator. Unless these restric-

[111] I am indebted to Richard Cartwright for this point.

PAGES (S) MISSING FROM ORIGINAL

131. It is not the case that S

132. It is false that S

When S is truth-valueless, ⌜It is not the case that S⌝ is true whereas ⌜It is false that S⌝ is not. Thus, a redundancy theory of falsity must claim that sentences of the form (132) express the same thoughts as *internal* negations.

Let us suppose that the redundancy theory has the following as consequences.

133. For any English sentence S, the sentence ⌜It is true that S⌝ expresses the same thought as S.

134. For any English sentence S, the sentence ⌜It is false that S⌝ expresses the same thought as an internal negation of S.

For the present argument, the important principle is (134). In some cases this principle might appear plausible. For example, (62) and (64) seem to be internal negations of one another.

62. The present King of France is wise.

64. The present King of France isn't wise.

(134) predicts that (64) expresses the same thought as (135).

135. It is false that the present King of France is wise.

In other cases, the principle is implausible.

92. The present King of France is wise and the present Queen of France is beautiful.

97. It is false that the present King of France is wise and the present Queen of France is beautiful.

(134) predicts that (97) expresses the same thought as some internal negation of (92). However, we cannot evaluate this claim until we determine what constitutes an internal negation of (92). This is the same problem that we encountered earlier in Section VIII. Until the notion of the internal negation of an English sentence is defined, (134) is unclear.

However, the problem is deeper than this. For example, one might simply stipulate that (96) is to count as an internal negation of (92).

96. Either the present King of France isn't wise or the present Queen of France isn't beautiful.

Alternatively, one might reformulate (134). The important thing about a redundancy theory of falsity is not what it says about internal negation. What is important is that sentences of the form 'It is false that S' be seen as expressing the same thoughts as sentences that do not involve attributions of falsity.

Is there an appropriate sentence that can be paired with (97)? The only candidate in English that is even

remotely plausible is (96). I will argue that if a theory of logical presupposition is correct, then (96) and (97) are not logically equivalent. Hence, they do not express the same thought.

My argument contains three premises.

Premise 1

Under a theory of logical presupposition, the thought expressed by (92) logically presupposes that there is a unique King and Queen of France.

Each conjunct of this thought carries one of these presuppositions. Since both conjuncts are asserted, it is natural to assume that each of the presuppositions remains in force.

Premise 2

(97) is true if and only if (92) is false.

If (92) is either true or truth-valueless, then (97) is not true.

Premise 3

A disjunction is true if and only if one of its disjuncts is true.

This is the central premise in the argument. It predicts that (96) would be true if there were no Queen of France, but there were a (unique) King of France and he was wise.

In this situation, (96) would be true and (97) would not.[115] Thus, if a theory of logical presupposition is correct, then (96) and (97) are not logically equivalent.

The reasons for adopting premise 3 rest ultimately on intuitions. Nevertheless, it seems to me that this premise is true and that any adequate theory of presupposition must be compatible with it. Consider (136) and (137).

136. Either the post office or the police station in the next town will be open.

137. Either the post office in the next town will be open, or the police station in the next town will be open.

Each of these sentences *suggests* that there is both a post office and a police station in the next town. Anyone assertively uttering them in normal circumstances would be thought to believe that the next town contained both facilities. However, this suggestion does not have the force of a *logical* relation. Suppose that you were to utter assertively either sentence and I were to say, "No, I'll bet you are wrong." If the post office in the next town were open, then you would win the bet no matter

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[115] That (97) would be untrue follows from premises 1 and 2.

whether the town contained a police station or not. Since you could not have won the bet unless what you said was true, the thoughts expressed by (136) and (137) are true rather than truth-valueless [116] (in such a situation).

The same conclusion can be reached by considering the role of disjunctions in deductive arguments. For example, a mathematician might reason as follows: "Either the set is empty or it contains the only number with property P. Since I have already demonstrated that there is no such number, we must conclude that the set is empty." In reasoning this way, the mathematician is trying to construct a sound argument. If a disjunction carried the logical presuppositions that are attributed to its disjuncts, then his argument could not be sound. Having proven that there is no unique number with the property P, the mathematician would also have proven that his initial (disjunctive) claim is untrue. However, this is not the case. Since the mathematician's premises are not contradictory, a theory of logical presupposition must not attribute the presuppositions of individual

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[116] For attempts to explain the suggestions of sentences like (136) and (137), see L. Karttunen, "Presuppositions of Compound Sentences," in Linguistic Inquiry 4 (Spring 1973): 169-194; and "Presuppositions and Linguistic Context," in Theoretical Linguistics 1 (1974): 182-194. See also Deirdre Wilson, Presupposition and Non-Truth-Conditional Semantics, Chapter 5.

disjuncts to the entire disjunction.[117]

For reasons like this, I see little hope of combining redundancy theories of truth (and falsity) with theories of logical presupposition. The combination looks plausible only so long as one restricts one's attention to the truth of simple sentences. When one tries to construct a theory of falsity and recognizes the distinction between internal and external negations, three problems become apparent. First, the account of negation becomes complex and *ad hoc*. Second, the redundancy theory of falsity is rendered unclear. Third, the behavior of certain compound sentences (e.g., disjunctions) makes it impossible to eliminate certain attributions of falsity. In the face of these difficulties, we must conclude that redundancy theories conflict with theories of logical presupposition.

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[117] For similar arguments, see Wilson, Presupposition and Non-Truth-Conditional Semantics, pp. 28-30; 79-83.

XI. Presupposition and Compound Sentences

The conflict between Frege's account of presupposition and his view of truth is not the most significant problem for his overall semantic theory. The easiest way to resolve it is simply to give up the redundancy theory of truth. Unlike his account of presupposition, this theory is not basic to his compositional semantics and could be abandoned without fundamentally altering the total system. He did not have to appeal to it in "On Sense and Reference," at all. He does so in the course of arguing that the relationship between a true thought and truth is that of sense to reference, rather than that of "subject to predicate."[118] The redundancy theory is introduced to defeat this latter alternative.

According to Frege, truth is an object rather than a sense or a concept. Like other objects, it cannot be predicated of anything. However, this doesn't commit him to a redundancy theory. He could have maintained that 'is true' denotes a function that assigns the object truth to true sentences and thoughts, and the object falsity to all other sentences and thoughts. Had he done so, he

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[118] See Frege's quoted remarks on p. 104 of the text.

could have held that the thoughts expressed by sentences of the form 'It is true that S' are not identical with the thoughts expressed by the corresponding sentences of the form 'S'. For example, he could have held that the thought expressed by (111) is false even though the thought expressed by (110) is truth-valueless.

110. The present King of France is wise.

111. It is true that the present King of France is wise.

In short, Frege could have retained all that is essential to his semantics without ever worrying about the redundancy theory at all.[119]

A much more serious objection arises in connection with compound sentences formed with sentential connectives. His theory of compositional semantics predicts that reference failure anywhere in such a sentence leads to truth-valuelessness and that the logical presuppositions of constituent sentences carry over to become logical presuppositions of the compound sentences. I have argued that this prediction is incorrect in the case of disjunctions. Although disjunctions typically *suggest* that the presuppositions of the individual disjuncts are fulfilled, they do not logically presuppose this. Many compound sentences

[119]For a different discussion of the redundancy theory, see Frege, "The Thought: A Logical Inquiry," Philosophical Logic, pp. 18-22.

do not even carry suggestions.[120]

138. If there is a (unique) King of France, then the King of France is one of the few remaining monarchs in Europe.

139. Either there is no (unique) King of France, or the King of France is wise.

Since these sentences are true rather than truth-valueless, Frege's theory of compositional semantics is incorrect.

This means that at least one of the following two principles must be false.

140. The reference of a compound proper name is a function of the reference of its parts.

141. Sentences are compound proper names that refer to truth values.

The most likely candidate for rejection is (141). It should be noted, however, that even if it is given up, either (142) or (143) (or both) must also be rejected.

142. Predicates denote functions whose values are truth values.

143. Sentential connectives denote functions whose arguments and values are truth values.

Once these principles are abandoned, a theory of

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[120] See Karttunen, "Presuppositions of Compound Sentences" and "Presuppositions and Linguistic Context," for a discussion of such cases.

presupposition no longer emerges automatically from a theory of compositional semantics, but rather must be motivated on its own terms. With the exception of negation, it is unlikely that sentential connectives will provide such motivation. Even in the case of negation, the situation is problematic.

Frege argued that the thought expressed by (144) logically presupposes the thought expressed by (146) on the grounds that both it and the thought expressed by (145) entail the thought expressed by (146).

144. The man who discovered the elliptic form of the planetary orbits died in misery.

145. The man who discovered the elliptic form of the planetary orbits didn't die in misery.

146. Someone discovered the elliptic form of the planetary orbits.

A theory of logical presupposition together with an account of internal negation predicts these (alleged) entailments. However, this is not the only possible account. Russell's theory makes the same predictions without positing truth value gaps.[121] The cost of

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[121] On Russell's theory (144) expresses the same thought as (i), and (145) is ambiguous between (ii) and (iii).

(i) Exactly one man discovered the elliptic form of the planetary orbits, and he died in misery.

(ii) Exactly one man discovered the elliptic form of the

his theory is that expressions of the form 'the α' are no longer treated as genuine singular terms. However, one can account for the entailments in question without either accepting this consequence or positing logical presupposition. The easiest way to do so is to claim that English contains a negative predicate-making operator that is involved in the construction of predicates of the form '[∿P]'. Such a predicate is satisfied by all and only the objects that do not satisfy the original predicate P. Finally, a subject-predicate sentence is said to be true if and only if the subject expression designates an object which satisfies the predicate.[122] Since both this theory and Russell's theory account for the (alleged) entailments cited by Frege, his argument involving negation does not establish the need for positing a relation of logical presupposition.

This is not to say that either of these two alternatives

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planetary orbits, and he didn't die in misery.

(iii) It is not the case that exactly one man discovered the elliptic form of the planetary orbits, and he died in misery.

(145) entails (146) on the reading it shares with (ii).

[122] I am indebted to Fred Katz for pointing out the possibility of this analysis (personal communication). Note, if (145) has a reading in which it does not entail (146), it might be seen as ambiguous between the logical forms (i) and (ii).

(i) $[\backsim D]\iota x Mx$ (ii) $\neg(D\iota x Mx)$

('D' represents 'died in misery' and 'M' represents 'is a man who discovered the elliptic form of the planetary orbits'.)

to Frege is ultimately correct. Before *any* account of negation is accepted, a much wider range of data must be examined. This data should include both instances of so-called "factive presupposition,"[123] which have been used to defend a theory of logical presupposition, and sentences like

147. The present King of *France* isn't wise!
France has no king.

which Deirdre Wilson has used to argue that negations give rise to *suggestions* rather than entailments.[124]

The import of these remarks is that a theory of logical presupposition can be motivated neither by appeal to general principles of compositional semantics nor by the usual "brisk little arguments"[125] involving negation. If such a theory is to be motivated at all, it must be as *one* part of an overall theory which explains a wide variety of inferences--inferences that arise from the use of referring (and other) expressions and are sanctioned by conjunctions, disjunctions, and conditionals

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[123]For a description of "factives" and "factive presupposition," see Paul and Carol Kiparsky, "Fact," in Semantics, edited by D. D. Steinberg and L. A. Jakobovits, (Cambridge: Cambridge University Press, 1971); pp. 345-369.

[124]For Wilson's argument, see Presuppositions and Non-Truth-Conditional Semantics, pp. 25-30; 48-55.

[125]The term is Strawson's from "Identifying Reference and Truth-Values," Semantics, pp. 86-99.

as well as negations. Frege never developed an adequate theory of this type. He was more interested in constructing the theory of an ideal formal language than he was in giving a detailed empirical account of the structure of natural languages. Still, if his compositional semantics purports to explain how natural languages actually work, the predictions about logical presupposition show the theory to be false.

TWO THEORIES OF NON-LOGICAL PRESUPPOSITION

PART 1

INTRODUCTION

In recent years the development of modern generative grammar has sparked new interest in a host of problems formerly the exclusive preserve of philosophers of language. One of these problems is the construction of a theory of presupposition. The aim of such a theory is to explain a special class of inferences--for example, to explain why assertively uttering either (1a) or (1b) would normally be taken to commit the speaker to the truth of the statement expressed by (1c).

1. a. The man in the next room is a doctor.
   b. The man in the next room isn't a doctor.
   c. There is a man in the next room.

Philosophers have long been aware of facts like these and have developed theories to account for them. Frege, for example, constructed a semantic theory in which reference failure leads to truth-valuelessness. On his view, the proposition expressed by (1c) is a necessary condition for the propositions expressed by (1a) and (1b) to be either true or false.[1] Russell, on the other hand, denied this. According to him, (1a) expresses the same

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[1]See Frege, "On Sense and Reference," Translations from the Philosophical Writings of Gottlob Frege, edited by Peter Geach and Max Black (Oxford: Basil Blackwell, 1970), pp. 68-71.

proposition as (2a), and (1b) is ambiguous between (2b) and (2c).

2. a. There is exactly one man in the next room, and he is a doctor.

   b. It is not the case that there is exactly one man in the next room and he is a doctor.

   c. There is exactly one man in the next room and he isn't a doctor.

On Russell's view, bivalence is preserved, and (1b) licenses the inference to the proposition expressed by (1c) on only on of its readings.[2]

Although the dispute between Frege and Russell would now be seen within the context of an empirical theory of natural language, it did not prompt philosophers to search for more data to decide the issue. One reason for this may be that the distinction between description and regimentation of natural language has not always appeared crucial to them. Frege and Russell were primarily concerned with the foundations of mathematics, the development of mathematical logic, and the use of logical apparatus to resolve philosophical problems. Where the working of natural language seemed directly relevant to these

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[2]See Bertrand Russell, "On Denoting," Logic and Knowledge, edited by Robert C. Marsh (New York: Capricorn Books, 1971), pp. 39-56; and "Descriptions," Semantics and the Philosophy of Language, edited by Leonard Linsky (Urbana: University of Illinois Press, 1952), pp. 95-110.

concerns, it received substantial attention. Otherwise, it did not.

More recently, the dispute about the nature of reference and referring expressions has been revived in the work of P. F. Strawson.[3] Like Frege, Strawson holds that reference failure in sentences like (1a) and (1b) leads to truth-valuelessness and that the statement expressed by (1c) is a necessary condition for the statements expressed by (1a and b) to be either true or false. Unlike Frege, his view does not arise from a commitment to formal semantics, but rather from a concern with the nuances of meaning and variety of distinctions found in ordinary linguistic usage. Nevertheless, Strawson's interests are primarily philosophical. His investigations take place within the framework of a general philosophical program--"the use theory of meaning"--and the examples that he analyzes are selected because of their broader philosophical significance.

In the case of presupposition, Strawson expanded our awareness of the range of facts that need to be accounted for. In addition to the inferences exemplified in (1), we

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[3]See P.F. Strawson, "On Referring," Readings in the Philosophy of Language, edited by Jay F. Rosenberg and Charles Travis (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1971), pp. 175-194; "A Reply to Mr. Sellars," Truth, edited by George Pitcher (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1964), pp. 88-92; and "Identifying Reference and Truth Values," Semantics, edited by Danny Steinberg and Leon Jakobovits (Cambridge: Cambridge University Press, 1971), pp. 86-99; and Introduction to Logical Theory (London: Methuen and Co., Ltd., 1971).

must explain why assertively uttering (3a, b, or c) is normally taken to commit the speaker to the truth of the statement expressed by (3d).

3. a. All of John's children are asleep.
   b. Not all of John's children are asleep.
   c. None of John's children are asleep.
   d. John has children.

According to Strawson, the statements made by (3a-c) logically presuppose the statement made by (3d). Hence, the truth of the latter is a necessary condition for the former to be either true or false.[4] Strawson is interested in examples like these because he believes that they throw light on the relationship between Aristotelian logic, modern logic, and natural language.

Recently the situation has changed. Many contemporary theorists see the task of accounting for data like (1-3) as part of an effort to construct an empirical linguistic theory. This shift in perspective has had several important consequences.

When accounts of presupposition are incorporated into broader linguistic theories, they interact with

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[4]As in the case of singular terms, there has been controversy on this point. For example, Wilfried Sellars has claimed that the statement made by (3a) does not entail, but only *suggests*, the statement made by (3d). Wilfried Sellars, "Presupposing," Presuppositions in Philosophy and Linguistics, edited by J.S. Petofi and D. Franck (Frankfurt: Athenaum Verlag, 1973), pp. 173-192.

other components of these theories in surprising and interesting ways. This interaction has led different theorists to draw a variety of conclusions. For example, Chomsky has recently abandoned the view that the semantic interpretation of a sentence is determined entirely at the level of deep syntactic structure;[5] McCawley has argued that natural language quantifiers are predicates in underlying structure;[6] and Keenan has maintained that not all languages are equal in expressive power.[7]

In each case, these conclusions have been motivated at least in part by appeal to presupposition. Moreover, in Jerrold Katz's most recent version of semantic theory, the definitions of many important properties and relations (e.g., analyticity and entailment) depend heavily on the notion of presupposition.[8]

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[5]Chomsky, "Deep Structure, Surface Structure and Semantic Interpretation," Studies on Semantics in Generative Grammar, (The Hague: Mouton, 1972); and "Some Empirical Issues in the Theory of Transformational Grammar," ibid.

[6]James McCawley, "A Program for Logic," Semantics of Natural Language, edited by D. Davidson and G. Harman (Dordrecht-Holland: Reidel Publishing Co., 1972), pp.498-544.

[7]Keenan has maintained in "Logic and Language" that there are languages L_1 and L_2 such that there is something that can be asserted by a speaker of L_1 that cannot be asserted by a speaker of L_2. Keenan, "Logic and Language," Daedalus: Journal of the American Academy of Arts and Sciences 102, no. 3 (Summer 1973): 185-194.

[8]Katz, Semantic Theory, (New York: Harper and Row, 1972).

It should be emphasized that this is a short list of contexts in which presupposition plays a significant role. The notion is all but ubiquitous in contemporary linguistic literature. Hence, it is important that an adequate theory of presupposition be developed.

The shift in emphasis from philosophic to linguistic concerns has also enlarged the class of data bearing on theories of presupposition. In addition to (1) and (3), it is commonly agreed that this data includes examples like the following.

4. a. {Not} many of Dean's friends were loyal.
   b. Dean has friends.

5. a. John {knows / doesn't know} that the earth is round.
   b. The earth is round.

6. a. Paul {regrets / doesn't regret} mowing the lawn.
   b. Paul mowed the lawn.

7. a. It {was / wasn't} the President that ordered the bombing.
   b. Someone ordered the bombing.

8. a. It {was / wasn't} the bombing that was ordered by the President.
   b. The President ordered something.

9. a. Bill {stopped / didn't stop} smoking.

   b. Bill has smoked.

10. a. U.C.L.A. {won / didn't win} the national championship again last year.

    b. U.C.L.A. has won the national championship.

11. a. It {is / isn't} likely that Bill's sister will find out what he has been doing.

    b. Bill has a sister.

12. a. If all of John's children are intelligent, then intelligence isn't hereditary.

    b. John has children.

13. a. If intelligence is hereditary, then none of John's children are intelligent.

    b. John has children.

14. a. Either intelligence isn't hereditary, or none of John's children are intelligent.

    b. John has children.

15. a. Either not all of John's children are intelligent, or intelligence isn't hereditary.

    b. John has children.

Various theorists would characterize this data quite differently, but most would agree that assertively uttering any of the (a) sentences in normal circumstances

and without special qualification would sanction an inference to the statement expressed by the corresponding (b) sentence. In some of these examples the (a) statement entails[9] the (b) statement. In others, assertively uttering (a) may only *suggest* the truth of the statement expressed by (b). However, in either case these examples differ from (16-19).

16. a. If John has intelligent children, then intelligence isn't hereditary.

    b. John has children.

17. a. If intelligence is hereditary, then John doesn't have intelligent children.

    b. John has children.

18. a. Either intelligence isn't hereditary, or John doesn't have intelligent children.

    b. John has children.

19. a. Either John doesn't have intelligent children, or intelligence isn't hereditary.

    b. John has children.

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[9] Here and throughout I use 'entails' in the same way that Van Frassen uses 'necessitates'.

A $\left\{\begin{matrix}\text{entails}\\ \text{necessitates}\end{matrix}\right\}$ B iff the truth of B is a necessary condition for the truth of A.

Note: on this definition, entailment and logical presupposition are not mutually exclusive. Although the two relations are different, every instance of logical presupposition is also an instance of entailment.

Although (16-19) differ minimally from (12-15), assertively uttering one of (16a-19a) does not sanction an inference to the corresponding (b) statement. A theory of presupposition must explain why this is so. It must also tell us whether or not the relationship between (a) and (b) is the same in examples (1, 3-15).

The introduction of new data by linguists has led to the construction of interesting views of presupposition. Two of the most important of these views are those of Lauri Karttunen and Deirdre Wilson.[10] Both Karttunen and Wilson have attacked traditional theories of logical presupposition and have developed alternative accounts that purport to explain a wide range of data. According to both theorists, this data falls into two very different classes. In one class the relevant inferences are entailments. In the other, they are not. For example, statement (1a) entails statement (1c). The statements expressed by (12a-15a), on the other hand, do not entail the statements expressed by (12b-15b).[11] Still, assertively

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[10]These views are developed in greatest detail in: Karttunen, "Presuppositions of Compound Sentences," Linguistic Inquiry 4 (Spring 1973): 169-194; Karttunen, "Presupposition and Linguistic Context," Theoretical Linguistics 1 (1974): 182-194; and Deirdre Wilson, Presupposition and Non-Truth-Conditional Semantics (London: Academic Press, 1975).

[11]Karttunen is not as explicit about this as Wilson is; however, this thesis seems to be implicit in his account. See Part 5 below.

uttering (12a-15a) in normal circumstances and without explicit qualification is taken to commit the speaker to the truth of statements (12b-15b). According to Karttunen and Wilson, a theory of presupposition must explain this phenomena and predict the full range of cases in which this special type of inference is sanctioned.

Wilson and Karttunen agree that entailments are to be accounted for semantically, whereas suggestions like those in (12-15) are to be accounted for pragmatically. However, their positive theories are very different. According to Wilson, the inferences arising from the use of negative sentences like (1b), (3b, c) and the negative versions of (4a-11a) are pragmatic and are explained by Grice's maxims of conversation. The inferences arising from the use of (12a-15a) are explained by general principles of evidence and confirmation. Wilson posits no notion of presupposition, logical or non-logical. Instead she claims to account for all of the relevant data with concepts and principles that are needed independently.

Unlike Wilson, Karttunen does not use independent principles of conversation or confirmation. He argues that a special contextual theory of presupposition is required. On this view, traditional accounts of

presupposition are replaced by a pragmatic theory of the interaction of sentences and background assumptions in communicative situations. Karttunen's theory specifies a special set of constraints that sentences of different forms place on the linguistic contexts in which they can be appropriately uttered.

In this essay I will examine the views of both Karttunen and Wilson. First I will take up their attack on logical presupposition, which, I shall argue, is partly, but not completely, successful. For purposes of analysis it is important to distinguish two different theses.

A. Theories of natural language require an account of non-logical presupposition.

B. The notion of logical presupposition should be eliminated from theories of natural language.

I will argue that thesis A is correct, but that B is uncertain. Although there are problems facing any theory of logical presupposition, the arguments given by Wilson and Karttunen for abandoning logical presupposition are inconclusive.

Second, I will demonstrate that Wilson's and Karttunen's positive accounts of non-logical presupposition are

inadequate. Last, I will propose a modification of Karttunen's theory that avoids many of the difficulties of the original and that is capable of accounting for a significant range of data. I hope that the result will be the development of a coherent framework within which to compare different theories of presupposition and the formulation of the assumptions and consequences of certain viable candidates for such a theory.

II. Presupposition and Compound Sentences[12]

Traditional accounts of presupposition were motivated chiefly by appeal to simple sentences and their negations. Contemporary accounts, like those of Karttunen and Wilson, center on more complex cases. One class of sentences that is crucial to their theories consists of sentences formed with sentential connectives. Particularly important are disjunctions and conditionals.

We have already seen that in some cases (e.g., (12-15))

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[12] I will use the term 'compound sentence' to refer to sentences formed with sentential connectives 'and', 'or', and 'if, then'. For the present, negation is not included in this list, but rather will be considered separately.

assertively uttering a disjunction or a conditional gives rise to certain inferences. What does this have to do with presupposition? To answer this question we must look more carefully at the cases in which such inferences arise.

Where a sentence A has been said to *presuppose*[13] a sentence B, a disjunction or conditional containing A typically implicates B.[14] Where A has been said not to presuppose, but rather to *entail* B, there is no such implicature. Thus, the implicatures[15] carried by

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[13]For convenience I will sometimes speak of *sentences* as entailing or presupposing one another. A sentence S entails a sentence S' just in case the proposition expressed by S entails the proposition expressed by S'. The case of presupposition is more difficult. When logical presupposition is in question, sentences bear presuppositions only in a derivative sense--i.e., S logically presupposes S' if and only if the proposition expressed by S logically presupposes the proposition expressed by S'. Where the presupposition is non-logical, sentences rather than propositions may be more natural bearers of presupposition. This point will be discussed in more detail in Parts 4 and 5.

[14]Shortly we will see that this principle must be modified in several ways. However, the point at issue here--namely the relevance of presuppositions to the implicatures carried by compound sentences--will not be affected.

[15]Here and in what follows I use the terms 'implicatures' and 'implicates' in a way that is neutral between a variety of semantic and pragmatic relations--e.g., entailment, logical presupposition, conversational implicature, and so on. The important point is that if a sentence A implicates B, then assertively uttering A in normal circumstances and without qualification typically is taken to commit the speaker to the truth of B. The question of why this commitment arises and what type of commitment it is will be the subject of further investigation later in this essay.

It should also be noted that in this section I will be concerned exclusively with two classes of implicatures of compound sentences--implicatures that arise from the presuppositions of simple constituent sentences and implicatures that are inherited from compound constituent sentences.

disjunctions and conditionals are relevant to the construction of a theory of presupposition.[16]

For example, the sentences in (20) are typically said to presuppose the corresponding sentences in (21).

20. a. The man in the next room {is / isn't} a doctor.
    b. {All / Not all} of the men following us are armed.
    c. {It's / It's not} Susan who's got the jewels.
    d. Sam {quit / didn't quit} working on January 1st.
    e. Bill {knew / didn't know} that the experiment would fail.

21. a. There is a man in the next room.
    b. There is at least one man following us.[17]
    c. Someone has the jewels.
    d. Sam worked before January 1st.
    e. The experiment failed.

The sentences in (22), on the other hand, do not *presuppose* but rather *entail* their counterparts in (21).

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[16] The first theorist to emphasize this point was Lauri Karttunen.

[17] There is a stronger statement that might also be said to be presupposed--namely, that there is more than one man following us. However, it will be convenient to stick with the weaker presupposition for the moment.

22. a. There is a man in the next room and he is a doctor.

    b. There is an unarmed man following us.

    c. Susan has the jewels.

    d. Sam worked before, but not after, January 1st.

    e. Bill's prediction that the experiment would fail was correct.

The sentences in (20) and (22) behave differently when embedded in compound sentences. If one of the former is a constituent of a disjunction or a conditional, then assertively uttering the entire compound sentence normally sanctions an inference to the corresponding statement in (21).

23. a. If the man in the next room is a doctor, then we are lucky.
    (There is a man in the next room.)

    b. If not all of the men following us are armed, then our plan will succeed.
    (There is at least one man following us.)

    c. If it is Susan who's got the jewels, then we will recover them quickly.
    (Someone has the jewels.)

    d. If Sam quit working on January 1st, then the company lost a good man.
    (Sam worked before January 1st.)

e. If Bill knew that the experiment would fail, then he must be a psychic.
(The experiment failed.)

24. a. Either the man in the next room is a doctor, or we are in trouble.
(There is a man in the next room.)

b. Either not all of the men following us are armed, or our plan will fail.
(There is at least one man following us.)

c. Either it's Susan who's got the jewels, or we will never see them again.
(Someone has the jewels.)

d. Either Sam quit working on January 1st, or he isn't eligible for unemployment compensation.
(Sam worked before January 1st.)

e. Either Bill knew that the experiment would fail, or his claim to be psychic is a hoax.
(The experiment failed.)

A speaker assertively uttering any of these sentences in normal circumstances and without qualification would be understood as taking the truth of the corresponding statements in (21) for granted. If, on the other hand, he were to assertively utter one of the conditionals or disjunctions in (25-26), then no inference to the corresponding statement in (21) would be justified.

25. a. If there is a man in the next room and he is

a doctor, then we are lucky.
(There is a man in the next room.)

b. If there is an unarmed man following us, then our plan will succeed.
(There is at least one man following us.)

c. If Susan has the jewels, then we will recover them quickly.
(Someone has the jewels.)

d. If Sam worked before, but not after, January 1st, then the company lost a good man.
(Sam worked before January 1st.)

e. If Bill's prediction that the experiment would fail was correct, then he must be psychic.
(The experiment failed.)

26. a. Either there is a man in the next room and he is a doctor, or we are in trouble.
(There is a man in the next room.)

b. Either there is an unarmed man following us, or our plan will fail.
(There is at least one man following us.)

c. Either Susan has the jewels, or we will never see them again.
(Someone has the jewels.)

d. Either Sam worked before, but not after, January 1st, or he isn't eligible for unemployment compensation.
(Sam worked before January 1st.)

e. Either Bill's prediction that the experiment would fail was correct, or his claim to be psychic is a hoax.
(The experiment failed.)

The contrast between (23-24) on the one hand and (25-26) on the other indicates that conditionals and disjunctions typically implicate what their constituents presuppose, but not what they entail.[18]

There is another way in which the implicatures of compound sentences are relevant to a theory of presupposition. Such implicatures behave the same way as standard presuppositions do when the sentences that carry them are embedded in certain larger contexts. One such context is provided by compound sentences themselves. For example, I have just shown that if a sentence A has standardly been said to *presuppose* B, then a conditional containing A *implicates* B. Now suppose that A itself is a compound sentence (e.g., a disjunction) which implicates B.[19] Conditionals containing A inherit this implicature.

27. a. If either the man upstairs is a doctor or the woman downstairs is a nurse, then we have a chance of saving Mary.

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[18]The constituents of a conditional are its antecedent and consequent. The constituents of a disjunction are its disjuncts.

[19]The implicatures in question are those which arise ultimately from the presuppositions of simple constituent sentences.

b. If the jewels are still in the building, then either the man upstairs has them or the woman downstairs has hidden them.

c. There is a man upstairs.

d. There is a woman downstairs.

28. a. If either not all of John's children were invited or not all of Bill's children are coming, then someone did a bad job of recruiting.

b. If our membership list is correct, then either not all of John's children will be invited or not all of Bill's children will be able to come.

c. John has children.

d. Bill has children.

Each of the conditionals in (27) and (28) contains a disjunction which, in isolation, implicates the corresponding (c) and (d) statements. Since conditionals inherit the implicatures of their compound components, assertively uttering the (a) or (b) sentences without explicit qualification is normally taken to commit the speaker to the truth of the corresponding (c) and (d) statements.[20]

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[20]Note: although the (a) and (b) sentences in (27) and (28) implicate the corresponding (c) and (d) statements, this is not true of the (a) and (b) sentences in (i) and (ii).

(i) (a) If either there is a man upstairs who is a doctor or there is a woman downstairs who is a nurse, then we

Conditionals are not the only sentences that inherit the implicatures of compound constituents. Conjunctions and disjunctions do, too. First consider conjunctions. The (a) sentences in (29) and (30) contain conjuncts which are themselves compound sentences (i.e., disjunctions). In isolation, these disjunctions implicate the corresponding (b) and (c) statements. In each case, the entire conjunction retains these implicatures.

29. a. There is medicine in the cabinet and either the man upstairs is a doctor or the woman downstairs is a nurse.

    b. There is a man upstairs.

    c. There is a woman downstairs.

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have a chance of saving Mary.

(b) If the jewels are still in the building, then either there is a man upstairs who has them or there is a woman downstairs who has hidden them.

(c) There is a man upstairs.

(d) There is a woman downstairs.

(ii) (a) If either John has a child who wasn't invited or Bill has a child who is not coming, then someone did a bad job of recruiting.

(b) If our membership list is correct, then either John has a child that won't be invited or Bill has a child that won't be able to come.

(c) John has a child.

(d) Bill has a child.

The conditionals in (27) and (28) differ minimally from those in (i) and (ii). The former sentences contain disjunctions whose constituents give rise to the relevant implicatures. The latter do not. Hence, the conditionals in (i) and (ii) do not implicate the (c) and (d) statements.

30. a. The food is already gone and either not all of John's children have eaten, or not all of Bill's children have eaten.

    b. John has children.

    c. Bill has children.

These examples indicate that conjunctions preserve implicatures in the way that conditionals do.[21]

Next consider disjunctions. Earlier I showed that if the components of a disjunction are simple sentences, then the entire disjunction implicates what its disjuncts presuppose (but not, in general, what they entail). The facts are exactly analogous in the case of compound sentences. Each of the disjunctions in (31) and (32) contains a conjunction as one of its disjuncts. These conjunctions contain simple sentences that presuppose the (b) and (c) statements. Thus, the conjunctions implicate these statements, and (31a) and (32a) inherit these

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[21](ia) and (iia) do not implicate (ib and c) and (iib and c) respectively.

(i) (a) There is medicine in the cabinet and either there is a man upstairs who is a doctor or there is a woman downstairs who is a nurse.
    (b) There is a man upstairs.
    (c) There is a woman downstairs.

(ii) (a) The food is already gone and either John has child who hasn't eaten, or Bill has a child who hasn't eaten.
    (b) John has a child.
    (c) Bill has a child.

These sentences correspond to the examples discussed in footnote 20.

implicatures.

31. a. Either it's Susan who has the jewels and it is Mary who has the paintings, or our investigation will fail.

    b. Someone has the jewels.

    c. Someone has the paintings.

32. a. Either not all of Kathy's children are at school and not all of Judy's children are away from home, or we won't have enough people to play baseball.

    b. Kathy has children.

    c. Judy has children.

The disjunctions in (33) and (34), on the other hand, behave differently. Although they contain conjuncts that *entail* the corresponding (b) and (c) statements,[22] these statements are not implicated by the relevant disjunctions.

33. a. Either Susan has the jewels and Mary has the paintings, or our investigation will fail.

    b. Someone has the jewels.

    c. Someone has the paintings.

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[22]For convenience, I will often speak of sentences entailing statements. A sentence S entails a statement P if and only if the proposition (statement) expressed by S entails P.

34. a. Either Kathy has a child who is not at school and Judy has a child who is at home, or we won't have enough people to play baseball.

    b. Kathy has a child.

    c. Judy has a child.

Examples like (23-34) have led several theorists, most notably Karttunen, to claim that certain implicatures of compound sentences are themselves presuppositions. The argument for this conclusion is straightforward. First, compound sentences implicate what their constituent sentences presuppose (but not in general what they entail). Second, such implicatures of compound sentences are inherited by larger compound sentences in which they may be embedded. These facts follow automatically from a single principle if the relevant implicatures of compound sentences are, in fact, presuppositions.

35. If P is presupposed by one of the constituents of a compound sentence S, then P is presupposed by S.[23]

For this reason, Karttunen hypothesizes that compound sentences presuppose what their constituents do.

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[23]This principle is a simplification of the principles that Karttunen actually adopts. The necessary complications and modifications will be presented later. I will also look more closely at Karttunen's argument in the sections that follow.

In this essay I will follow Karttunen in holding that certain implicatures of compound sentences are presuppositions of those sentences.[24] If this view is correct, then there is a theoretically significant relation which is participated in by certain simple sentences, their negations, and compound sentences that contain them.[25]

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[24] This view will be modified in Part 5.

[25] There are many other kinds of sentences that participate in this relation--for example, sentences of the form 'It may be that S'. Thus, the sentences in (i) but notthe sentences in (ii) implicate statement (iii).

(i) (a) It may be that the man upstairs is a doctor.
(b) It may be that the man upstairs isn't a doctor.
(c) It may be that there is medicine in the cabinet and the man upstairs is a doctor.
(d) It may be that either the man upstairs is a doctor or the woman downstairs is a nurse.
(e) It may be that if the man upstairs is a doctor, then we can save Mary.
(f) It may be that if the jewels are still in the building, then the man upstairs has them.

(ii) (a) It may be that there is a man upstairs who is a doctor.
(b) It may be that there isn't a man upstairs who is a doctor.
(c) It may be that there is medicine in the cabinet and there is a man upstairs who is a doctor.
(d) It may be that either there is a man upstairs who is a doctor, or there is a woman downstairs who is a nurse.
(e) It may be that if there is a man upstairs who is a doctor, then we can save Mary.
(f) It may be that if the jewels are still in the building, then there is a man upstairs who has them.

(iii) There is a man upstairs.

In this essay, however, I will concentrate most on compound sentences formed with sentential connectives.

I will refer to this relation as 'k-presupposition'. This is the relation mentioned in (35).

At present there is much that remains unclear about k-presupposition. One thing we do know, however, is that if a sentence S k-presupposes a statement P, then assertively uttering S in normal circumstances and without explicit qualification licenses an inference to P. Examples (20), (23-24), and (27-32) are instances of this relation.[26]

In calling this relation 'k-presupposition', I am not assuming anything about the type of relation that it is. For example, I am not assuming that the relation is either logical or non-logical,[27] semantic or pragmatic. Nor am I assuming that it is the only kind of presupposition that there is. The definition of this relation and the characterization of its relationship to other notions of presupposition will be the subject of this essay.

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[26]It should be noted that some of these examples may be instances of other relations as well--e.g., entailment.

[27]In particular I am not assuming that for all S and P, if S presupposes P, then S entails P.

PART 2

COMPOUND SENTENCES AND THE ATTACK ON LOGICAL PRESUPPOSITION

I. Filtering and Truth Functionality

1.1 Filtering

I have just argued that compound sentences k-presuppose what their constituents do. However, this conclusion is too strong. Although there are many instances in which the k-presuppositions of constituent sentences do carry over to become k-presuppositions of the entire compound, this is not always the case. Each of the compound sentences below contains a constituent sentence that k-presupposes the corresponding (c) statement. These presuppositions do not carry over to the compound sentences themselves.

1. a. If France has a king, then the King of France is one of the few remaining monarchs in Europe.
   b. Either France doesn't have a king, or the King of France is one of the few remaining monarchs in Europe.
   c. There is a King of France.
2. a. If John has children, then all of his children are asleep.
   b. Either John doesn't have children, or all of his children are asleep.
   c. John has children.

3. a. If anyone has solved the problem, then it's Susan who has solved it.

   b. Either no one has solved the problem, or it's Susan who has solved it.

   c. Someone solved the problem.

4. a. If Bill ever smoked, then he stopped smoking before I met him.

   b. Either Bill never smoked, or he stopped smoking before I met him.

   c. Bill has smoked.

5. a. If this function is not computable, then Church knows that it is not computable.

   b. Either this function is computable, or Church knows that it is not computable.

   c. This function is not computable.

Examples like these show that principle (35) of Part 1 must be modified. This is the central problem to which Karttunen addresses himself in "Presuppositions of Compound Sentences." I will take it up in detail in Part 5 where I examine critically a number of his views. For the present, I will follow him in proposing (6) and (7) as first approximations.

6. If S k-presupposes P, and R does not entail P, then ⌜If R, then S⌝ k-presupposes P.[1]

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[1]Karttunen, "Presuppositions of Compound Sentences," Linguistic Inquiry 4 (Spring 1973): 178.

7. If S k-presupposes P, and ⌜-R⌝ does not entail P, then ⌜Either R or S⌝ k-presupposes P.[2]

These principles are consistent with all of the data that I have considered thus far. Not only do they avoid making incorrect predictions about (1-5), they correctly account for many of the examples presented in Part 1. Because they predict that some, but not all, of the k-presuppositions of a constituent sentence become k-presuppositions of the entire compound, they are often said to perform a filtering function.[3]

(6) and (7) indicate the existence of filtering in disjunctions and conditionals. What about conjunctions? Is it necessary to adopt an analogous principle to account for the k-presuppositions of these sentences? In the case of disjunctions and conditionals, the existence of filtering is shown by compound sentences that do not implicate, entail, or in any other way suggest the truth of a k-presupposition of one of their constituents. In the case of conjunctions, there are no such examples. However, there is other evidence that demonstrates the existence of filtering.

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[2]Ibid, p. 181. Note: (7) mentions expressions of the form '-R' without making it clear whether the negation in question is "internal" or "external". I will discuss these two kinds of negation in detail in Part 3.

[3]There are other filtering principles that might be used to account for (1-5). These will be examined in Part 5 and compared with (6) and (7). For the present, the difference between these alternatives is not crucial.

8. a. If Susan lives near Union Square, then she has a landlord and her landlord is Irish.

   b. Susan has a landlord and her landlord is Irish.

   c. Susan has a landlord.

9. a. If John and Emily have been married for fifty years, then they have children and all of their children have grown up.

   b. John and Emily have children and all of their children have grown up.

   c. John and Emily have children.

10. a. If Susan got anywhere in her investigation, then someone had the jewels and it was one of her contacts who had them.

    b. Someone had the jewels and it was one of Susan's contacts who had them.

    c. Someone had the jewels.

11. a. Either Sam's recurring hallucinations are a sign of mental illness, or he has taken a lot of LSD and he has only recently stopped taking it.

    b. Sam has taken a lot of LSD and he has only recently stopped taking it.

    c. Sam has taken LSD.

12. a. Either the jewels have already been insured, or they are safe and John knows that they are.

    b. The jewels are safe and John knows that they are safe.

    c. The jewels are safe.

The (a) sentences above do not k-presuppose the corresponding (c) statements. Moreover, the (c) statements are not entailed by either the antecedents of (8-10) or the negations of the left disjuncts of (11-12). Consequently, if (6) and (7) are correct, then the (b) sentences must not k-presuppose the (c) statements either. Since each of these sentences contains a conjunct which, in isolation, carries the relevant k-presupposition, a filtering principle for conjunctions is also required.[4]

13. If S k-presupposes P, and R does not entail P, then ⌜R and S⌝ k-presupposes P.[5]

Principles (6), (7) and (13) leave a number of questions unanswered. (6) says nothing about the k-presuppositions of conditionals that are inherited from their antecedents. (7) and (13) are silent about the k-presuppositions of disjunctions and conjunctions that are inherited from their left disjuncts and conjuncts respectively. This raises a question about the symmetry

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[4]Karttunen offers a different, but equally cogent argument for the same conclusion ("Presuppositions of Compound Sentences," p. 179). He points out that ⌜It $\{^{\text{is possible}}_{\text{may be}}\}$ that S⌝ inherits the k-presuppositions, but not the entailments of S. (See footnote 25 of Part 1.) He then observes that (i), but not (ii), k-presupposes (iii).

(i) It is possible that Fred will kiss Cecilia again.
(ii) It is possible that Fred has managed to kiss Cecilia and that he will kiss her again.
(iii) Fred has kissed Cecilia.

This is accounted for by (13).

[5]Karttunen, "Presuppositions of Compound Sentences," p. 179.

of sentential connectives with respect to k-presupposition. Are there analogous filtering principles for the leftmost constituents of compound sentences, or are the k-presuppositions of these constituents always inherited?

In the case of disjunctions, this question is easily answered. The sentences in (14) have exactly the same k-presuppositions as the sentences in (15).

14. a. Either the King of France is French, or France doesn't have a king.

    b. Either all of Jack's letters have been held up or he hasn't written any letters.

    c. Either it's Susan who's got the jewels, or no one has them.

    d. Either Sam stopped smoking before I met him, or he never smoked.

    e. Either John regrets voting for Nixon, or he didn't vote for Nixon at all.

15. a. Either France doesn't have a king, or the King of France is French.

    b. Either Jack hasn't written any letters at all, or his letters have been held up.

    c. Either no one has the jewels, or it's Susan who's got them.

    d. Either Sam never smoked, or he stopped smoking before I met him.

    e. Either John didn't vote for Nixon at all, or he regrets voting for him.

In neither case does assertively uttering the entire disjunction implicate the truth of the corresponding statement in (16).

16. a. There is a King of France.
    b. Jack has written some letters.
    c. Someone has the jewels.
    d. Sam has smoked.
    e. John voted for Nixon.

Consequently, neither the sentences in (14) nor those in (15) k-presuppose these statements.[6] This means that the filtering principle for disjunctions is (17).

17. a. If S k-presupposes P, and ⌜-R⌝ does not entail P, then ⌜Either R or S⌝ k-presupposes P.
    b. If R k-presupposes P, and ⌜-S⌝ does not entail P, then ⌜Either R or S⌝ k-presupposes P.

The situation with conjunctions and conditionals is a bit more complex. Karttunen argues that all k-presuppositions of an antecedent become k-presuppositions of the entire conditional, and all k-presuppositions of an initial

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[6] Karttunen denies this. He claims that the sentences in (14), but not in (15), are in some way deviant and do presuppose the statements in (16). He is simply wrong about the data. The sentences in (14) are perfectly acceptable and are exactly analogous to those in (15) with respect to k-presupposition.

conjunct become k-presuppositions of the entire conjunction. Thus, he claims that the filtering principles for these sentences are asymmetric with respect to k-presupposition.

18. a. If S k-presupposes P, and R does not entail P, then ⌜If R, then S⌝ k-presupposes P.
    b. If R k-presupposes P, then ⌜If R, then S⌝ also k-presupposes P.

19. a. If S k-presupposes P, and R does not entail P, then ⌜R and S⌝ k-presupposes P.
    b. If R k-presupposes P, then ⌜R and S⌝ also k-presupposes P.

In Part 5 I will show that Karttunen's arguments for the (b) clauses of these principles are inconclusive. However, this issue is independent of the main point I want to make next. If the sentential connectives 'and', 'or', and 'if, then' are truth functional, then at least some k-presuppositions must be non-logical.[7]

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[7] In this paper I will assume that the inductive definition of k-presupposition specifies that the only k-presuppositions of a compound sentence are those that arise from the relevant filtering conditions.

1.2 K-Presupposition and Truth Functionality

A logically presupposes B if and only if the truth of B is a necessary condition for A to be either true or false.[8] Thus, if ⌜Either R or S⌝ logically presupposes P and P is false, then ⌜Either R or S⌝ is truth-valueless. If, in addition, 'or' is truth functional, then ⌜Either T or S⌝ must also be truth-valueless provided that R and T do not differ in truth value.

From this it follows that not all k-presuppositions are logical presuppositions. (18a) k-presupposes (18b).[9]

18. a. Either France is not a member of NATO, or the King of France is a reactionary.

    b. There is a King of France.

    R = 'France is not a member of NATO'

If this is also a logical presupposition, then (18a) is truth-valueless (since (18b) is false). However, substitution of another true sentence for R does not

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[8] In this paper I use "neither true nor false" and "truth-valueless" interchangeably. These notions are not identical and are not even co-extensive in a theory that posits more than two truth values. However, the differences between these two notions are not significant here. For a context in which these differences are important, see my "Frege's Theory of Presupposition" and Dummet's Frege: Philosophy of Language, (New York: Harper and Row, 1973), p. 185.

[9] This follows from filtering principle (17) of the previous section.

always preserve this lack of truth value. For example, (19) is true rather than truth-valueless.

19. Either there is no King of France, or the King of France is a reactionary.

Thus, if 'or' is truth functional, then at least some k-presuppositions are not logical presuppositions.

In fact, if 'or' is truth functional, then some k-presuppositions are not entailed by the sentences that presuppose them. If (18a) entailed (18b), then (18a) would not be true. The truth functionality of 'or' would then incorrectly predict that (19) is also untrue. Consequently, if 'or' is truth functional, then some instances of k-presupposition are not instances of entailment.

A similar point holds for conditionals.[10] Conjunctions, on the other hand, require special attention. An important theoretical difficulty arises when one tries to construct an argument involving conjunctions that parallels the

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[10]For example, (ia) k-presupposes (ib).

(i) (a) If Mary reads the report of the Surgeon General, then she will stop smoking.
(b) Mary smokes.
R = 'Mary will read the report of the Surgeon General'

If this is a logical presupposition, and if (ib) is false, then (ia) is neither true nor false. However, if R is also false, and 'if then' is truth functional, then (ii) must also be truth-valueless.

(ii) If Mary smokes, then she will stop smoking.

It isn't. Therefore, if conditionals are truth functional, then some k-presuppositions are non-logical.

one just given involving disjunctions.

(20a) k-presupposes (20b).[11]

20. a. France is a member of NATO and the King of France is a reactionary.

b. There is a King of France.

R = 'France is a member of NATO'

If this is also a logical presupposition, then (20a) is truth-valueless. If, in addition, 'and' is truth functional, then substituting (20b) for R should preserve this lack of truth value (since both (20b) and R are false). Thus, (21) should be truth-valueless.

21. There is a King of France, and the King of France is a reactionary.

This is where the argument involving conjunctions differs from the argument involving disjunctions. Earlier I showed that if 'or' is truth functional then maintaining that all k-presuppositions of disjunctions are logical presuppositions leads us to incorrectly characterize a *true* sentence as truth-valueless. But (21) is not true on anyone's account. It is either false or truth-valueless.

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[11]This follows from filtering principle (19) of the previous section.

We have reliable intuitions distinguishing truth from untruth. If we also had reliable intuitions distinguishing falsity from truth-valuelessness, then we could evaluate the claim that (21) is truth-valueless rather than false.

Since I don't think we have such intuitions, I don't think that we can directly evaluate this claim. Logical presupposition is not a relation about which we have direct intuitions, but rather is a theoretical construct that can be used to account for certain inferences.[12] (21) sanctions an inference to (20b)

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[12] Proponents of logical presupposition have not always recognized that alleged bearers of such presuppositions do not wear their truth values on their sleeves. This point is illustrated by the following passage from Strawson's "On Referring," Readings in the Philosophy of Language, edited by Rosenberg and Travis (Englewood Cliffs, New Jersey: Prentice-Hall, 1971), pp. 174-5.

> "Now suppose someone were in fact to say to you with a perfectly serious air: 'The king of France is wise'. Would you say, 'That's *untrue*'? I think it is quite certain that you would not. But suppose he went on to ask you whether what he had just said was true, or was false; whether you agreed or disagreed with what he had just said. I think you would be inclined, with some hesitation, to say that you did not do either; that the question of whether his statement was true or false simply did not arise, because there was no such person as the king of France." (my emphasis)

Here Strawson tries to motivate a notion of logical presupposition by appealing directly to data about what we would or would not say. Note, however, that he uses the words 'untrue' and 'false' interchangeably. It is natural that he should do so, since nothing in the passage would change significantly if 'untrue' or 'not true' were substituted for 'false' throughout. Precisely this is what *cannot* be explained by a theory of logical presupposition. On such a theory, it is neither true nor false that the King of France is wise. Consequently, it is *not true* and hence, *untrue*, that the King of France is wise. Thus,

whether or not it logically presupposes (20b). Thus, one cannot simply appeal to intuitions to determine whether or not this is an instance of logical presupposition. Consequently, one cannot construct a convincing argument involving conjunctions that parallels the one involving disjunctions.

What can be shown is that if 'and' is truth functional, then either some k-presuppositions of conjunctions are not logical presuppositions or some logical presuppositions of conjunctions are not k-presuppositions. In other words, there are conjunctions whose k-presuppositions and logical presuppositions are not identical.

This is easily demonstrated. (20a) k-presupposes (20b). If this is not a logical presupposition, then (20a) is a conjunction whose k-presuppositions are not identical with its logical presuppositions. On the other hand, if (20a) does logically presuppose (20b), and if 'and' is truth functional, then (21) must be truth-valueless. Hence, it must logically presuppose something that is untrue. Since (21) has no k-presuppositions that

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if Strawson is "quite certain" that we would not say, "That's untrue" in response to a claim about the King of France, then he ought to have concluded that our intuitions conflict with his theory every bit as much as they conflict with a theory that postulates bivalence.

are untrue,[13] not all its logical presuppositions are k-presuppositions. Thus, if 'and' is truth functional, then there are conjunctions whose k-presuppositions and logical presuppositions are not the same.

This brings up an important distinction that must be kept in mind throughout--namely the distinction between theses (22a), (22b), and (22c).

22. a. K-presupposition is not co-extensive with logical presupposition.

b. Not all k-presuppositions are logical presuppositions.

c. No k-presuppositions are logical presuppositions.

Disjunctions and conditionals provide arguments for (22a) and (22b). Conjunctions provide an argument only for (22a). No arguments have yet been given for (22c).

The only argument I see for (22c) is programmatic. The discussion up to now justifies positing a relation of k-presupposition that differs from the notion of logical

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[13]This claim carries the assumption that all k-presuppositions of conjunctions arise from filtering principle (19) of the previous section. It *may* be that (21) has no k-presuppositions at all. The reason I hesitate about this is that I am not sure whether or not Karttunen would claim that (20b) k-presupposes that France exists. If he were to claim this, then he would hold that (21) shares this k-presupposition. Still, since France does exist, (21) has no k-presuppositions that are untrue. Hence, my argument goes through.

presupposition. It *may* be that k-presupposition will prove sufficient to adequately explain all relevant data without appeal to logical presupposition at all. Is so, then logical presupposition can be eliminated from theories of natural language. It should be noted, however, that in order to confirm this argument, a comprehensive theory of non-logical presupposition must be developed.

Even theses (22a) and (22b) depend upon the assumption that the sentential connectives are truth functional. A proponent of logical presupposition might deny this assumption and argue that k-presupposition really is just logical presupposition. To combat this argument, I will look at a different phenomenon--presupposition cancellation.[14]

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[14]Karttunen often writes as if he does not recognize that the argument against logical presupposition based on compound sentences is programmatic. In "Presuppositions of Compound Sentences" (pp. 186-188) he rejects all three-valued truth tables for conjunctions on the grounds that they fail to incorporate adequate filtering conditions. For example, he rejects (i).

(i)

and	T	F	*
T	T	F	*
F	F	F	*
*	*	*	*

If what he is trying to show is that we need a non-logical notion of presupposition that applies to conjunctions, then his observation about filtering is to the point. However, this does not show that (i) is incorrect. On the other hand, if he is trying to show that conjunctions do not carry logical presuppositions, then his observation must be understood as part of a programmatic attempt to supplant logical presupposition with an entirely new notion.

Karttunen also offers an argument against the truth

table (ii).

(ii)

&	T	F	*
T	T	F	*
F	F	F	F
*	*	F	*

He claims that according to (ii) what a conjunction logically presupposes depends not on the form of the sentence or on its semantic properties, but rather on what truth values its conjuncts happen to have. Fred Katz has pointed out that this claim is incorrect (personal communication). If we let ⌜Pre S⌝ be a sentence which is true if and only if all of the logical presuppositions of S are satisfied, then (iii) is predicted by (ii) to be a logical presupposition of ⌜A and B⌝.

(iii) ⌜-(A and -Pre B) and -(B and -Pre A) and (Pre A or Pre B)⌝

Each conjunct of (iii) has the effect of ruling out one of the positions occupied by '*' in (ii). According to (ii), ⌜A and B⌝ is truth-valueless iff (iii) is untrue. This holds for any A and B. Thus, Karttunen's argument against (ii) is incorrect. The real argument against (ii) is that it leaves a number of inferences *unexplained* and hence is no *substitute* for k-presupposition.

Finally, Karttunen claims that for all three-valued logics, if truth functionality is maintained, then some classically valid sentences or arguments will be lost ("Presuppositions of Compound Sentences," p. 188). This claim is false. Fred Katz (personal communication) has demonstrated that if (iv-viii) are adopted (the blanks being filled in by either '*' or 'F'), then any sound and complete set of axioms and rules of inference for the standard propositional calculus will be validated.

(iv)

-	
T	F
F	T
*	T

(v)

V	T	F	*
T	T	T	T
F	T	F	-
*	T	-	-

(vi)

&	T	F	*
T	T	F	-
F	F	F	-
*	-	-	-

(vii)

⊃	T	F	*
T	T	F	-
F	T	T	T
*	T	T	T

(viii)

≡	T	F	*
T	T	F	-
F	F	T	T
*	-	T	T

Note: this system incorporates what has been called "external negation." However, there is nothing to prevent one from adopting an "internal negation" operator as well. The argument against such a system is not that it fails to preserve classical validity, but only that it does not capture the inferences that k-presupposition has been designed to accommodate.

II. Presupposition Cancellation and Compound Sentences

The results based on filtering in Section 1.2 center on compound sentences that do not inherit the k-presuppositions of their constituents. These results depend upon the assumption that the connectives are truth functional. The argument based on presupposition cancellation focuses on compound sentences that *retain* the k-presuppositions of their constituents.[15] This argument does not depend on any assumptions about truth functionality.

What is presupposition cancellation? If a sentence S k-presupposes a statement P, then assertively uttering S in normal circumstances and without explicit qualification sanctions an inference to P--i.e., a speaker assertively uttering S suggests that he believes P and invites his audience to do the same. Such a presupposition is *cancelled* in a conversational context C if and only if the inference to P that is normally sanctioned by assertively uttering S is explicitly called into question in C and ceases to be sanctioned.

(23-27) are examples of presupposition cancellation. Each of the (a) sentences below k-presupposes the

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[15] Deirdre Wilson was the first theorist to draw attention to the importance of presupposition cancellation for compound sentences.

corresponding (b) statement. However, these sentences can be appropriately uttered in contexts that deny or cast doubt upon the truth of (b). Such contexts are provided by (23c-27c). In these contexts the speaker does not suggest that he believes (b) nor does he invite his audience to accept (b). The k-presuppositions are cancelled.

23. a. If all of the particles released by the collision were negatively charged, then the experiment was a success.

    b. Some particles were released by the collision.

    c. If all of the particles released by the collision were negatively charged, then the experiment was a success. However, this assumes that the collision was strong enough to separate some particles from the nucleus, and I am not sure that it was.

24. a. If the jewels are still here, then it's Susan who's got them.

    b. Someone has the jewels.

    c. If the jewels are still here, then it's Susan who's got them. But I am afraid that they were simply lost while we were on vacation and that no one has them.

25. a. If Susan's agent gave her the money, then the district attorney has a point.

b. Susan has an agent.

c. If Susan's agent gave her the money, then the district attorney has a point. However, Susan doesn't even have an agent, let alone one who practices extortion for her.

26. a. Either John gave up smoking or he gave up drinking.

b. John used to smoke.

c. Either John gave up smoking or he gave up drinking. Since he never smoked at all, it must be drinking that he gave up.

27. a. Either the villain knows that Mary is dead, or he is still in his hideout waiting to receive word.

b. Mary is dead.

c. Either the villain knows that Mary is dead, or he is still in his hideout waiting to receive word. Since Mary may have escaped, he may still be up there.

The fact that a k-presupposition P of a sentence S can be cancelled provides evidence that S does not entail P. If (23a-27a) entailed (23b-27b) respectively, then (23c-27c) would be bizarre or inconsistent.[16] Since

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[16] Where presuppositions are entailed, cancelling is impossible.

(i)? It's Susan who has the jewels. But I am afraid that no one has the jewels.

(ii)? Susan's agent gave her the money. But Susan doesn't have an

they are neither, the (a) sentences do not entail the (b) statements. Although the (a) sentences k-presuppose the (b) statements, they do not logically presuppose them.[17]

We now have two arguments for the claim that not all k-presuppositions are logical presuppositions. One is based on filtering and the other is based on cancellation.[18] It is important to realize that the phenomena

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agent.

(iii)? John gave up smoking. But he never smoked.

(iv)? The villain knows that Mary is dead. But she is alive.

[17] Sometimes it is possible to show that a k-presupposition is not entailed without appealing to instances of cancellation.

(i) Either the post office or the police station in the next town is open.

(ii) Either the post office in the next town is open, or the police station in the next town is open.

(i) and (ii) k-presuppose that there is a post office and a police station in the next town. Anyone assertively uttering them in normal circumstances and without explicit qualification would implicate that the next town contained both facilities. However, this implicature is not an entailment. Suppose you were to utter assertively either sentence and I were to say, "No, I'll bet you are wrong." If the post office in the next town were open, then you would win the bet no matter whether the town had a police station or not. Since you could win the bet only if what you said was true, (i) and (ii) do not entail (iii).

(iii) There is a post office and a police station in the next town.

[18] For obvious reasons, conjunctions behave like simple sentences with respect to cancellation. This does not show that simple sentences and conjunctions bear logical presuppositions. All it indicates is that there is no argument based on cancellation to prove that they do not.

upon which these arguments rely are independent. Filtering determines when compound sentences inherit the k-presuppositions of their constituent sentences. Cancellation occurs when a sentence carrying k-presuppositions is assertively uttered in a wider discourse that denies or casts doubt upon these k-presuppositions.[19]

Another difference between filtering and cancellation is that all k-presuppositions can be filtered, whereas not all k-presuppositions can be cancelled. For any P, if S k-presupposes P, then P is "filtered out" in determining the k-presuppositions of ⌜Either -P or S⌝, ⌜If P, then S⌝, and ⌜P and S⌝.[20] In contrast, the only presuppositions that can be cancelled are those that are not entailed by the sentences that presuppose them. (23-27) are instances of cancellation but not filtering. (28-32) are instances of filtering but not cancellation. In determining the k-presuppositions of (28-32), P is "filtered out" despite the fact that S entails P.

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[19] Presupposition cancellation is restricted to cases in which a sentence is assertively uttered, but does not sanction an inference to the relevant k-presupposition. Filtering is not so restricted. The k-presuppositions of S may be "filtered out" despite the fact that someone assertively uttering ⌜Either -R or S⌝ or ⌜If R, then S⌝ does not assertively utter S.

Moreover, although filtering occurs in conjunctions, the k-presuppositions that are filtered out are not "denied" or "called into question".

[20] This filtering is accomplished by principles (17-19).

28. If the collision released particles from the nucleus, then all of the particles so released were negatively charged.

    S = 'All of the particles released from the nucleus by the collision were negatively charged'

    P = 'The collision released particles from the nucleus'

29. If someone has the jewels, then it is Susan who has them.

    S = 'It is Susan who has the jewels'

    P = 'Someone has the jewels'

30. If Susan has an agent, then her agent gave her the money.

    S = 'Susan's agent gave her the money'

    P = 'Susan has an agent'

31. Either John has never smoked, or he gave up smoking.

    S = 'John gave up smoking'

    P = 'John has smoked'

32. Either Mary is alive, or the villain knows that she isn't alive.

    S = 'The villain knows that Mary isn't alive'

    P = 'Mary isn't alive'

III. Compound Sentences and the Status of Logical Presuppositions

So far I have established three major results. First, there is a relation of k-presupposition that is not identical with logical presupposition. Second, there are instances of k-presupposition that are not instances of logical presupposition. Third, some sentences k-presuppose sentences that they do not entail. Both the arguments based on filtering and those based on cancellation support these conclusions.

In this section I will consider the stronger conclusion that natural language is free of logical presuppositions. So far I have only considered compound sentences. Nothing has been said about the k-presuppositions of simple sentences and their negations. If there are no logical presuppositions, then these k-presuppositions must also be non-logical. Do the results already established allow us to conclude that this is the case?

It is tempting to think that they do. This temptation comes in the form of the following argument:

33. a. The k-presuppositions of disjunctions and conditionals are not logical presuppositions of these sentences. For example, P is not a

necessary condition for either (i) or (ii) to have a truth value.

(i) If Nelson's wife was nominated, then Gerald's wife was disappointed.

(ii) Either Nelson's wife wasn't nominated, or Gerald's wife was disappointed.

P = '$\{^{\text{Nelson}}_{\text{Gerald}}\}$ has a wife'

b. The relationship between P and the compound sentences in (a) is the same as the relationship between (v) and (iii-iv), and between (viii) and (vi-vii).

(iii) Nelson's wife was nominated.

(iv) Nelson's wife wasn't nominated.

(v) Nelson has a wife.

(vi) Gerald's wife was disappoited.

(vii) Gerald's wife wasn't disappointed.

(viii) Gerald has a wife.

c. Therefore, (iii-iv) do not logically presuppose (v), and (vi-vii) do not logically presuppose (viii).

If this argument were sound, it would demonstrate that traditional examples of presupposition are not

instances of logical presupposition. Unfortunately, it is not. This can be seen by comparing it with a parallel argument in which the question at issue involves entailment rather than logical presupposition.

34. a. The k-presuppositions of disjunctions and conditionals are not entailed by the presupposing sentences. For example, P is not a necessary condition for either (i) or (ii) to be true.
(i), (ii), and (P) as in (33a).

b. Same as in (33b).

c. Therefore, (iii-iv) do not entail (v), and (vi-vii) do not entail (viii).

(33) and (34) have exactly the same form. Consequently, one is *valid* if and only if the other is. Notice also that (33a) and (34a) are true[21] and that (33b) = (34b). This means that either both arguments are *sound* or neither is. Thus, the fact that (34c) is false[22] shows that both arguments must be rejected.

The problem is (b). What does it mean to say of

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[21] The arguments in the previous two sections show this.

[22] It incorrectly states that (iii) does not entail (v), and (vi) does not entail (viii).

arbitrary pairs of sentences that the relationship between their members is the same? If it means that for all relations R each pair of sentences is an instance of R if and only if the others are, then (33) and (34) are *valid*, but not *sound*. On this interpretation, premise (b) is false since (iii) and (vi) entail (v) and (viii) respectively, whereas (i) and (ii) do not entail P.

Premise (b) can also be interpreted in another way. What it asserts is that there is a theoretically significant relation that (i) and (ii) bear to P; (iii) and (iv) bear to (v); and (vi) and (vii) bear to (viii). On this interpretation, (b) is true--the relation in question being k-presupposition. But now the arguments are not *valid*. (iii) and (vi) entail what they k-presuppose. Nothing in the arguments precludes these k-presuppositions from being logical presuppositions as well.

This possibility is not to be taken lightly. In stating the filtering conditions for compound sentences I simply assumed that we had a theory that picks out the k-presuppositions of simple sentences and their negations. Nothing was said about the nature of this theory. If the best way to handle these sentences is with a theory of logical presupposition, then our overall

account of k-presupposition must include such a theory as one of its parts.

There is nothing incoherent about this. Any theory incorporating the filtering conditions of Section 1.1 is committed to a recursive characterization of k-presupposition. Such a characterization must include at least one clause to cover the k-presuppositions of simple sentences and their negations. If these presuppositions are logical, then the clause in question may simply be (35).

35. If P is a necessary condition for S to have a truth value, then P is k-presupposed by S.[23]

In such a theory, (35) would be combined with a definition of truth in which certain simple sentences and their negations are neither true nor false. (35) together with this truth-definition would predict what these sentences k-presuppose.[24] Addition of the filtering

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[23]This clause could be formulated differently depending upon one's favorite definition of logical presupposition. Here I assume that S is either a simple sentence or a negation of such a sentence.

[24]This account could easily be extended to cover other traditional cases of logical presupposiion--e.g., sentences with quantifiers. To do so would involve adopting a definition of truth in which the relevant quantified sentences come out truth-valueless.

conditions would provide a basis for explaining all of the data that we have examined thus far.[25]

This is not to say that the above analysis is ultimately correct. However, it does illustrate an important point. Although compound sentences provide motivation for positing a relation of non-logical presupposition,[26] they do not furnish an argument for eliminating logical presupposition altogether.[27] To

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[25] I assume here that any theory incorporating the filtering conditions must include, in addition to a recursive characterization of k-presupposition, a statement from which it follows that if S k-presupposes P, then assertively uttering S in normal circumstances and without explicit qualification sanctions an inference to P. This is discussed in more detail in Part 5.

[26] Even if (35) is included in a recursive characterization of k-presupposition, the relation remains non-logical in my sense. The reason for this is that the claim that an arbitrary sentence S k-presupposes a statement P does not imply that S entails P.

[27] Although this conclusion is obvious, it seems to me that it has not always been recognized. For example, in "Presuppositions of Compound Sentences," Karttunen claims that facts about filtering show that three-valued logics with truth functional operators "have nothing to recommend themselves" and that "they do not provide us with a viable notion of presupposition. (p. 188)" Here the claim seems to be not just that notions of logical presupposition are insufficient and hence need supplementation, but rather that they should be completely supplanted. What makes this conclusion surprising is that it is based entirely on compound (and other complex) sentences without any discussion of how we should handle traditional data for a theory of logical presupposition.

Another argument in which Karttunen makes essentially the same point is based on sentences of the form (i).

(i) It $\{^{\text{may be}}_{\text{is possible}}\}$ that S.

Karttunen observes that if S presupposes P, then ⌜It $\{^{\text{may be}}_{\text{is possible}}\}$ that

determine whether or not such an argument is forthcoming, we must turn our attention to the relationship between presupposition and negation.

$S^{\neg}$ sanctions an inference to P. This is not the case if S only entails P (See Part 1, footnote 25). From this Karttunen concludes that characterizations of presupposition in terms of entailment are unsatisfactory. In particular, he claims that Van Frassen's definition of presupposition as that which is entailed by a sentence and its negation is inadequate.

It should be noted that all that is *entailed* by Karttunen's observation is that presupposition is not the same relation as entailment. This is *compatible* with Van Frassen's claim that instances of presupposition are instances of entailment and also with his claim that A presupposes B if and only if both A and its negation entail B.

However, Karttunen's argument can be expressed differently. What his data show is that if presupposition is defined exclusively in terms of entailment, then something will be left *unexplained*--namely, the inference from (i) to P, where S presupposes P. Thus, the force of the argument is not that notions of logical presupposition are inapplicable to natural language, but rather that they are not sufficient. Instead, we need a broader theory. It remains an open question whether or not logical presupposition has a part in this theory.

PART 3

LOGICAL PRESUPPOSITION AND NEGATION

I. Logical Presupposition, Negation, and Singular Terms

The most common argument for logical presupposition centers on the relationship between certain simple sentences and their negations. Chief among these are sentences like those in (1) and (2).

1. a. Wilt Chamberlain is rich.
   b. Nixon's wife is happy.
   c. The monarch who rules France is wise.

2. a. Wilt Chamberlain isn't rich.
   b. Nixon's wife isn't happy.
   c. The monarch who rules France isn't wise.

Each of these sentences sanctions an inference to the corresponding statement in (3).

3. a. There is such a person as Wilt Chamberlain.
   b. Nixon has a wife.
   c. There is a monarch who rules France.

The question is, what is the nature of this inference and why does it go through?

Most theorists have assumed that both the sentences in (1) and those in (2) bear a *logical* relation to the

statements in (3). They have agreed that these latter statements express necessary conditions for the former sentences to be true. In my terminology, this amounts to the claim that the sentences in (1) and (2) *entail* their counterparts in (3).[1]

This presents a problem. The sentences in (2) are negations of those in (1). It is natural to assume that sentences which are negations of one another can be neither true together nor false together. If, in addition, *every* sentence is assumed to be either true or false, then the claim that the sentences in (1) and (2) entail the statements in (3) is problematic. For example, since (3c) is false, both (1c) and (2c) must also be false. But this is impossible on the assumptions just mentioned.

Theories of logical presupposition provide one way out of this difficulty. The assumption that every sentence is either true or false is abandoned. The statements in (3) are necessary conditions for the sentences in (1) and (2) to have a truth value. This means that (1c) and (2c) are truth-valueless. Nevertheless, if each had a truth value, then one would be true and the other false.

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[1]Recall, sentences entail statements only in a derivative sense. A sentence S entails a statement P if and only if the proposition (statement) expressed by S entails P.

One feature of this view is that it allows the logical form of a sentence--or, in more contemporary terms, its semantic representation--to be very close to its surface grammatical form.[2] For example, the sentences in (1) retain their subject-predicate form in semantic representation.[3] Where singular definite descriptions are involved, as in (1c), a description operator is used to construct semantically complex singular terms. Hence, (1c) is represented by (4).

4. W ιx (Mx & Rxf)

Here, the complex singular term 'ιx (Mx & Rxf)' refers to the unique person who satisfies the open sentence 'Mx & Rxf'.[4] A sentence of the formal language

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[2]This may be a virtue in a theory that attempts to account for the syntax and semantics of sentences of natural language. Such a theory must explicate the mapping between semantic representation and surface grammatical form. Part of this mapping may be the result of independently motivated principles of syntax. Apart from this, it is desirable to posit a semantic representation that requires as little new conceptual machinery as possible. Thus, by simplifying the mapping between semantic and syntactic structure, we may be simplifying the overall theory.

[3]For purposes of illustration I will assume that the semantic representation of an English sentence is given by a sentence in a formal language. For our purposes, we may restrict our attention to more or less standard first order languages.

[4]I will assume that the statements below (about reference and truth value) are part of a model theoretic logical theory which is defined over the language of semantic representations. Consequently, each of these statements should be understood as relativized to interpretations. Of course, the "intended" interpretation is one in which

which consists of an n-place predicate followed by n terms is *true* if and only if these terms refer to an n-tuple of objects that satisfies the predicate. It is *false* if and only if they refer to an n-tuple that doesn't satisfy the predicate. It is *truth-valueless* if and only if at least one of the terms fails to refer. Finally, a negation operator with the truth table (5) is introduced, and (2c) is represented by (6).

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T	F
F	T
*	*

6. $\sim[W\ \ x(Mx \ \&\ Rxf)]$

On this account, both (1c) and (2c) turn out to be truth-valueless.

This theory predicts that the sentences in (1) and (2) entail the corresponding sentences in (3). However, it is not the only theory to do so. Russell's account makes the same predictions without abandoning bivalence.[5] The cost of his theory is that expressions of the form 'the so-and-so' are no longer treated as

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'f' names France, 'M' and 'W' are satisfied by monarchs and wise individuals respectively, and 'R' is true of ordered pairs x and y such that x rules y.

[5]See pp. 132-133, Part 1.

genuine singular terms. A sentence containing such an expression must be assigned a semantic representation that is remote from its surface grammatical form--a representation in which the relevant expression is not represented by any single constituent of semantic structure.

It would even be possible to account for the (alleged) entailments of (1) and (2) without either accepting this consequence or positing logical presupposition. The easiest way to do so would be to introduce a negative predicate making operator into the language of semantic representations.[6] This operator would be involved in the construction of predicates like [∿P] . This predicate would be satisfied by all and only the objects that do not satisfy P.[7]

As before, a sentence which consists of an n-place predicate followed by n terms is true if and only if these terms refer to an n-tuple that satisfies the predicate. This time, however, we would say that a sentence is false if and only if it is not true. On this analysis, (2c) would be represented by (7).

7. [∿W] ιx(Mx & Rxf)

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[6] I am indebted to Fred Katz (personal communication) for pointing out the possibility of this analysis.

[7] This statement would be included in the theory's recursive definition on truth.

Although both (1c) and (2c) entail (3c), these sentences would be characterized as false rather than truth-valueless.[8] Since the (alleged) entailments of these sentences can be perspicuously characterized whether or not a theory of logical presupposition is adopted, it will be useful to look elsewhere for further data.

II. Negation, Quantifiers, and Logical Presupposition

Another traditional argument for logical presupposition is based on quantified sentences like those in (8).

8. a. All of the books in this room are valuable.
   b. None of the books in this room are valuable.

Each of these sentences sanctions an inference to (9).

9. There are books in this room.

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[8] It might be claimed that (2c) is ambiguous and that on one of its readings, it does not entail (3c). Since the analysis just given postulates sentential, as well as predicate negation, this is no problem. The reading of (2c) in which it does not entail (3c) can be represented by (i).

(i) $\neg(W\ \iota x(Mx \ \&\ Rxf))$

If these sentences *entail* (9), then they cannot be represented by their most obvious counterparts in the predicate calculus.[9]

10. a. $\forall x\ (Bx\ \&\ Rx \supset Vx)$

    b. $-\exists x\ (Bx\ \&\ Rx\ \&\ Vx)$

Consequently, some new representations must be found.

Proponents of logical presupposition have claimed that examples like these provide evidence for their theory. The classical defense of this position is presented by Strawson in Introduction to Logical Theory where he argues that (8a and b) logically presuppose (9).[10] Unfortunately, he doesn't provide formal

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[9] 'B', 'R', and 'V' represent respectively the predicates 'is a book', 'is in this room', and 'is valuable'.

[10] Strawson, Introduction to Logical Theory, (London: Methuen and Co., Ltd., 1971). Strawson's discussion takes place between pages 152-184 of that work. However, his explicit arguments for logical presupposition leave something to be desired. The main argument (pp. 173-176) relies on intuitions about truth-valuelessness and hence suffers from the difficulty noted earlier in footnote 12 of Part 2, pp. 169-170. His other main argument involves the interpretation of the laws of traditional (Aristotelian) logic--the most well-known of which constitute the Square of Opposition.

(i) (a) ⌜All x is y⌝ is the contradictory of ⌜Some x is not y⌝.
    (b) ⌜No x is y⌝ is the contradictory of ⌜Some x is y⌝.
    (c) ⌜All x is y⌝ and ⌜No x is y⌝ are contraries.
    (d) ⌜Some x is y⌝ and ⌜Some x is not y⌝ are subcontraries.
    (e) ⌜All x is y⌝ entails ⌜Some x is y⌝ .
    (f) ⌜No x is y⌝ entails ⌜Some x is not y⌝.

Strawson establishes two results about these laws. First, if the definitions in (ii) are adopted, then there is no way to simultaneously preserve all the laws in (i) and correctly represent the

representations for these sentences. Since it will be convenient for our purposes to have such representations, it is worthwhile to outline briefly how they might be constructed.

A theory of logical presupposition seems to require a productive mechanism for constructing quantifiers

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meanings of the relevant English sentences in the standard, bivalent predicate calculus.

(ii) (a) P and Q are contradictory iff one or the other must be true, but both cannot be true together.

(b) P and Q are contraries iff they cannot be true together, but they can be false together.

(c) P and Q are subcontraries iff one or the other must be true and moreover, they both may be true together.

(d) P entails Q iff it cannot be that P is true when Q is not.

Second, if bivalence is abandoned, and the definitions in (ii) are modified by inserting the clause '*whenever both have a truth value*' immediately after 'iff', then the laws in (i) can be rendered consistent. On this analysis, sentences of the four forms presuppose a statement of the form 'There are x's', where 'x' stands in for the subject of the sentence. (For a discussion of the role of variables in the four forms and the technical notion of a 'term', see Strawson.)

Although these results are interesting and worthwhile, they do not motivate logical presupposition. For one thing, (i) could be trivially rendered consistent by modifying the definitions in (ii) in a different way--e.g., by inserting 'if the subject terms of both apply to at least one thing'. For another, there is no reason to suppose that an empirical theory of natural language has an obligation to save the Square of Opposition in any interesting sense. Consider (id). Since speakers have no reliable intuitions about truth-valuelessness, there is no pre-theoretic reason to suppose that it is true on the non-bivalent interpretation suggested by Strawson. It is enough that our theory predict that it is false when interpreted in accordance with (ii) and true when modified in accordance with the trivial principle just mentioned. What this means is that although the laws in (i) *may* be true when interpreted Strawson's way, independent arguments are needed to justify abandoning bivalence in the first place.

In this section, I will try to reconstruct such arguments. Although they are not explicitly given by Strawson, I believe that they are at least roughly in line with what he had in mind.

of arbitrary complexity. For purposes of illustration, I will take the definite description operator as my model. This operator converts an open sentence Φv into a compound singular term $\ulcorner \iota v \Phi v \urcorner$.[11] Since Φv may be any open sentence, this process allows the formation of *singular terms* of arbitrary complexity.

Similarly, an operator 'Δ' can be defined for constructing compound *quantifiers*. To do this, we again let Φv be any open sentence and $\ulcorner Qv \urcorner$ be any simple quantifier--e.g., $\ulcorner \forall v \urcorner$ or $\ulcorner \exists v \urcorner$. $\ulcorner (Qv\ \Delta\ \Phi v) \urcorner$ is then defined to be a compound quantifier, which can be prefixed to an open sentence.[12] For example, on this analysis, the phrase 'all of the books in this room' is represented by (11), and (8a) is represented by (12).

11. [$\forall$ x Δ (Bx & Rx)]

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[11] 'v' and 'Φ' are metalinguistic variables ranging over expressions in the formal language of semantic representations. The values of 'v' are variables in the formal language--'x', 'y', 'z',... The values of 'Φ' are formulas of the formal language. 'Φv' is used in place of 'Φ' where it is understood that the values of 'Φ' are to be limited to formulas in which v occurs free. For example, $\ulcorner \iota v \Phi v \urcorner$ is the expression that consists of 'ι' followed by v and Φ--where it is understood that v occurs free in Φ.

[12] Ed Keenan proposes a similar analysis using different notation in "Presupposition in Natural Logic," The Monist 57 (July 1973): 344-370.

12. $[\forall x \Delta (Bx \& Rx)] Vx$[13]

The clause needed in a model theoretic truth defintiion to evaluate such structures can be formulated in several ways. But no matter how it is stated, it must yield results requivalent to (13).

13. $\ulcorner(Qv \Delta \Phi v) \Psi v\urcorner$ is true in an interpretation I if and only if

(i) there is at least one object that satisfies Φv in I, and

(ii) $\ulcorner Qv \Psi v\urcorner$ is true in an interpretation J, which is exactly like I except for specifying that the values of the variable v are restricted to all and only those things that satisfy Φv in I.[14]

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[13] Note, compound quantifiers are not singular terms. Thus, the representation of (8a) is not (i).

(i) V ($\forall x \Delta$ (Bx & Rx))

On the above analysis, (i) is not even a well-formed formula.

One main reason for not representing English quantified phrases as singular terms is provided by sentences that contain more than one such phrase.

(ii) Each of the boys in the class likes some girl in the class.
(iii) Each of the women in the village hates some of her relatives in the city.

(ii) exhibits the well-known ambiguity that can be captured by interchanging the scopes of the quantifiers. This solution would be impossible if the quantified English phrases were represented by singular terms. In fact, I see no way that such a representation could account for either (ii) or (iii).

[14] If (13) is adopted, it is convenient to always adopt

This clause guarantees that $\ulcorner(\forall x\ \Delta\ \Phi x)\ \Psi x\urcorner$ is logically equivalent to $\ulcorner\exists x \Phi x\ \&\ \forall x(\Phi x \supset \Psi x)\urcorner$, and $\ulcorner(\exists x\ \Delta\ \Phi x)\ \Psi x\urcorner$ is logically equivalent to $\ulcorner\exists x(\Phi x\ \&\ \Psi x)\urcorner$. Consequently, (12) entails (14).

14. $\exists x$ (Bx & Rx)

I am supposing that (12) is the semantic representation of (8a) and that (14) is the representation of (9). Thus, the theory just constructed predicts that (8a) entails (9).[15]

In making this prediction I didn't say anything about logical presupposition. This notion becomes

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representations in which different occurrences of simple quantifiers bind different variables.

It is also necessary to extend the usual definition of binding. The new definition must be equivalent to the following:

An occurrence of a variable v in a formula θ is bound iff

(i) it is within an occurrence (in θ) of a formula $\ulcorner Q\ v\ \Psi\urcorner$ or $\ulcorner(Qv\ \Delta\ \Phi)\Psi\urcorner$ (where Φ and Ψ are formulas); or

(ii) it is within an occurrence (in θ) of a singular term $\ulcorner\iota v\Phi\urcorner$.

All other occurrences are free.

[15] Where S and S' are sentences of English, I assume that a theory predicts that S entails S' (on a reading) iff R(S') is a consequence of R(S)--where R(S) and R(S') are semantic representations of S and S' respectively and the notion of consequence is defined formally by the semantic theory. For convenience, I am ignoring the difference between (9) and (i).

(i) There is at least one book in the room.

relevant only when (15) and (16) are considered together [(8a) is repeated here as (15)].

15. All of the books in this room are valuable.

16. Not all of the books in this room are valuable.

Both of these sentences sanction inferences to (9). If both *entail* (9), then incorporating a theory of logical presupposition into the account of quantification just constructed provides a simple explanation of these entailments. To provide this explanation, two further elements are needed--(5) and (17).

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17. $\ulcorner(Qv\ \Delta\ \Phi v)\ \Psi v\urcorner$ is false in an interpretation I if and only if

(i) there is at least one object that satisfies Φv in I, and

(ii) $\ulcorner Qv\Psi v\urcorner$ is false in J, where J is exactly like I except for specifying that the values of the variable v

are restricted to all and only
the objects that satisfy Φv in I.[16]

According to (13) and (17), the truth of (14) is a necessary condition for (12) to be either true or false.

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[16] In addition to (17), it is necessary in a fully developed theory to adopt clauses giving the falsity conditions for simple quantifications like $\ulcorner \exists v \Phi \urcorner$ and $\ulcorner \forall v \Phi \urcorner$. As a first approximation, we may adopt (i).

(i) A sentence $\ulcorner Qv\Phi \urcorner$ is false in an interpretation I iff
  (a) $\ulcorner Qv\Phi \urcorner$ is not true in I; and
  (b) For some object O in the range of v and name β that does not already occur in Φ, $\Phi v/\beta$ is false in I^{β}_{O}.
  (I^{β}_{O} is an interpretation that differs at most from I in assigning the name β to the object O. $\Phi v/\beta$ is the result of replacing all free occurrences of v in Φ with occurrences of β.)

Together, (i), (17) and (5) ensure that (ii) entails (iii) and (iv) entails (v).

(ii) $\sim(\exists x \Delta (Bx \& Cx))\ L\ x\ \iota y(Gy \& Fy)$
  (None of the boys in the class like the girl in the front row)

(iii) $\exists y(Gy \& Fy)$
  (There is a girl in the front row)

(iv) $\sim(\exists x \Delta (Bx \& Cx))(\forall y \Delta (Gy \& Cy))\ Lxy$
  (None of the boys in the class like all of the girls in the class)

(v) $\exists y(Gy \& Cy)$
  (There is at least one girl in the class)

Sentences like (vi) and (vii) provide further tests for the theory developed here.

(vi) Not every second year student likes his advisor.
(vii) No second year student likes his advisor.

Unfortunately, these sentences raise issues that cannot be pursued in this thesis.

12. $(\forall x\ \Delta\ (Bx\ \&\ Rx))\ Vx$

14. $\exists x\ (Bx\ \&\ Rx)$

Since the negation operator defined in (5) preserves truth-valuelessness, the truth of (14) is also a necessary condition for (18) to be either true or false.

18. $\sim(\forall x\ \Delta\ (Bx\ \&\ Rx))\ Vx$

Thus, (12) and (18) logically presuppose (14). If (12) and (18) represent (15) and (16), then the latter logically presuppose, and hence entail, (9).

This way of looking at things brings out an important parallel between the rationale for logical presupposition based on definite descriptions and that based on quantifiers. In each case a sentence of English and one of its grammatical negations are assumed to entail the same statement. In each case a theory of logical presupposition provides a simple explanation of this entailment. Introduction of the 'ι' and 'Δ' operators captures the relevant entailments of the positive sentences. Capturing the same entailments of the negative sentences depends upon distinguishing falsity from truth-valuelessness. Failure of $\ulcorner\iota\upsilon\phi\upsilon\urcorner$ to refer and failure

of $\ulcorner(Qv \ \Delta \ \Phi v)\urcorner$ to pick out a non-empty universe of discourse result in truth-valuelessness. The account is completed by positing a negation operator that preserves this truth-valuelessness.

The parallel between these two cases illustrates a fundamental issue regarding possible arguments for logical presupposition. In considering simple sentences (including simple quantifications) one would have no reason to abandon bivalence if doing so did not facilitate the account of larger sentences.[17] If one were only concerned with simple sentences, and nothing more complex, then one could simply write into the truth definition whatever is necessary for these sentences to be true, letting all failures of truth be instances of falsity.[18] This is troublesome only when different reasons for a sentence's being untrue affect whether or not some more complex sentence is true.[19] Distinguishing

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[17] Dummet argues at length for this conclusion in his discussion of Frege. See Frege: Philosophy of Language, (New York: Harper and Row, 1973), pp. 417-429 and pp. 446-467 (especially pp. 419-423). Also see Dummet, "Truth," Philosophical Logic, edited by P.F. Strawson (Oxford: Oxford University Press, 1967), pp. 61-63.

[18] e.g., one could adopt (13) without (17).

[19] e.g., the difference (for the truth of (16)) between there being no books in the room and there being an inexpensive one.

between falsity and truth-valuelessness allows us to mark such differences while maintaining that the contexts in question are truth functional. Hence, the importance of negation in arguments for logical presupposition.

This also sheds light on my earlier discussion of compound sentences. Although the paradigmatic data for theories of logical presupposition consist of simple sentences,[20] these sentences justify abandoning bivalence only if larger, typically truth functional, structures are best explained by distinguishing between the falsity and truth-valuelessness of their constituents. My discussion of compound sentences indicates that these structures do not require this distinction. This eliminates a large and obvious class of cases that might be used to motivate logical presupposition. However, it is not conclusive since it still leaves negation as a possible source of support.

It should be noted that none of the data cited thus far conclusively demonstrate the need for logical presupposition. We have already seen that in the case of definite descriptions, there are alternative accounts. The same is true for quantifiers. For example, the

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[20] Typically, such sentences are grammatically of subject-predicate form. This data includes both sentences whose grammatical subjects are singular termsand those whose grammatical subjects are quantified phrases.

sentences in (19) could be represented by the sentences in (20) rather than by those in (21).[21]

19. a. All of the books in this room are valuable.
    b. Not all of the books in this room are valuable.
    c. Some of the books in this room are valuable.
    d. None of the books in this room are valuable.

20. a. $\exists x\ (Bx\ \&\ Rx)\ \&\ \forall x\ (Bx\ \&\ Rx \supset Vx)$
    b. $-\forall x\ (Bx\ \&\ Rx \supset Vx)$
    c. $\exists x\ (Bx\ \&\ Rx\ \&\ Vx)$
    d. $\exists x\ (Bx\ \&\ Rx)\ \&\ -\exists x\ (Bx\ \&\ Rx\ \&\ Vx)$

21. a. $(\forall x\ \Delta\ (Bx\ \&\ Rx))\ Vx$
    b. $\sim(\forall x\ \Delta\ (Bx\ \&\ Rx))\ Vx$
    c. $(\exists x\ \Delta\ (Bx\ \&\ Rx))\ Vx$
    d. $\sim(\exists x\ \Delta\ (Bx\ \&\ Rx))\ Vx$

The advantage of the representations in (21) is their regularity. They correspond much more closely to surface grammatical form than do their counterparts in (20). The disadvantage of these representations is that they require (13) and (17) which introduce truth value gaps. On the other hand, the representations in

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[21] Note the difference between '-' and '$\sim$' in (20) and (21). These operators differ in that '$\sim$' preserves truth-valuelessness whereas '-' equates falsity with untruth.

(20) do not require these additions. Instead they necessitate a complex and irregular representation relation between sentences of English and their semantic representations.[22] To decide conclusively in favor of one or the other of these alternatives would involve examining their role in a total theory that includes both syntax and semantics. Such a task is beyond the scope of this essay. *Prima facie*, the case for logical presupposition based on quantifiers and definite descriptions seems to be at least as strong as the case for the opposing alternatives that I have mentioned.

The case for logical presupposition may even be strengthened by considering natural language quantifiers like 'most'.

22. Most of the books in this room are valuable.

Let us represent 'most' with a formal quantifier $\ulcorner M\upsilon \urcorner$. This quantifier is such that $\ulcorner M\upsilon \Phi\upsilon \urcorner$ is true if and only if most of the values of υ satisfy $\Phi\upsilon$. On this account, (22) cannot be represented by either (23) or (24).

23. $Mx\ (Bx\ \&\ Rx \supset Vx)$

24. $Mx\ \ (Bx\ \&\ Rx\ \&\ Vx)$

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[22] Note that the mechanism for associating sentences with their semantic representations would have to treat sentences with 'some' differently from sentences with 'all'.

Since there are more things that are not books than things that are, (23) is true and (24) is false, regardless of what proportion of the books in the room are valuable. However, if (22) is represented as (25), then (13) correctly characterizes its truth conditions.[23]

25. (Mx Δ (Bx & Rx)) Vx

If this analysis is correct, then there is independent motivation for both compound quantifiers and their characterization in (13). Thus, these devices can be justified independently of a theory of logical presupposition.[24]

A similar analysis works for 'many'. 'Many' differs from 'most' in being vaguer than 'most' and in occurring naturally with 'not'.

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[23] More precisely, a definition of truth which includes (13) together with a specification of the intended interpretation of the predicates in (25) correctly characterizes the truth conditions of (22). Note, (13) and (17) were stated so as to apply to all simple quantifiers, not just '∀x' and '∃x'.

[24] Of course, this analysis of 'most' is not the only one possible. For example, (22) could be represented by (i).

(i) $\exists x \exists y$ (x numbers $\hat{w}$ (Bw & Rw & Vw) & y numbers $\hat{z}$ (Bz & Rz & -Vz) & x>y)

Here, (ii) and (iii) are compound singular terms of the form $\ulcorner \hat{\vartheta} \Phi \upsilon \urcorner$.

(ii) $\hat{w}$ (Bw & Rw & Vw)
(iii) $\hat{z}$ (Bz & Rz & -Vz)

Such terms refer to the set of all objects satisfying $\Phi\upsilon$. However, this analysis involves difficulties of its own--new term producing operators, an ontology of sets for simple sentences like (22), and a very complex representation relation. Thus, although the analysis of *most* given in the text has not been conclusively established, it seems to be a reasonable one.

26. Many books in this room are valuable.

27. Not many books in this room are valuable.

The latter fact is important for theories of logical presupposition. (26) and (27) sanction inferences to (9). Representing (26) and (27) by (28) and (29) accounts for these inferences (provided that both (5) and (17) are also adopted).

28. $(MNx\ \Delta\ (Bx\ \&\ Rx))\ Vx$

29. $\sim(MNx\ \Delta\ (Bx\ \&\ Rx))\ Vx$

The fact that several quantifiers can be treated in a uniform way by a theory that incorporates (13) and (17) constitutes significant evidence for such a theory.

If the (a) and (b) sentences in (30) and (31) entail the corresponding (c) sentences, then the scope of logical presupposition may be expanded still further.

30. a. It's his dancing that Sam likes to brag about.

    b. It isn't his dancing that Sam likes to brag about.

    c. Sam likes to brag about something.

31. a. Joe $\left\{\begin{matrix}\text{knows}\\\text{realizes}\\\text{regrets}\end{matrix}\right\}$ that he lost his wallet.

    b. Joe doesn't $\left\{\begin{matrix}\text{know}\\\text{realize}\\\text{regret}\end{matrix}\right\}$ that he lost his wallet.

    c. Joe lost his wallet.

Although little is known about the correct way to represent these sentences, a theory of logical presupposition could make (c) sentences necessary conditions for the (a) sentences to be either true or false. Since negation preserves truth-valuelessness, the (b) sentences take care of themselves. This approach to the sentences in (30) and (31) is as promising as any I know of.

Although it is not conclusive that simple sentences and their negations bear logical presuppositions, I have shown that such an account is at least plausible.

III. Negation, Cancellation, and Logical Presupposition

3.1 Wilson's Arguments

The case for logical presupposition just constructed is based solely on negation. Moreover, it depends upon a crucial characterization of the data.

32. a. All of the books in this room are valuable.
    b. Not all of the books in this room are valuable.

c. There are books in this room.

33. a. Some of the books in this room are valuable.

b. None of the books in this room are valuable.

c. There are books in this room.

34. a. The King of Sussex is the man you saw.

b. The King of Sussex isn't the man you saw.

c. There is a King of Sussex.

35. a. It was Susan who solved the problem.

b. It wasn't Susan who solved the problem.

c. Someone solved the problem.

36. a. Sam stopped smoking yesterday.

b. Sam didn't stop smoking yesterday.

c. Sam used to smoke.

37. a. Malory knows that mongeese subdivide.

b. Malory doesn't know that mongeese subdivide.

c. Mongeese subdivide.

38. a. Bill realizes that my thesis is true.

b. Bill doesn't realize that my thesis is true.

c. My thesis is true.

Both the (a) and (b) sentences in (32-38) sanction inferences to the corresponding (c) statements. Each of the accounts that I have considered depends upon the

further assumption that the (a) and (b) sentences *entail* the (c) statements. This is precisely the assumption that Wilson attacks. She argues that although the positive sentences entail their (c)-counterparts, the negative sentences do not. If her arguments can be sustained, then negative sentences do not bear logical presuppositions.

One of Wilson's main arguments is based on the connectives 'since', 'because', and 'and'. These connectives are alike in that both A and B are entailed by ⌜Since A, B⌝, ⌜B because A⌝, and ⌜A and B⌝. Since entailment is transitive, these sentences entail everything that is entailed by A and B separately. This fact can be used to reconstruct Wilson's argument.[25]

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[25] (39) is not explicitly formulated by Wilson, but rather is a reconstruction of her remarks. The argument that she gives is designed to show that sentences like (ia-va) in (39) do not logically presuppose (ic-vc). She says:

> "I assume that these sentences are perfectly capable of being true. This fact is puzzling for the strong presuppositional analysis [an analysis in which complex sentences always inherit the presuppositions of their constituents] . . . [iva] for example would presuppose that mongeese subdivide, but further states that mongeese don't subdivide. It should follow that (ia-va) are anomalous. Yet there are many cases where similar sentences would be regarded as true . . .(Wilson, Presuppositions and Non-Truth-Conditional Semantics,(London: Academic Press, 1975), p. 26)"

This is a perfectly good argument against "the strong presuppositional analysis." However, Wilson also concludes from it that "The denial of a presupposition is consistent with its related negative sentence. (ibid)" What is needed to justify this conclusion is not the argument just quoted, but the one given in (39).

39. Premise 1: If C is entailed by either A or B, then C is entailed by ⌜Since A, B⌝, ⌜B because A⌝, and ⌜A and B⌝.

Conclusion 1:

Therefore, if negative sentences (e.g., 34b-38b) entail what they are customarily said to presuppose (e.g., (34c-38c), then the (a) sentences below entail incompatible statements.

(i) a. Since there is no King of Sussex, the King of Sussex isn't the man you saw.

b. There is no King of Sussex.

c. There is a King of Sussex.

(ii) a. It wasn't Susan who solved the problem, because the problem is unsolvable.

b. Someone solved the problem.

c. No one solved the problem.

(iii) a. Since Sam never smoked, he didn't stop smoking yesterday.

b. Sam never smoked.

c. Sam used to smoke.

(iv) a. Malory doesn't know that mongeese subdivide because mongeese don't subdivide.

b. Mongeese subdivide.

c. Mongeese don't subdivide.

(v) a. Bill realizes that my thesis is true and not that it is false.[26]

b. My thesis is true.

c. My thesis is false.

Conclusion 2:

Since (ia-va) can be true, they do not entail incompatible statements. Thus, (34b-38b) do not entail (34c-38c). In short, negative sentences do not entail what they are customarily said to presuppose.[27]

This argument attempts to show that the inferences sanctioned by negative (presupposition-bearing) sentences are not logical, but rather are suggestions that can be suspended or removed. The same conclusion can be reached

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[26] (va) is assumed to express a proposition which is true if and only if the following is true:

Bill realizes that my thesis is *true*! He doesn't realize that it's *false*.

The right conjunct in (va) is assumed to be equivalent to the sentence following '!' above.

[27] One defect in Wilson's argument is that it does not deal explicitly with negations of quantified sentences. For example, (ia-va) seem to be much more acceptable than the sentences below:

?Since there are no books in this room, not all of the books in the room are valuable.
?Since there are no books in this room, none of the books in the room are valuable.
?Since there are no books in this room, not many of the books in the room are valuable.

I return to this point in Section 3.2.

without mentioning complex sentences involving 'since', 'because', and 'and' at all. Wilson maintains that each of the following cases represents a possible discourse, the sentences of which are capable of being jointly true.

40. a. Sussex doesn't have a king. Therefore, the King of Sussex isn't the man you saw.

    b. It wasn't Susan who solved the problem. That problem is unsolvable.

    c. Sam didn't stop smoking yesterday. He's never smoked in his life.

    d. Mongeese don't subdivide. Therefore, Malory doesn't know that they subdivide.

    e. Bill doesn't realize that my thesis is false. He couldn't. My thesis is true.

If the negative sentences above entailed what they are customarily said to presuppose, then these discourses would be inconsistent. Since they aren't inconsistent, Wilson concludes that the negative sentences do not carry the alleged entailments. Instead, she holds, the inferences they sanction in isolation have the force of suggestions which are here explicitly withdrawn or rejected.

If these arguments are sound, then a slightly stronger result is also forthcoming. In the cases just cited, the falsity of the presupposition is not

only consistent with the relevant negation, it presumably constitutes the grounds for asserting it. This suggests that the falsity of the presupposition does not render the negative sentence truth-valueless, but actually guarantees its truth.[28] For example, in argument (41), a negative sentence is deduced from a denial of its presupposition together with a necessary truth. This indicates that the falsity of the presupposition entails that the negative sentence is true.

41. Premise 1: No one can stop doing something if he has never done it before.

Premise 2: John has never played chess with Spassky.

Conclusion: John cannot stop playing chess with Spassky.[29]

Wilson's arguments represent a serious challenge to theories of logical presupposition.[30] If her conclusions

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[28]Wilson makes this point on pages 28-30 of Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975).

[29]Most linguists would claim that this sentence presupposes that John has played chess with Spassky. Wilson's argument is designed to show that this presupposition must be non-loigcal. For similar arguments of the same type involving standard presupposition bearing negative sentences, see Wilson, ibid.

[30]Unfortunately, some theorists have misunderstood these arguments. One such theorist is Marga Reis ("Entanglement on Factives," Linguistic Inquiry 4 (Spring 1973): 261-271). She

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argues that Wilson is wrong in claiming that there is an asymmetry between positive and negative sentences whose main verb is factive. According to Wilson, the sentences in (i), but not those in (ii), entail (iii).

(i) Mary {a. knows / b. has forgotten / c. remembers} that first order logic is decidable.

(ii) Mary {a. doesn't know / b. hasn't forgotten / c. doesn't remember} that first order logic is decidable.

(iii) First order logic is decidable.

Reis agrees that (i) entails (iii). Contrary to Wilson, she argues that (ii) does, too. In the case of 'forget' and 'remember', her argument is based on three premises.

Premise 1: (i) entails (iii).
Premise 2: 'remembers' is synonymous with 'hasn't forgotten'.
Premise 3: Substituting synonyms for synonyms yields logically equivalent sentences.

Since these premises entail that (iib) entails (ii) (because (ic) does), Reis rejects Wilson's analysis.

However, premise 2 is patently false. Together with (3), it predicts that (iv) and (v) are equivalent.

(iv) Since I never believed that first order logic is decidable, I haven't forgotten that it is decidable.
(v) *Since I never believed that first order logic is decidable, I remember that it is decidable.

Thus, Reis' counterargument must be rejected.

Her argument involving 'know' and 'forget' is even worse.

Premise 1: as before
Premise 2: 'forget' is synonymous with 'not know anymore'.
Premise 3: as before

These premises entail that (vi) entails (iii).

(vi) Mary doesn't know anymore that first order logic is decidable.

But this was never at issue. 'Know' is not equivalent to 'still know'. 'Not know' is not equivalent to 'not know anymore'. In general, ⌜α still VP's⌝ and ⌜α doesn't VP anymore⌝ sanction inferences to ⌜α used to VP⌝. Since these inferences do not seem to be cancellable, they may be entailments. Where VP is ⌜know that S⌝, S is entailed. However, even if (vi) entails (iii), this is not a point about factives, but rather about 'anymore'. Consequently, Wilson's original thesis remains untouched.

Finally, Reis is wrong in claiming that Wilson's analysis is

are correct, then the major source of support for these theories is eliminated. However, there is a way of reconciling these theories to her data. Doing this involves distinguishing between two different types of negation.

This distinction is illustrated by examples like (43) and (44).

42. The King of France is wise.

43. The King of France isn't wise.

44. It is not {true / the case} that the King of France is wise.

Proponents of logical presupposition characterize (42) as being truth-valueless. Thus, they are committed to the claim that (45) is true.

45. The proposition that the King of France is wise is neither true nor false.

Consequently, they are committed to the truth of (46), (47) and (44).

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incompatible with "all lexical decompositions involving a negative element". If decomposition is desired, ⌜forget that P⌝ can be decomposed into ⌜once knew that P but doesn't know that P now⌝. On this analysis (ib) but not (iib) entails (iii)--just what Wilson predicts. We will see in a moment that there are ways in which Wilson's position can be attacked. The arguments given by Reis are not among them.

46. The proposition that the King of France is wise is not true.

47. That the King of France is wise is not true.

44. It is not {true / the case} that the King of France is wise.

Since (44) is true, these theorists must distinguish between two different kinds of negative sentences.[31] Examples like (44) are instances of external negation and never suffer from presupposition failure. Examples like (43) are instances of internal negation and share the presuppositions of corresponding affirmatives. When S is truth-valueless, external negations of S are true, whereas internal negations are truth-valueless.

This distinction can be used to handle apparent cases of presupposition cancellation. In all such cases, it is consistent to utter assertively a negative sentence together with a denial of its presupposition. What makes this seem problematic is that the negative sentences in question do not have the form of explicit external negations like (44). However, if the negative sentences in (39-41) have, in those contexts, the force of external negations, then Wilson's data can be accounted for by the theories

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[31] For a more complete discussion of this argument, see my "Frege's Theory of Presupposition," pp. 80-92.

she attacks.

One way in which this can be done is to claim that negatives sentences like (34b-38b) are ambiguous between internal and external negation readings. It might also be claimed that the internal negation readings are the normal or preferred interpretations. This would account for the fact that asserting these sentences typically sanctions inferences to the relevant presuppositions. On this view, the external negation interpretations are present in (39-41) because they are forced.[32]

Wilson recognizes that theories of logical presupposition can be made to accommodate her data. Her position is that the need to distinguish between internal and external negation, and the need to specify the relevant preferred interpretations greatly complicate such theories. Against them she proposes a theory in which negative sentences like (32b-38b) are unambiguous and do not entail their putative presuppositions (32c-38c). The inferences to these presuppositions are pragmatic and arise from

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[32]It might not be necessary to posit ambiguity at all. Conceivably, a theory might claim that although (34b-38b) are unambiguous internal negations, external negation interpretations are *imposed* on them in contexts like (39-41). On this view, something like the principle of charity may operate. The external negation interpretations are imposed on these sentences in these contexts, because they are the only ones that are consistent with the rest of the discourse.

independently motivated principles of conversation and rational communication.

If Wilson can substantiate these claims, then her theory will obviously be very attractive--certainly preferable to theories of logical presupposition. However, her case against logical presupposition has not yet been established. Apparent instances of cancellation do not prove that theories of logical presupposition are incorrect, but rather indicate the desirability of trying to construct a simpler and more natural account of the data. Thus, Wilson's argument is programmatic. If the program can be carried through, then logical presupposition can be eliminated. If not, then logical presupposition remains a viable alternative in accounting for the inferences sanctioned by certain sentences and their negations.

3.2 Cancellation and Quantification

In a moment, I will turn directly to Wilson's positive account. Before doing that, however, I must correct for a certain bias in the discussion thus far.

In Section II, I indicated that quantified sentences and their negations provide evidence for theories of logical presupposition. In subsection 3.1, apparent instances of cancellation are used to cast doubt on such theories. However, none of these instances involves quantified sentences. The reason for this is that inferences to the putative presuppositions of these sentences are not easily withdrawn.[33]

48. ? {Not all / Not many / None} of the books in this room are valuable, because there are no books in this room.

49. ? Since there are no books in this room, {not all / not many / none} of the books in this room are valuable.

50. ? {Not all / Not many / None} of the books in this room are valuable. There are no books in this room.

Although Wilson admits this, she denies that quantified sentences motivate theories of logical

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[33]Wilson recognizes this on pages 57-58 of Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), where she says that if quantified sentences carry presuppositions, then they are candidates for "absolute presuppositions". On pages 51-52, she characterizes absolute presuppositions as presuppositions "which can never be cancelled and do not participate in non-presupposition-carrying senses of negation."

presupposition. According to her, the negations in (51) and (52) each sanction inferences to (53). She claims that either all of these inferences are entailments or none of them are.

51. a. Not all of the books in this room are valuable.
    b. Not many of the books in this room are valuable.
    c. None of the books in this room are valuable.

52. a. It is not true that all of the books in this room are valuable.
    b. It is not true that many of the books in this room are valuable.
    c. It is not true that some of the books in this room are valuable.

53. There are books in this room.

Since the sentences in (52) are external negations, they are true when (53) is false. Thus, they do not entail (53), but only suggest it. Since Wilson holds that the inferences sanctioned by the sentences in (51) and (52) have the same force, she concludes that the sentences in (51) do not entail (53) either.

This argument is questionable. It rests on the claim that the sentences in (51) entail (53) if and only if the sentences in (52) do. But this is not obvious. We have already seen that, for Wilson, the inferences from

(51) to (53) cannot be explicitly cancelled. However, the inferences from (52) to (53) can be cancelled.

54. It is not true that $\left\{\begin{matrix}\text{all}\\\text{many}\\\text{some}\end{matrix}\right\}$ of the books in this room are valuable, because there are no books in this room.

55. Since there are no books in this room, it is not true that $\left\{\begin{matrix}\text{all}\\\text{many}\\\text{some}\end{matrix}\right\}$ of the books in this room are valuable.

56. It is not true that $\left\{\begin{matrix}\text{all}\\\text{many}\\\text{some}\end{matrix}\right\}$ of the books in this room are valuable. There are no books in this room.

For some reason, (54-56) seem to be much more acceptable than (48-50). If so, then they are apparent counterexamples to the claim that the sentences in (51) entail (53) if and only if the sentences in (52) do. Consequently, they represent a serious threat to Wilson's thesis that quantified sentences do not motivate theories of logical presupposition.[34]

Still Wilson's positive account remains interesting.

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[34]Theories of logical presupposition would treat the sentences in (51) as unambiguous instances of internal negation. The sentences in (52) would be either ambiguous or simply cases of external negation.

It is conceivable that we would be willing to accept her analysis about quantified sentences, provided that her pragmatic account is successful in other cases. Our intuitions about (48-50) and (54-56) are not decisive. If they conflict with an otherwise highly motivated theory, then we might be willing to revise them.[35]

IV. Summary

This concludes my analysis of that portion of the attack on logical presupposition that can be considered independently of a detailed examination of Wilson's and Karttunen's positive accounts. In the rest of this essay I will present these accounts and evaluate them. For now, it is useful to summarize the major results achieved thus far.

First, compound sentences involving 'and', 'or',

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[35] A similar point holds for theories of logical presupposition. Wilson claims that ⌜It is not {true / the case} that S⌝ sanctions inferences to the putative presuppositions of S. If so, such inferences are problematic for theories of logical presupposition. However, if these theories are highly motivated on other grounds, then we might be willing to accept their analysis of external negations and attribute any discrepancies with our intuitions to performance factors. Consequently, it is important not to reject out of hand either logical presupposition or Wilson's pragmatic account. Instead, these theories must be compared against the total range of data. This will be the main task of Part 4.

and 'if, then' do not motivate theories of logical presupposition. Although such sentences typically sanction inferences to the k-presuppositions of their constituents, many of these inferences are demonstrably non-logical. Since the concept of logical presupposition does not facilitate the account of the k-presuppositions of compound sentences, these sentences do not provide evidence for theories of logical presupposition.

Second, certain sentences and their negations sanction inferences to the same statement. If these inferences are *entailments*, then theories of logical presupposition offer plausible explanations of them (particularly in the case of quantified sentences). Moreover, the claim that certain sentences and their negations are bearers of logical presupposition is compatible with a theory that handles the k-presuppositions of compound sentences non-logically.

Third, apparent cases of cancellation raise the possibility that negative sentences do not entail their presuppositions. If so, then theories of logical presupposition are completely undermined and must be replaced with non-logical accounts. However, this result cannot be established until such non-logical theories are constructed and evaluated.[36]

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[36]I have left out some of Wilson's arguments against logical

presupposition because they are clearly unsound. Several are based on a special notion of strong entailment that she defines as follows:

(i) Strong Entailment
"A sentence S entails another sentence P iff if S is true, P must also be true and if P is false, S must also be false. (Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), p. 4)"

This notion interacts in a special way with the notion of logical presupposition. No sentence P which is capable of being false can be both strongly entailed and logically presupposed by the same sentence. This follows automatically, for if any such sentence P were false, then S would have to be both false and truth-valueless.

Wilson tries to use this result as a weapon. For example, she uses it to argue that cleft sentences do not bear logical presuppositions(ibid, pp. 30-32).

(ii) It was John who left.
(iii) John left.
(iv) Someone left.

According to Wilson, (ii) entails (iii), and (iii) entails (iv). Since entailment is transitive and (iv) is capable of being false, she concludes that (ii) does not logically presuppose (iv).

However, this argument begs all the important issues. First, it does not go through unless (ii) *strongly entails* (iii), and (iii) *strongly entails* (iv). Both of these claims are problematic. Wilson cites Chomsky's suggestion that although (ii) entails (iii), it does not *strongly entail* (iii) (ibid, p. 31). This is precisely what any proponent of logical presupposition would say, since on his theory, (ii) is not false, but truth-valueless when both (iii) and (iv) are false. Moreover, independently of any special facts about clefts, theories of logical presupposition predict that (iii) entails (iv) but does not *strongly entail* (iv). After all, it could be the case that (iv) is false and there is no such person as John. If so, then (iii) would be characterized as truth-valueless. Since this is exactly what any proponent of logical presupposition would propose, it cannot simply be *assumed* to be false.

Unfortunately, several of Wilson's arguments suffer from the same difficulty. The problem is simple. Although strong entailment can be used as a weapon against logical presupposition, intuitions about strong entailment depend upon speakers' ability to distinguish falsity from truth-valuelessness. According to Wilson, it is "demonstrable that there is no consistent set of intuitions about when a given sentence is false as opposed to lacking in truth value. (ibid, p. 61)" Thus, on her own account, the crucial claims about strong entailment can't be established. On the other hand, we do have intuitions about entailment in the sense that I have defined. However, on this sense of entailment, all logical presuppositions are entailed. Wilson's problem is that she uses intuitions about entailment to construct arguments involving strong entailment. Once this confusion is recognized, her arguments collapse.

PART 4

PRESUPPOSITION, CONVERSATION, AND CONFIRMATION

I. Wilson's Positive Account

According to Wilson, the data for theories of presupposition fall into two different classes. In one class, the presupposing sentences *entail* their presuppositions. In the other, they only *suggest* them. The first class includes simple sentences and conjunctions of such sentences. For example, the (a) and (b) sentences below entail the (c) statements.

1. a. The man in the next room is a philosopher.
   b. There is a linguist in the office, and the man in the next room is a philosopher.
   c. There is a man in the next room.
2. a. All of John's children are intelligent.[1]
   b. Intelligence is hereditary, and all of John's children are intelligent.
   c. John has children.

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[1] Wilson represents sentences of the form (i) with semantic representations of the form (ii).

(i) All S is P.

(ii) $\exists x\ (Sx)\ \&\ \forall x\ (Sx \supset Px)$

Although she does not give representations for sentences of the form (iii), she seems to assume that their semantic representations are of the form (iv). (See Wilson, Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), p. 59.)

(iii) Not all S is P.

(iv) $\neg(\exists x\ (Sx)\ \&\ \forall x\ (Sx \supset Px))$

3. a. It is Susan who has the jewels.
   b. It is Susan who has the jewels, and Mary who has the money.
   c. Someone has the jewels.
4. a. Sam has stopped smoking.
   b. Sam has stopped smoking, and Bill has stopped drinking.
   c. Sam used to smoke.
5. a. Bill realizes that the Red Sox won the pennant.
   b. Bill realizes that the Red Sox won the pennant, and Harry realizes that the Reds won the series.
   c. The Red Sox won the pennant.

The second class of sentences includes negations, disjunctions, and conditionals. These sentences do not entail, but only suggest the truth of their putative presuppositions.[2]

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[2]For Wilson, sentences entail other sentences only derivatively. A sentence S entails a sentence S' iff the statement made by S entails the statement made by S'. Similarly, we may say that a sentence S entails a statement P iff the statement made by S entails P.

Sentences *suggest* statements in a different way. According to Wilson, the (a-c) sentences in (6-10) suggest the corresponding (d) statements in the following sense: A speaker who assertively utters one of the (a-c) sentences must believe the (d) statement in order for his utterance to be sanctioned by pragmatic principles that guide conversation. More of this below.

6. a. The man in the next room isn't a philosopher.
   b. If the man in the next room is a philosopher, then we are in luck.
   c. Either the man in the next room is a philosopher, or there are no philosophers in the building.
   d. There is a man in the next room.
7. a. Not all of John's children are intelligent.
   b. If intelligence is hereditary, then all of John's children are intelligent.
   c. Either intelligence isn't hereditary, or all of John's children are intelligent.
   d. John has children.
8. a. It isn't Susan who has the jewels.
   b. If it is Susan who has the jewels, then we will recover them shortly.
   c. Either it is Susan who has the jewels, or we will never find them.
   d. Someone has the jewels.
9. a. Sam hasn't stopped smoking.
   b. If Sam has stopped smoking, then we will invite him to the party.
   c. Either Sam has stopped smoking, or he has stopped drinking.
   d. Sam has smoked.

10. a. Bill doesn't realize that the Red Sox won the pennant.

    b. If Bill lives in Boston, then he realizes that the Red Sox won the pennant.

    c. Either Bill doesn't live in Boston, or he realizes that the Red Sox won the pennant.

    d. The Red Sox won the pennant.

On this analysis, there is no room for logical presupposition. In fact, there is no need to posit any notion of presupposition at all. The inferences in (1-5) are simple entailments. Semantic theory accounts for them in the same way that it accounts for other examples of entailment. The inferences in (6-10), on the other hand, are pragmatic. Those sanctioned by negative sentences are explained by Gricean principles of conversation. Those sanctioned by disjunctions and conditionals are accounted for by principles of confirmation and evidence. In neither case is it necessary to invoke any notion of presupposition. Consequently, if Wilson is correct, the notion of presupposition can be eliminated from theories of natural language.

The heart of Wilson's account is her explanation of allegedly pragmatic inferences like those in (6-10). The framework for this explanation is provided by Paul Grice.

According to Grice, a speaker often suggests more by assertively uttering a sentence than can be gathered from the semantic representation of that sentence. Many of these suggestions may be explained on the assumption that conversation is conducted according to certain rules and that hearers interpret a speaker's remarks so as to preserve the assumption that these rules are being obeyed. Among these rules are principles of cooperation and rational communication that regulate the efficient exchange of information. Grice calls such principles conversational maxims. These maxims are seen as falling under the general principle of cooperation.

11. The Cooperative Principle

    Make your contribution to the conversation so as to advance its accepted purpose or direction.

12. Conversational Maxims

    Quantity: (i) Don't give too little information.

    (ii) Don't give too much information.

    Quality: (i) Don't make statements which you believe to be false.

    (ii) Don't make statements for which you have insufficient evidence.

Relation: Be relevant.

Manner: (i) Avoid obscurity of expression.

(ii) Avoid ambiguity.

(iii) Be brief.

(iv) Be orderly.

According to Grice, a speaker's remarks are assessed against the background assumption that these conversational maxims are being obeyed. This assumption gives rise to an important class of implicatures that Grice calls 'conversational implicatures'. The notion of a speaker conversationally implicating a proposition is defined as follows:

13. A speaker who assertively utters a sentence S *conversationally implicates* a proposition Q if and only if

(i) he is to be presumed to be observing the conversational maxims; and

(ii) the supposition that he believes Q is required in order to make his assertive utterance of S consistent with this presumption; and

(iii) the speaker thinks (and would expect the hearer to think that the speaker thinks)

that the hearer can work out or grasp intuitively that the supposition in (ii) is required.[3]

This definition suggests a general pattern for explaining how conversational implicatures arise. Grice's characterization of this pattern (from the point of view of the hearer) is given in (14).

14. He [the speaker] has said that P; there is no reason to suppose that he is not observing the maxims, or at least the cooperative principle; he could not be doing this unless he thought that Q; he knows (and knows that I know that he knows) that I can see that the supposition that he thinks that Q is required; he has done nothing to stop me from thinking that Q; therefore he intends me to think, or is at least willing to allow me to think, that Q; and so he has implicated that Q.[4]

The notion just defined is one in which a speaker conversationally implicates a proposition. However, it is also possible to define a notion of conversational implicature that applies to sentences.

15. A *sentence S* conversationally implicates a proposition Q if and only if a speaker who assertively utters S in normal circumstances[5]

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[3]Grice, "Logic and Conversation," William James series, lecture 2, unpublished manuscript.

[4]Ibid.

[5]Normal circumstances are those in which the speaker is presumed to be obeying Grice's maxims.

and without explicit qualification conversationally implicates Q.

For example, sentence (16) conversationally implicates that the speaker does not know which of the statements (17) and (18) is true.

16. Either Martin is in North Carolina, or he is in South Carolina.
17. Martin is in North Carolina.
18. Martin is in South Carolina.

The explanation of this conversational implicature is as follows: The presumption that the speaker is obeying the conversational maxims allows us to conclude that (16) is relevant to the accepted purpose and direction of the conversation. We may assume that (17) and (18) are, too. Consequently, if the speaker knew that (17) were true, or if he know that (18) were, then he would be guilty of violating the first maxim of quantity ("Don't give too little information"). That is, he would be guilty of having made a weaker statement [(16)] when he could have made a stronger statement [(17) or (18)] which is also relevant to the conversation.[6] Since, by

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[6] In this paper I will assume (i) and (ii).

(i) A statement A is weaker than a statement B if B entails A, but A does not entail B.

(ii) A statement A is less informative than a statement B if

hypothesis,[7] the speaker has given us no reason to suppose that he is opting out of the Cooperative Principle or any its maxims, and since he knows that we are capable of working out all this, he conversationally implicates that he does not know which of (17) and (18) is true.[8]

A is weaker than B.

Grice indicates that he accepts these assumptions in "Logic and Conversation," William James series, lecture 4, unpublished manuscript; and "The Causal Theory of Perception," in Perceiving, Sensing and Knowing, edited by Robert J. Swartz, (Garden City, New York: Anchor Books, Doubleday and Company, Inc., 1965), p. 450.

[7]We are assuming that the speaker utters (16) "in a normal context and without explicit qualification." Thus, he is to be presumed to be observing the conversational maxims.

[8]This discussion parallels a discussion by Grice in lecture 3 of "Logic and Conversation." There he argues that a speaker who asserts a disjunction conversationally implicates that the grounds for his assertion are non-truth functional. I assume then that Grice would hold that one who assertively utters (16) conversationally implicates that he does not know which of (17)-(18) is true.

This brings up an interesting point regarding the interpretation of definition (13). (13i) says that the speaker is presumed to be observing the conversational maxims. One might imagine this clause receiving two different interpretations--(a) and (b).

(a) The speaker is acting in accordance with the conversational maxims.
(b) The speaker is guided by the conversational maxims.

To act in accordance with a maxim is to do what it says; one's reasons are irrelevant. One may act in accordance with a rule even when one is trying to violate it, so long as what one does is what the rule prescribes. On the other hand, to be guided by a maxim is to try to follow the maxim. Here it is not what one does, but what one takes oneself to be doing that is relevant. Which interpretation is needed for (13)?

One Grice's account, the presumption that a speaker is obeying the conversational maxims is a presumption that he is being cooperative. This suggests interpretation (b). It is interesting to see that this interpretation is required by the conclusion that a speaker who assertively utters (16) conversationally implicates that he does not know which of (17)-(18) is true.

First consider interpretation (a). On this interpretation, the

Wilson tries to apply similar reasoning to the presuppositions of negations, disjunctions, and conditionals. Her thesis about negations is (19).

19. Negative sentences (like 6a-10a) conversationally implicate what they are customarily said to presuppose.

Her thesis about disjunctions and conditionals is similar. However, it requires the addition of two new maxims.

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supposition that the speaker is observing the maxims entails that he has made the strongest statement possible. It does not entail that he *believes* that he has made the strongest statement possible. He could be mistaken about what he is in a position to assert. If a speaker asserts a disjunction while mistakenly believing that he is in a position to assert one of its disjuncts, then he is acting in accordance with the maxims although it is not his intention to do so.

According to (13ii) a proposition Q is conversationally implicated only if the supposition that the speaker is observing the maxims entails that he believes Q. Thus, on interpretation (a) someone assertively uttering (16) does not conversationally implicate that he does not know which of (17)-(18) is true.

Now consider the (b) interpretation. On this interpretation the supposition that the speaker is trying to follow the maxims entails that he believes that he is making the strongest statement he can. A speaker asserting a disjunction must believe that he is not in a position to assert either disjunct. Thus, on interpretation (b), one who assertively utters (16) conversationally implicates that he is not in a position to assert either (17) or (18)--i.e., he conversationally implicates that he does not know which of them is true.

In practice, the difference between interpretations (a) and (b) does not have great significance, but for certain purposes, it is useful to distinguish the two. In this essay I assume the (b) interpretation.

20. Don't assert a contingent[9] disjunction unless you have some evidence for the truth of both disjuncts.

21. Don't assert a contingent conditional unless you have some evidence for the truth of the antecedent.[10]

Wilson notes that these maxims are not covered by Grice's second maxim of quality ("Don't make statements for which you have insufficient evidence").[11]

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[9]To say that a statement is contingent is to say that it is neither necessarily true nor necessarily untrue.

[10]Wilson states her new principles in terms of hearers rather than speakers. She says that they are principles of interpretation "...which hearers will try to apply first, and which they will only abandon if [they do] not square with the facts. (Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), p. 108)" The principle for disjunctions is included in the following:

> "If a speaker produces a disjunction which is a contingent truth [sic] it is generally assumed that he has some evidence for the truth of both disjuncts, although he does not know which is actually true. Again it is open to him to deny that he has such evidence, but as a matter of conversational fact he will be assumed to have it. (Ibid, p. 105)"

The emphasis on hearers rather than speakers is unimportant. A speaker who knows that he will be interpreted to have evidence for both disjuncts will adopt maxim (20) above. Competent speakers are generally competent hearers and vice versa. Thus, the maxims applying to speakers and hearers are complementary.

[11]According to Wilson, principles like (20) and (21) "...cannot be handled on purely Gricean lines, for though they assume that a speaker in saying something must have evidence, they do not depend on his having evidence for what he actually says [i.e., the disjunction or conditional], but on his having evidence for a related categorical statement [i.e., constituents of the disjunction or conditional]. (Ibid, p. 108)"

That maxim requires someone who asserts a sentence[12] to have evidence for the assertion. However, it is possible to have evidence for a disjunction without having evidence for both of its disjuncts. Similarly, it is possible to have evidence for a conditional without having evidence for its antecedent. Thus, Wilson's principles (20) and (21) impose additional requirements that are not imposed by Grice's second maxim of quality. Moreover, (20) and (21) do not seem to follow from general rules governing rational and cooperative behavior. Therefore, they are not Conversational Maxims in Grice's sense.

Wilson's account can be reconstructed so that principles (20) and (21) give rise to implications in essentially the same way that Grice's maxims do. The notion of a speaker *W-implicating* a proposition is defined in exact analogy with the earlier definition of a speaker conversationally implicating a proposition.

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[12] I will follow Wilson in sometimes speaking of "asserting a sentence." To "assert a sentence" is to assert a statement by way of assertively uttering a sentence. This terminology is somewhat unfortunate since sometimes there is more than one statement that can be asserted by assertively uttering a given sentence. However, this will not affect the arguments that follow.

22. A speaker who assertively utters a sentence S *W-implicates* a proposition Q, if and only if

    (i) he is to be presumed to be observing principles (20) and (21); and

    (ii) the supposition that he believes Q is required in order to make his assertive utterance of S consistent with this presumption; and

    (iii) the speaker thinks (and would expect the hearer to think that the speaker thinks) that the hearer can work out or grasp intuitively that the supposition in (ii) is required.

The notion of a sentence W-implicating a proposition is defined as follows:

23. A sentence S W-implicates a proposition Q if and only if a speaker who assertively utters S in normal circumstances[13] and without explicit qualification W-implicates Q.

Finally, I will represent Wilson's thesis about disjunctions and conditionals as (24).

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[13]Here, normal circumstances are those in which the speaker gives no indication that maxims (20) and (21) are not being obeyed.

24. Disjunctions and conditionals (like those in (6-10)) W-implicate their putative presuppositions.[14]

Theses (19) and (24) are central to Wilson's positive account of presupposition.[15] In the sections that follow I will reconstruct her arguments for these theses. I will try to show that her arguments are inadequate and more strongly, that (19) and (24) are false.

I should point out that although I believe that Wilson's position must ultimately be rejected, I find it both interesting and provocative. If her view could be sustained, it would provide a very economical and satisfying account of presupposition. On the other hand, if it cannot be sustained, then it is important to determine precisely where Wilson goes wrong. Fortunately, Wilson presents her view carefully and clearly enough to make this possible.

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[14] (24) will not account for the presuppositions of conditionals that are inherited from their consequents. Wilson says nothing about how these are to be accounted for.

[15] Although (19) and (24) are central to Wilson's account, she regards them as tentative and refers to them as "suggestions." Apparently she does not regard them as crucial to her fundamental claim that "...presuppositional analysis has no part in semantics, on any terms. (Presuppositions and Non-Truth-Conditional Semantics, p. xii)" But she hasn't proven this claim. In Part 3 I showed that her argument against attributing logical presuppositions to negative sentences is programmatic. Although there are difficulties with the standard account Wilson cannot claim to have refuted it unless she can show that there is a better theory that avoids these difficulties--hence, the importance of her "suggestions."

II. Negation and Conversational Implicature

2.1 Wilson's Argument

Wilson's argument that negative sentences conversationally implicate what they are customarily said to presuppose is based on example (25).[16]

25. John doesn't regret that Bill is ill.
    a. John doesn't exist.
    b. Bill doesn't exist.
    c. Bill exists but isn't ill.
    d. John exists and Bill is ill but John doesn't know that Bill is ill.
    e. John knows that Bill is ill but is not sorry about it.

According to Wilson,

> . . . any of (a)-(e) . . . expresses a *sufficient* condition for the truth of [25], though none of (a)-(e) is necessary for the truth of [25]. Since [25] can be uttered with any of (a)-(e) appended as clarification, and without anomaly, all of (a)-(e) express *possible interpretations* of [25].[17] (my emphasis)

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[16] Wilson's entire discussion centers on this one example. Since her thesis is a general one, I assume that she thinks that all cases can be dealt with in the way that (25) is.

[17] Wilson, Presuppositions and Non-Truth-Conditional Semantics, (London: Academic Press, 1975), p. 99.

Wilson also claims that

> . . . if [25] is uttered *in isolation or without clarification*, it would normally be taken as suggesting (d), or, more likely, (e). What has to be explained on Gricean principles is why (e) is the *preferred interpretation* of [25].[18] (my emphasis)

Before giving Wilson's argument, I need to say a word about what she means by "possible interpretations" and "preferred interpretations." She uses these expressions in one way when talking about theories of logical presupposition and in another way when presenting her own theory. In discussing logical presupposition, she says

> . . . it seems that an adequate theory of [logical] presupposition must allow for negative sentences to be *ambiguous* between readings on which they carry presuppositions [i.e., internal negation readings] and readings on which they do not [i.e., external negation readings].[19] (my emphasis)
>
> A negative sentence has a *preferred internal interpretation* in the absence of any indication to the contrary. The *external interpretation* may be invoked in a number of ways: by placing heavy stress on the verb, for example, or by explicitly stating that the presupposition is false, or by adding something which itself entails the negation of the presuppositions.[20] (my emphasis)

Here, an *interpretation* of a sentence is one of its meanings. Thus, a sentence with more than one possible interpretation is ambiguous. A *preferred interpretation*,

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[18] Ibid, p. 100.

[19] Ibid, p. 35.

[20] Ibid, p. 33.

on the other hand, is a meaning that the sentence carries when used in isolation or without clarification. For example, to say that the internal interpretation of a negative sentence is preferred is to say that the sentence is interpreted as carrying presuppositions unless the context indicates otherwise.[21]

When Wilson presents her own theory, she uses the expressions "possible interpretation" and "preferred interpretation" in another way. She rejects the view that negative sentences are ambiguous. On her analysis of negation, "There is no ambiguity: merely *a disjunctive set of truth conditions, the truth of any of which is sufficient for the truth of the negation.*"[22] (my emphasis) Nevertheless, she talks about the "truth conditions" of a negative sentence as constituting its "possible interpretations." When she says that (a)-(e) are possible interpretations of (25), she means that they are individually sufficient and disjunctively necessary conditions for (25) to be true. Each of (a)-(e) constitutes a possible basis for asserting (25).

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[21]On this view, the internal interpretation of (i) is one in which it carries the presupposition (ii).

(i) The King of Thessalonia isn't happy.
(ii) There is exactly one king of Thessalonia.

[22]Ibid, p. 35.

What does she mean when she says that (d) and (e) are *preferred* interpretations of (25)?[23] It seems to me that she has two theses in mind. First, it is appropriate to assertively utter (25), *in isolation or without clarification,* provided that the *evidence* for one's assertion is the truth of what is expressed by (d) or (e). However, if one's evidence is that which is expressed by (a)-(c), then the assertion is inappropriate. Second, a speaker who assertively utters (25) in isolation or without clarification *suggests* (d) or (e). Such a speaker *conveys to his audience* either the message that (d) is true or the message that (e) is true.[24]

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[23]It is not completely clear whether Wilson holds that (e) is the preferred interpretation of (25) or whether she believes that both (d) and (e) are preferred interpretations. Fortunately, this unclarity does not affect her main argument that (25) conversationally implicates its putative presuppositions. In order to simplify the discussion, I will assume for the present that both (d) and (e) are preferred. This assumption will be re-examined later.

[24]Wilson never says what it means to say that a speaker X uses a sentence S *to convey* a statement P. Presumably, it does not mean that X uses S *to assert* P. On Wilson's account a speaker may use (25) to convey the statement expressed by (e) even though what the speaker says can be true when statement (e) is false. Such a speaker does not assert statement (e); he *suggests* it. Wilson seems to assume that X uses S to convey P if and only if X uses S *to indicate* that P is true. In some cases, the statement conveyed is the statement asserted. In other cases, it is not.

Wilson's argument can now be summarized. She claims that although (a-c) are "possible interpretations" of (25), a speaker obeying Grice's maxims would not use (25) to convey them. Nor would he use (25) (in isolation or without clarification) if his evidence were (a), (b), or (c), Rather, such a speaker would use (25) to convey (d) or (e). Since anyone who believes (d) or (e) must also believe (26), (25) conversationally implicates (26).[25]

26. Bill is ill.

Therefore, if Wilson's argument is sound, then (25) conversationally implicates what it is customarily said to presuppose.

Wilson states her argument in the following passage:

> . . . any of (a)-(e) . . . expresses a sufficient condition for the truth of [25], though none of (a)-(e) is necessary for the truth of [25]. Since [25] can be uttered with any of (a)-(e) appended as clarification, and without anomaly, all of (a)-(e) express possible interpretations of [25]. . .
>
> . . . if [25] is uttered in isolation, or without clarification, it would normally be taken as suggesting (d), or, more likely, (e). What has to be explained on Gricean principles is why (e) is the preferred interpretation of [25].
>
> First, notice that, except when explicitly contradicting a previous remark, there would be no point at all in using [25] to convey the information in (a)-(c) above. If, for example, Bill is not ill, then the shortest way of conveying this information is by saying that Bill is not ill. Brevity, or the

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[25] I will follow Wilson in sometimes talking about sentences being believed, conveyed, and conversationally implicated. Again, sentences are believed, conveyed, or conversationally implicated only in a derivative sense.

avoidance of unnecessary prolixity, is one of the Gricean goals of conversation. Moreover, if I want to convey the information that Bill is not ill, [25] is a remarkably inefficient way of conveying this information, since it merely entails that *one* of (a)-(e) is true. The avoidance of obscurity or ambiguity is another of the Gricean goals of conversation. In other words, someone who was obeying the Gricean maxims would simply never use [25] on the basis of (c), since there is another, shorter, more explicit and less misleading way to convey the information in (c). The same holds of (a) and (b): it is in general, and ignoring special purposes such as flat contradiction, deliberate confusion of the issue, etc., easier to say straight out that a given person does not exist than to use a more complex negative such as [25].

The elimination of (a)-(c) interpretations by appeal to Gricean maxims leaves (d) and (e) as the most likely interpretations of [25]. The (d) and (e) interpretations take for granted that John exists and Bill exists, and that Bill is ill. Hence these presuppositions of a sentence like [25] can be explained by a theory of conversation, and do not need to be accounted for at the semantic level.[26]

This argument is reconstructed in (27).

27. Premise 1

(a)-(e) are possible interpretations of (25)--i.e., (a)-(e) are individually sufficient and disjunctively necessary conditions for (25) to be true.

Premise 2

A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification)

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[26]Wilson, Presuppositions and Non-Truth-Conditional Semantics, pp. 99-100.

{to convey / on the basis of}[27] (a), (b), or (c).

Conclusion 1

A speaker obeying Grice's maxims can use (25) (in isolation or without clarification) {to convey / on the basis of} *only* (d) or (e).

Premise 3

Anyone who believes (d) or (e) must also believe (26).

Conclusion 2

A speaker obeying Grice's maxims who asserts (25) (in isolation or without clarification) takes it for granted that (26) is true. Such a speaker conversationally implicates what (25) is customarily said to presuppose.

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[27] The equivocation in this premise will be taken up later in Section 2.2.3. Until then I will use only the "convey" interpretation. This does not affect any of the arguments that follow .

I should also point out that I interpret premise 2 to assert both (i) and (ii).

(i) A speaker cannot use (25) (in isolation or without clarification) to convey (a), (b), or (c).

(ii) The reason he cannot use (25) (in isolation or without clarification) to convey (a), (b), or (c) is that to do so would violate Grice's maxims of conversation.

2.2 Evaluating Wilson's Position

There are two main problems with Wilson's position. The first involves her use of the notion "possible interpretation". The second involves her use of Grice's maxims. In Section 2.2.1, I will show that argument (27) is invalid. In order to repair it, Wilson would have to redefine her notion of "possible interpretation" in a way that takes for granted most of what needs to be explained. In addition, she would have to posit an *ad hoc*, and otherwise unmotivated, mechanism for enumerating the possible interpretations of sentences. Finally, in Section 2.2.5, I will argue that her use of Grice's maxims to eliminate certain "interpretations" is mistaken in important respects. These two problems undermine Wilson's position.

2.2.1 "Possible Interpretations"

Wilson's argument (27) is invalid, because Premises 1 and 2 do not entail Conclusion 1. Wilson thinks that if she can show that (25) cannot be used to convey (a-c), then she will have shown that it must be used to convey (d) or (e). But this does not follow unless (a-e) are the *only* statements that (25) can be used to

convey. Since Premises 1 and 2 do not entail this, the argument is invalid as it stands.

Perhaps then Wilson is appealing to a suppressed premise.

Premise O

> If T is a set of individually sufficient and disjunctively necessary conditions for the truth of a sentence S, then the only statements that S can be used to convey are members of T.

Although adding Premise O to (27) renders the argument valid, this premise is false. Consider (25f) and (25g).

25. f. (The disjunction of (a-e))
    g. John *believes* that Bill is ill, but isn't sorry about it.

Both of these examples entail (25).[28] Moreover, on

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[28] Thus, each constitutes a possible basis for assertively uttering (25) and each can be appended to (25) as clarification. For example, a speaker might assertively utter (25) with (g) in mind rather than (d) or (e). If so, he might append (g) to (25) as clarification.

(i) John doesn't regret that Bill is ill; he believes Bill is ill, but isn't sorry about it.

Consequently, on Wilson's account, (f) and (g) must be "possible interpretations" of (25). Note, however, that neither of them entails (26).

Wilson's analysis of (25), (a-e), (e-f) and (a-d, g) are each sets of individually sufficient and disjunctively necessary conditions for (25) to be true.[29] Thus, Premise O predicts that (25) can be used to convey only the statements common to all three sets. Since these sets have no common members, Premise O incorrectly predicts that (25) cannot be used to convey anything. Therefore, Premise O is false, and the modified argument is unsound.

(25f) and (25g) also illustrate another point. Wilson sometimes talks about "the truth conditions" of a sentence as if it were clear what this phrase means. It isn't. I have just presented three different sets of individually sufficient and disjunctively necessary conditions for (25) to be true. Consequently,

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[29] In the case of (e-f), this is obvious since (f) itself is logically equivalent to (25). Although less obvious, it is equally true of (a-d, g). The claim that both (a-e) and (a-d, g) are individually sufficient and disjunctively necessary conditions for the truth of (25) entails that the disjunction of (a-e) and the disjunction of (a-d, g) are logically equivalent. They are.

In one direction, the entailment is obvious--i.e., the disjunction of (a-e) entails the disjunction of (a-d, g). The entailment holds in the other direction despite the fact that (g) doesn't entail (e). Suppose that the disjunction of (a-d, g) is true and the disjunction of (a-e) is not. Then each of (a-e) must be untrue while (g) is true. This is impossible.

(a-d) are each untrue if and only if John and Bill exist, Bill is ill, and John knows that Bill is ill. Since we are assuming that (e) is also untrue, John must be sorry about Bill's illness. But this means that (g) cannot be true. Since this contradicts our original assumption, the disjunction of (a-d, g) entails the disjunction of (a-e)--i.e., the two disjunctions are logically equivalent.

there is no such thing as *the* truth conditions of (25).

This eliminates the plausibility Wilson's argument might at first be thought to possess. When confronted with her argument, one is tempted to think of (a-e) as *the* truth conditions of (25). One then imagines that Wilson is implicitly assuming that a sentence can only be used to convey one of its truth conditions. Examples like (25f) and (25g) undermine this view.[30]

2.2.2 Attempted Improvements

In light of these difficulties, Wilson might maintain that some sets of truth conditions are "better" than

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[30]According to Wilson, there are two types of truth conditions--necessary and sufficient. P is a necessary condition for the truth of S iff S entails P. Q is a sufficient condition for the truth of S iff Q entails S. The job of a semantic theory is to capture all the entailment relations that a sentence enters into. A semantic theory that does this accounts for the truth conditions of a sentence. So far, so good. One goes wrong when one assumes that *the* set of "possible interpretations" of a negative sentence S is *the* set of individually sufficient and disjunctively necessary conditions for S to be true. There is no such set.

I've already illustrated this with example (25). Moreover, the point is perfectly general. Let S be a sentence; let T be a set of individually sufficient and disjunctively necessary conditions for S to be true; and let A and B be members of T. If T already contains ⌜A or B⌝, then form T' by subtracting ⌜A or B⌝ from T. If T doesn't contain ⌜A or B⌝, then form T' by adding ⌜A or B⌝. In either case, T' is not identical with T. Nevertheless, both T and T' are sets of individually sufficient and disjunctively necessary conditions for S to be true.

others. She might hold that the set of "possible interpretations" of a sentence S is *a* set of individually sufficient and disjunctively necessary conditions for the truth of S. Nevertheless, not all such sets of truth conditions are sets of "possible interpretations" of S. What, then, is a "possible interpretation" of a sentence?

In discussing (a-e) Wilson says,

> . . . any of (a)-(e) . . . expresses a sufficient condition for the truth of [25], though none of (a)-(e) is necessary for the truth of [25]. Since [25] can be uttered with any of (a)-(e) appended as clarification, and without anomaly, all of (a)-(e) express possible interpretations of [25].[31]

This suggests that any statement that entails a sentence S is a "possible interpretation" of S. However, this cannot be what Wilson has in mind. Grice's maxims cannot eliminate all such "interpretations" that do not entail the putative presuppositions of S while leaving intact those statements that do. In Section 2.2.5, I will show that according to Wilson, the only "interpretations" eliminated by Grice's maxims are those that are *shorter* than S.[32] (25f) and (25g) are not shorter than

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[31]Wilson, Presuppositions and Non-Truth-Conditional Semantics, p. 99.

[32]The crucial maxim is "Be brief". It is this maxim that is supposed to eliminate (a-c) in (25). Actually, there is a

(25), nor do they entail (26). Thus, if they are among the "possible interpretations" of (25), then, on Wilson's account, Grice's maxims do not eliminate them, and (25) does not conversationally implicate (26).

Wilson might object that the set of "possible interpretations" of a sentence does not include all statements that entail it. In particular, she might object that the set of possible interpretations of (25) does not include (f) or (g) (despite the fact that (g) can be appended to (25) as clarification). If so, then more must be said about the notion "possible interpretation".[33] Moreover, simply to *assume*

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problem in comparing the length of *statements* as opposed to sentences, since a statement can often be expressed by sentences of different lengths. Wilson never addresses this problem. However, her position might be put as follows: Grice's maxims prevent one from using a longer sentence S when a shorter sentence S' would convey one's meaning. She might also claim that in the case of a statement like the one expressed by (25e), there is no sentence shorter than (25) that can be used to convey it.

I don't want to push this too hard since in Section 2.2.5 I will argue that Wilson's account of Grice's maxims won't do. At present, however, I want to make a different point--namely that even if Wilson is right about how Grice's maxims work, her argument that negative sentences conversationally implicate their putative presuppositions must be rejected.

[33] On pages 7 and 8 of Presuppositions and Non-Truth-Conditional Semantics, Wilson considers the theoretical objection that her notions of entailment and truth condition are too wide for semantic purposes. She says,

> ". . . For example, it is a truth of logic that (21) entails (22):
> "(21) Metal expands on heating, and I am now heating the metal
> "(22) The metal will expand.
> But although (21) entails (22), it is not intuitively obvious that as a matter of semantic knowledge I can infer (22) from (21), or that (22) is a part of the meaning of (21). Similarly, if we take two necessary truths, such as (23) and (24), it will

follow from my definitions that they entail each other:

"(23) All sick pandas are sick

"(24) All bachelors are men.

But again, though an entailment relation holds between (23) and (24), it is intuitively clear that (23) is semantically independent of (24), and that the semantics should record this fact. For one who believes in the truth-conditional approach to semantics, the solution to this problem is to narrow down the types of truth-condition and entailment which are seen as semantically relevant. Wiggins, for example, in the article cited above, relies on the notion of a *designated truth condition* for each sentence. The designated truth-conditions for (23) and (24) will differ, and their semantic differences will thus be taken into account. In fact, a solution along these lines will follow automatically from the requirement that a semantic description be compositional, constructing the truth-conditions for a given sentence in terms of the items appearing in that sentence together with the syntactic description of the sentence. Hence a truth-conditional semanticist may concede that the notions of entailment and truth-condition are too wide for semantic purposes, and then proceed to narrow them down to the point where they coincide with semantic intuitions. At this point the objection will no longer hold. (pp. 7-8)"

This is all that Wilson has to say on the subject. Although a solution to the problem of necessary truths (her (23) and (24)) may follow automatically from the requirement of compositionality, nothing Wilson says solves the problem that I have raised in this section.

Note also that for Wilson's purposes, it won't do to eliminate all disjunctive statements like (25f) from sets of "designated" truth conditions. Consider (i).

(i) Either the president elected in 1980 will be a Democrat or he (she) will be a Republican.

The sentences in (ii) are individually sufficient and disjunctively necessary for (i) to be true.

(ii) a. The president elected in 1980 will be a Democrat.
b. The president elected in 1980 will be a Republican.

However, (i) would never be used to convey (iia) or (iib). Moreover, it would not normally be used on the basis of (iia) or (iib). The standard case in which a disjunction is asserted is one in which the speaker knows that one or the other of the disjuncts is true, but doesn't know which. Thus, if Wilson's "designated" truth conditions for (i) are to be possible interpretations of (i), then they must include the disjunction (i) itself. But then there is no obvious reason for excluding (25f) from the "designated" truth conditions of (25).

that a speaker must convey (d) or (e) if (a-c) are eliminated is to assume the central fact that needs to be accounted for--namely that one presupposes (26) when one uses (25) in isolation.

This brings up a more general point. It won't do to define the set of possible interpretations of a sentence to be that set which together with Gricean maxims determines what the sentence can be used to convey in isolation. For one thing, there is no such set. (e), (d, e), . . . (a-e) would all serve Wilson's purposes equally well.[34] Even if Wilson could find some way of picking out the sets she wanted, she would have to explain why these particular sets were selected.

A good illustration of this point is provided by (30).

30. It wasn't Sam who kissed Mary.

This sentence is customarily said to presuppose (31).

31. Someone kissed Mary.

To explain this, Wilson would presumably maintain that the set of possible interpretations of (30) is

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[34](25), in isolation or without clarification, "conveys" (e) rather than (d). Wilson recognizes this and tries to use Grice's principles to explain it. I discuss this in Section 2.2.5.

(32).[35]

32. a. No one kissed Mary.

b. Someone kissed Mary, but it wasn't Sam.

(32a) is shorter than (30). Therefore, Wilson would claim that Grice's maxims eliminate it in the same way they eliminate (25a-c). Since someone who believes (32b) must believe (31), Wilson would maintain that (30) conversationally implicates (31). However, unless she can tell us why (32) rather than (33) is the set of "possible interpretations" of (30), her "explanation" is useless.

33. a. Sam didn't kiss anyone.

b. Sam kissed someone, but it wasn't Mary.[36]

Note: it is just as easy to construct a Wilsonian "proof" that (30) conversationally implicates (34) as it is to argue that it implicates (31).

---

[35]Although Wilson doesn't discuss this example, the above analysis is required by her account. (The only example she does discuss is (25).) Actually, there are two other "interpretations" involved that are also ruled out by Grice's maxims.

(i) Sam doesn't exist.
(ii) Mary doesn't exist.

These "interpretations" do not affect my point and will be ignored here.

[36]On Wilson's account, (33a-b) are individually sufficient and disjunctively necessary conditions for (30) to be true. (Again Wilson would probably add (i) and (ii) of footnote 35.)

34. Sam kissed someone.

The "proof" runs as follows:[37]

> Since (30) can be uttered with either (33a) or (33b) appended as clarification, and without anomaly, (33a-b) are possible interpretations of (30). However, there would be no point in using (30) to convey (33a). If Sam didn't kiss anyone, then the shortest way of conveying this information is by saying that he didn't kiss anyone. Brevity, or the avoidance of unnecessary prolixity, is one of the Gricean goals of conversation. Moreover, if I want to convey the information that Sam didn't kiss anyone, (30) is a remarkably inefficient way of conveying this information, since it merely entails that *one* of (33a-b) is true. The avoidance of obscurity or ambiguity is another of the Gricean goals of conversation. In other words, someone obeying the Gricean maxims would simply never use (30) on the basis of (33a) since there is another shorter, more explicit and less misleading way to convey the information in (33a). Thus, when (30) is used in isolation, it conveys (33b). Since (33b) takes it for granted that (34) is true, (30) conversationally implicates (34).

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[37] What follows is a paraphrase of what Wilson says about (25). See the passage quoted above on pages 245-246 of the text.

Clearly, a theory that "explains" what is false as easily as it "explains" what is true is inadequate. Thus, *even if Wilson is right about how Grice's maxims eliminate "possible interpretations"*, she has failed to account for the presuppositions of negative sentences.

The reason she has failed is that her analysis implicitly relies on a notion of "possible interpretation" that begs all the important questions. She holds that (35-38) are all semantically equivalent.

35. Sam kissed Mary.
36. It was Sam who kissed Mary.
37. Mary was kissed by Sam.
38. It was Mary who was kissed by Sam.

A chief virtue of her account is supposed to be that different kinds (or scopes) of negation are not required. Thus, the negations of (35-38) should all be semantically equivalent.

Nevertheless, Wilson's account requires that the negations of (35), (36) and (38) have different "possible interpretations".[38] This means that "possible interpretation" is not a semantic notion and hence cannot be

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[38] (35) and (37) have the same presuppositions and so may have the same "possible interpretations".

defined in terms of semantically "designated truth conditions". It also means that some special mechanism must be devised for specifying the "possible interpretations" of a sentence. Unless this mechanism can be motivated independently, it constitutes a complication of the theory quite on a par with special mechanisms to compute presuppositions directly. Essentailly the same points can be made using a wide variety of examples.

2.2.3 A Further Source of Confusion

There is another reason why Wilson's argument appears to be more plausible on first glance than it really is. One can easily be confused about Premise 2.

> Premise 2
>
> A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification) *to convey* (a), (b), or (c).

In arguing for this premise, Wilson equatesit with Premise 2a.

> Premise 2a
>
> A speaker obeying Grice's maxims cannot use (25)

(in isolation or without clarification) *on the basis of* (a), (b), or (c).[39]

The difference between these two premises is that (2) talks about what a sentence can be used to *convey*, whereas (2a) is concerned with what can constitute the *grounds* or *evidence* for assertively uttering a sentence in isolation. These are not the same things.

It is one thing to say that a speaker is not using a sentence S to *convey* a proposition P. It is quite another to say that P is not *the basis* for a speaker's assertion of S. Consider (39), (40), and (41).

39. a. If Sam owns any paintings, then none of them are valuable.
    b. Sam has sold all his valuable possessions.
40. a. Either Sam does not own any paintings, or none of his paintings are valuable.
    b. Sam has sold all his valuable possessions.
41. a. Several people have been robbed.
    b. Bill, Henry, and Mary have been robbed.

---

[39]Wilson says that "Someone who was obeying the Gricean maxims would simply never use (25) *on the basis of* (c), since there is another, shorter, more explicit way *to convey* the information in (c). (Presuppositions and Non-Truth-Conditional Semantics, p. 100)" (my emphasis)

In each case, the truth of (b) is a sufficient condition for the truth of (a). Moreover, a speaker might assert (a) *on the basis of* his belief in (b). He might do this without *conveying* (b) or suggesting that it is true. For example, if what is relevant to the conversation in (41) is not *who* was robbed, but whether anyone was robbed, then one might appropriately assert (a) on the basis of (b) without any intention of conveying (b). Similar remarks apply to (39) and (40). Thus, if one wants to show that a certain statement P is not *the basis* for a speaker's remarks, then it is not enough to show that the speaker is not trying *to convey* P.

In itself, the confusion of (2) and (2a) is not particularly important. However, this confusion may lead to a much more serious mistake. It is tempting to think that if (2a) is true, then a speaker using (25) (in isolation or without clarification) must not know that any of (a-c) is true. From this, it is easy to jump to the further conclusion that the speaker must know that (a), (b), and (c) are *not* true. If this conclusion could be established, then Wilson would not have to worry about whether or not (a-e) exhaust the "truth conditions" or "possible interpretations" of (25). By concentrating on (a-c) alone, she would have shown that

(25) conversationally implicates (26).

Of course, the reasoning that leads to this conclusion is fallacious.[40] Premise 2 does not entail (2a); (2a) does not entail (2b); and (2b) does not entail (2c).

Premise 2

A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification) to convey (a), (b), or (c).

Premise 2a

A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification) on the basis of (a), (b), or (c).

Premise 2b

A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification) if he knows (believes) that (a), (b), or (c), is true.

Premise 2c

A speaker obeying Grice's maxims cannot use (25) (in isolation or without clarification) unless he knows (believes) that (a), (b), and (c) are not true.

---

[40]Note, I am not claiming that Wilson did reason in this way. Rather, I am trying to locate and eliminate a possible source of confusion.

The differences between (2, a, b, and c) are obvious when these principles are clearly formulated and compared with one another. However, when confronted with Wilson's argument, it is easy to overlook these differences.[41] When this confusion is combined with the confusion about what constitutes "the set of truth conditions" or "possible interpretations" of a sentence, her argument can appear quite plausible, when in fact it is not.

2.2.4 Summary

What I have shown is that Wilson's argument that negative sentences conversationally implicate their putative presuppositions must be rejected. It must be rejected even if one accepts her claim that Grice's maxims prevent one from using (25) to convey (a-c). In Section 2.2.5, I will show that even this latter claim is incorrect. One *cannot* use (25) to convey (a-c). However *Grice's maxims* are not responsible for this fact.[42] Finally, I will argue that negative sentences do not conversationally implicate their putative presuppositions.

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[41] The same kind of confusion can arise if one (fallaciously) reasons as follows: If Premise 2 is correct, then a speaker conversationally implicates that he is not using (25) to convey (a), (b), or (c). Therefore, he conversationally implicates that he is conveying the negation of (a), the negation of (b), and the negation of (c).

[42] Having noted the confusion of "to convey" and "on the basis of", I will continue to adopt the "to convey" interpretation unless otherwise indicated. This choice does not affect the arguments I will give.

2.2.5 "Be Brief"

Most of Wilson's discussion of (27) is concerned with trying to show that Grice's maxims prevent a speaker from using (25) to convey (a), (b), or (c). Wilson gives two arguments for this conclusion.

The first is based solely on the maxim "Be brief". The key presumption is that shorter sentences are to be preferred over longer ones. (a), (b), and (c) are shorter sentences than (25). Thus, the quickest and easiest way of conveying the information expressed by these sentences is to utter them assertively. Consequently, Wilson concludes that a speaker obeying Grice's maxims cannot use (25) to convey the information in (a), (b), or (c), since he would then be guilty of being unnecessarily verbose. According to this argument, such a speaker would choose (25c) over (25) simply because it is two words shorter.

Presumably the maxim "Be brief" plays some role in guiding conversation; however, it is hard to believe that it has the role that Wilson attributes to it. For example, some justification may be required for using the seven word sentence (42) rather than the five word sentence (43).

42. The story was reported by the Globe.

43. The Globe reported the story.

However, even if no justification is forthcoming, we hardly regard the violation of the maxim of brevity worth noticing. Certainly one is not *prevented* from using (42) where (43) would do just as well. If the maxim of brevity were the only reason not to use (25) to convey the information expressed by (c),[43] then violations here would also be negligible. Since (25) cannot be used to convey the information in (c), we must look for other explanations of the facts at hand.[44]

Wilson does just this. After invoking the maxim "Be brief" she adds the following:

> Moreover, if I want to convey the information that Bill is not ill, [25] is a remarkably inefficient way of conveying this information, since it merely entails that *one* of (a)-(e) is true. The avoidance of obscurity or ambiguity is another of the Gricean goals of conversation. In other words, someone who was obeying the Gricean maxims would simply never use [25] on the basis of (c), since there is another, shorter, more explicit and less misleading way to convey the information in (c) . . .[45]

Here Wilson suggests that in addition to the maxim

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[43](25c) is only one example. The same point could be made for (25a) and (25b).

[44]If the maxim of brevity were as important as Wilson claims, then it is hard to see how (25e) could ever be used. (25) is shorter than (e) and can also be used to express the information in (e). Thus, the maxim of brevity would preclude the use of (e).

[45]Wilson, Presuppositions and Non-Truth-Conditional Semantics, p. 100.

"Be brief", the maxims "Avoid ambiguity" and "Avoid obscurity of expression" are also involved in ruling out "interpretations" (a-c). This is initially puzzling. On Wilson's account, (25) is not ambiguous. At this point her terminology is misleading. According to her, each sufficient "truth condition" of a sentence is a "possible interpretation" of the sentence. Thus, a sentence having more than one sufficient "truth condition" has more than one "possible interpretation". However, the fact that a sentence has more than one "interpretation" does not show that it has more than one *meaning*. Thus, Wilson's observation that (25) merely entails that one of (a-e) is true does not show that (25) is ambiguous.[46]

Wilson's point can best be expressed by considering the first maxim of quantity--"Don't give too little information". This maxim tells us to avoid making a weaker (less informative) statement when we are in a position to make a stronger (more informative) statement that is relevant to the conversation. According to Wilson, the statements expressed by (a), (b), and (c)

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[46]Nor does it show that an utterance of (25) is ambiguous. An utterance may be ambiguous even when the sentence uttered is not--e.g., 'He is intelligent'. However, the fact that there is more than one sufficient truth condition for a sentence does not show that an utterance of the sentence is ambiguous.

entail, but are not entailed by the statement expressed by (25). Thus, (a), (b), and (c) express stronger statements than (25) does. Consequently, a speaker assertively uttering (25) rather than (a), (b), or (c) violates the first maxim of quantity.

This assumes that one cannot use (25) to convey the statements expressed by (a), (b), or (c). If one could, then no violation of the first maxim of quantity would occur. What must be explained is why (25) cannot be used to convey these statements.

Consider (c). According to Wilson, (c) contains information not found in (25)--i.e., (c) entails, but is not entailed by (25). Because of this, there is no way for a hearer to grasp that the information in (c) is what a speaker who utters (25) wishes to convey. Consequently, (25) is an obscure and ineffective way of communicating this information. This seems to be Wilson's point in invoking the maxim prohibiting obscurity of expression.

This position has one main virtue. It claims that the reason (25) cannot be used in place of (c) is not that (c) is *shorter* than (25) but rather that (25) is *less informative*. This is at least the right *kind* of reason for supposing that a certain sentence cannot be used to convey a certain statement. For example, it

is why (40a) normally cannot be used to convey (40b).

40. a. Either Sam does not own any paintings, or none of his paintings are valuable.

b. Sam has sold all his valuable possessions.

No one would claim that brevity is the reason (40a) cannot be used in place of (40b). There is no basis for thinking that length is any more important in the case of (25).

The argument just given might be seen as providing support for Wilson's analysis. Unfortunately, it doesn't. It applies to "interpretations" (d) and (e) every bit as much as it applies to (a-c). On Wilson's analysis, the statements expressed by (d) and (e) are weaker (less informative) than the statement expressed by (25). Consequently, if the uninformativeness of (25) rules out using it to convey (a-c), then this same uninformativeness must rule out using it to convey (d) or (e). However, not *all* of these "interpretations" can be eliminated since (25) can be used to convey (e). Clearly, something is wrong.[47]

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[47] If (a-e) were all ruled out by Gricean maxims, then (25) might still be used to convey the message that the disjunction of (a-e) is true. Of course, (25) can be used to convey this. However, this is not the only message that it can be used to convey. Similarly, if the first maxim of quantity ruled out using (25) (in isolation or without clarification) on the basis of (a-e), then one still would

To avoid this objection, Wilson must do two things. First, she must find a difference between (a-c) and (e) that is relevant to the operation of a maxim.[48] This maxim must prevent a speaker from using (25) in place of (a-c), but allow him to use it in place of (e). Second, she must show that the maxim in question has priority over the maxim prohibiting obscurity. Where the former conflicts with the latter, violations of the latter must be permitted.

Some maxims *do* have priority over others. For example, Grice observes that ". . . to make a less informative [i.e., weaker] statement rather than a more informative [i.e., stronger] statement would be to offend against the first maxim of quantity, *provided that the more informative statement, if made, would be of interest* [i.e., provided that it would be relevant]."[49] (my emphasis) Thus, the maxim of relevance takes

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be able to use (25) appropriately (in isolation) when one believed that at least one of (a-e) were true, but didn't know which. However, this is not the only basis that one might have for asserting (25).

[48] I assume here that although (25) can be used to convey (e), it cannot be used to convey (d). Wilson shares this assumption. In a moment I will present her argument for it. Until then I will concentrate only on (a-c) and (e).

[49] Grice, "Logic and Conversation," Lecture 4, unpublished manuscript. Presumably Grice means that asserting a weaker statement rather than a stronger one violates the first maxim of quantity provided that the *extra* information provided by the stronger statement is relevant to the conversation.

priority over the first maxim of quantity.

Unfortunately, the maxim of relevance does not distinguish between (a-c) and (e). One might claim that it is permissible to use a sentence that does not express the message that one is trying to convey provided that the presumption of relevance makes it clear what the message is. But this doesn't explain why a speaker can use (25) to convey (e) in a context in which (e) is relevant, but he cannot use (25) to convey (a-c) in a context in which *they* are relevant. Thus, the priority of the maxim of relevance does not account for the difference between (a-c) and (e).

This brings me back to the maxim "Be brief". *It* distinguishes between (a-c) and (e). If it had priority over "Avoid obscurity", then one could use a sentence that did not express what one wanted to convey, provided that the sentence were shorter than any sentence that did express one's message. Unfortunately, the maxim of brevity does not have this consequence.

Wilson did not grasp this point. The reason she didn't is connected with her dubious notion of the "possible interpretations" of a sentence. She assumed that each sentence S is associated with a set T of "possible interpretations" which includes all of the

statements that S can be used to convey. She thought that if the maxim of brevity eliminated all members of T except one, then it would be obvious to the hearer which statement someone asserting S intended to convey.

This is how Wilson treats (25). The (a-c) "interpretations" are eliminated because they are shorter than (25). What about (d) and (e)? According to Wilson,

> The choice between (d) and (e) interpretations can be similarly weighted in favour of (e) in the following way. If a speaker had wanted to convey (d), then most efficient way of conveying this information would be by saying [#]:
>
> [#] John does not know that Bill is ill.
>
> While [25] has [#] as a possible interpretation, it also has the possible interpretation given in (e) above. Since there are thus two available ways of conveying the information in [#] *of roughly the same length*, one of which is open to other interpretations, the Gricean goal of clarity will dictate [#] as the correct form in which to convey this information. This leaves (e) as the most likely interpretation of [25] according to Gricean principles--as it in fact is.[50] (my emphasis)

In this passage, Wilson implicitly claims the priority of "Be brief" over other Gricean maxims. (d) is eliminated because there is a way of conveying the information it expresses that "is roughly the same length" as (25) but is not "open to other interpretations."[51]

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[50] Wilson, Presuppositions and Non-Truth-Conditional Semantics, p. 100.

[51] Of course, (d) itself is longer than (25). On Wilson's account the reason that (#) can be used to convey the information expressed by (d) is that (#) conversationally implicates that (a-c) are false--i.e., that John exists and Bill is ill.

Of course, there is also a way of expressing the information in (e) that is not "open to other interpretations"--by using (e) itself. Apparently, the reason that "the Gricean goal of clarity" doesn't eliminate (e) is that it isn't "of roughly the same length" as (25). It is four words longer. Thus, on Wilson's analysis, the maxim "Be brief" takes priority over other Gricean maxims and is responsible for the fact that a speaker cannot use (25) to convey (a-d) but can use it to convey (e).

This position cannot be correct. I have already argued that the maxim of brevity won't bear the weight that Wilson places on it. Giving this maxim priority over other Gricean maxims just compounds the problem. Thus, Wilson's argument that Grice's maxims explain why (25) cannot be used to convey (a-d) must be rejected.

The issue becomes even clearer when Wilson's unjustified reliance on "possible interpretations" is eliminated. She implicitly maintains that a sentence S can be used to convey one of its "possible interpretations" P just in case S is shorter than any sentence that expresses P. By dropping reference to "possible interpretations" we get (44).

44. A sentence S can be used to convey a statement P (that it does not semantically express) just in case S is shorter than any sentence that does express P.

(44) is clearly false.[52] Thus, the maxim of brevity does not explain why (25) cannot be used to convey the statements expressed by (a-d), but can be used to convey the statement expressed by (e).

2.3 Conclusion

The results of Section 2.2 undermine Wilson's argument that negative sentences conversationally implicate their putative presuppositions. In Sections 2.2.1-2.2.4, I demonstrated that her argument is invalid and cannot be repaired. In Section 2.2.5, I showed that she fails to establish one of her premises. This leaves her analysis unsupported.

The problem with Wilson's view is even more serious. I do not think that she has simply failed to come up with the right argument to establish her conclusion.

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[52] If it were true, then it would be just as correct to use (i) to convey (iii) as it is to use it to convey (ii).

(i) John hasn't stopped smoking.
(ii) John used to smoke and still does.
(iii) John never smoked before and doesn't now.

Rather it seems to me that her conclusion is false. Negative sentences do not conversationally implicate their putative presuppositions.

For example, on Wilson's account, competent speakers recognize that (47) and (48) are logically equivalent.

47. Sam didn't flunk the test.

48. It wasn't Sam who flunked the test.

(47) does not conversationally implicate (49).

49. Someone flunked the test.

If (48) does, then the maxims that give rise to this implicature must treat (47) and (48) differently.[53] This eliminates the maxims of quantity and quality.

Quantity: (i) Don't give too little information.
(ii) Don't give too much information.

Quality: (i) Do not make statements which you believe to be false.
(ii) Do not make statements for which you have insufficient evidence.

"Be brief", "Avoid ambiguity", and "Avoid obscurity"

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[53] This argument assumes that Wilson's notion of "possible interpretation" cannot be used to distinguish between (47) and (48).

are not responsible for the difference between (47) and (48) either. This leaves only "Be relevant" and "Be orderly". I see no way of using these maxims to establish the alleged conversational implicature. I conclude that (48) does not conversationally implicate (49). More generally, negative sentences do not conversationally implicate their putative presuppositions.

III. Disjunctions and Conditionals

3.1 Wilson's Analysis

Wilson argues that disjunctions and conditionals implicate their putative presuppositions. However, she does not claim that the implicature is conversational. Rather, it is supposed to arise from two new maxims of confirmation.

20. Don't assert a contingent disjunction unless you have some evidence for the truth of both disjuncts.

21. Don't assert a contingent conditional unless you have some evidence for the truth of the antecedent.

In Section I, I used these maxims to define a notion of W-implicature.

22. A speaker who assertively utters a sentence S W-implicates a proposition Q, if and only if
    (i) he is to be presumed to be observing principles (20) and (21); and
    (ii) the supposition that he believes Q is required in order to make his assertive utterance of S consistent with this presumption; and
    (iii) the speaker thinks (and would expect the hearer to think that the speaker thinks) that the hearer can work out or grasp intuitively that the supposition in (ii) is required.

The notion of a *sentence* W-implicating a proposition is defined as follows:

23. A *sentence S* W-implicates a proposition Q if and only if a speaker who assertively utters S in normal circumstances and without explicit qualification W-implicates Q.

Wilson's thesis is that disjunctions and conditionals W-implicate their putative presuppositions.

For example, a speaker who assertively utters (50a) or (50b) would normally be taken to suggest the truth of (50c).

50. a. If the King of Thessalonia came to the party, then the party was a success.
    b. Either the King of Thessalonia came to the party, or there were no monarchs in attendance.
    c. There is a (unique) King of Thessalonia.

Wilson's explanation of this is that (50a) and (50b) W-implicate (50c). She argues that a speaker uttering (50a-b) and observing (20) and (21) must have evidence for the truth of (51).

51. The King of Thessalonia came to the party.

Of course, it is not required that the speaker have conclusive evidence for (51) or even that he have enough evidence to warrant asserting it. If he had that much evidence, then he would not assert (50a) or (50b), but rather would make a stronger statement. Still, the (alleged) fact that he must have *some* evidence for (51) provides Wilson with an argument. According to her, it is impossible to have *any* evidence for (51)

unless the truth of (50c) is given. Consequently, the speaker must believe (50c), and (50a-b) must W-implicate it.[54]

Wilson seems to think that this kind of account can be given for all contingent disjunctions and conditionals. Although she recognizes that her notion of evidence raises questions, she maintains that the job of answering these questions does not fall within the scope of linguistic theory, but rather is a task for confirmation theory. She is content to make a *prima facie* case and depend on the investigations of confirmation theorists to provide further support for her position.

Wilson says that if principles like (20) and (21) exist

> . . . they raise as many questions as they answer. In particular, they raise the question of what counts as evidence for a given

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[54] Assumption (i) is necessary to make this argument go through.

(i) Competent speakers know that it is impossible to have evidence for (51) unless (50c) is true.

The supposition that is required to make the speaker's utterance consistent with the presumption that he is observing (20) and (21) is (ii). (See interpretation (b) in footnote (8).)

(ii) The speaker believes that he has evidence for (51).

Given (i) and (ii) we may conclude that the speaker believes that (50c) is true. Since Wilson would accept (i), she would claim that (50a-b) W-implicate (50c).

> statement. I have said that in general, if a speaker utters one of (67)-(69) he is assumed to have evidence for (70):
>
> (67) Nixon may regret being bald
> (68) If Nixon regrets being bald, I'm leaving
> (69) Either Nixon regrets being bald or his brother does
> (70) Nixon regrets being bald.
>
> Now although there are a number of necessary conditions for the truth of (70), only some of these necessary conditions count towards confirming the truth of (70). For example, (70) cannot be true unless Nixon exists; but the fact that Nixon exists does not count as confirmation of (70). Similarly, (70) cannot be true unless Nixon is bald; but the fact that Nixon is bald would not be accepted as evidence in favour of (70). What would count as evidence would be Nixon's behaviour given that the first two conditions were satisfied; for example, his insistence on subsidising the National Foundation for Research on Hair Restoration, or his gloom when looking at the back of his head in the mirror. While it is certainly part of the job of a semantic theory to investigate valid deductive reasoning, it does not seem to me to be part of its job to investigate confirmation theory. And insofar as the interpretation of modals, conditionals and disjunctions depends on what counts as confirmation of a related categorical statement, it does not seem to me to be the job of semantics to investigate this.
>
> If what I have been saying in this section is correct, it provides an additional reason for abandoning the semantic approach to presuppositions. Presuppositions tie up with the theory of confirmation in the following way. What have been treated as presuppositions of various types are exactly those truth-conditions which would not be counted as evidence for the truth of their related sentences. What have been treated as entailments or assertions are just those truth conditions which *would* count as evidence for the truth of their related sentences.[55]

In the subsections that follow I will make three points about Wilson's account of disjunctions and conditionals. First, it conflicts with her claim that negative sentences suggest rather than entail[56] their putative

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[55] Wilson, Presuppositions and Non-Truth-Conditional Semantics, pp. 108-109. Note: the presuppositions of (68) and (69) are neither necessary nor sufficient truth conditions of these sentences.

[56] P entails Q if and only if the truth of Q is a necessary condition for P to be true.

presuppositions. Second, it leaves many presuppositions unexplained. Third, (20) and (21) are not acceptable maxims. Speakers do not follow them and hearers do not presume that they do.

3.2 Negations, Disjunctions and Conditionals

I have already argued that negative sentences do not conversationally implicate their presuppositions. This conclusion is compatible with Wilson's claim that such sentences only suggest that their presuppositions are true. For example, it could be that negative sentences *conventionally implicate*[57] or *pragmatically presuppose* the relevant statements. Even if Wilson were to give up her views about *conversational* implicature and negation, she could retain her semantic analysis of negative sentences. On this analysis, (52) is logically compatible with the falsity of its presupposition (53).[58]

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[57] A sentence S conventionally implicates a statement P if S suggests P and this suggestion arises not from general, conversational, or pragmatic principles, but rather from the meaning of S. See Grice, "Logic and Conversation," Lecture 2, unpublished manuscript.

[58] These examples were selected for convenience. Any presupposition-bearing negative sentence will do.

52. The King of Thessalonia didn't come to the party.

53. There is a (unique) King of Thessalonia.

In fact, the negation of (53) [i.e., (54)] entails (52).

54. There isn't a (unique) King of Thessalonia.

In this subsection I will show that Wilson's account of disjunctions and conditionals conflicts with her semantic analysis of negation. If (20) and (21) are responsible for the presuppositions of (55a-b), then (54) does not entail (52). Rather (52) entails (53).

55. a. If the King of Thessalonia didn't come to the party, then the party was a flop.

b. Either the King of Thessalonia didn't come to the party, or all the monarchs in Europe were there.

Wilson admits that a speaker who assertively utters (55a-b) in isolation or without clarification suggests (53).[59] If maxims (20) and (21) are responsible

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[59] Wilson does not discuss these particular examples. However, she does discuss a number of others. For example, she says

> "I am as convinced as is the most devout presuppositionalist that anyone who asserts (25), (27) or (29) in isolation, or without qualification, in general suggests quite strongly that (26), (28) and (30) are also true:
>
> "25. Mary doesn't regret that her grandmother was trampled by an antelope.
>
> "26. Mary's grandmother was trampled by an antelope.

for this suggestion, then a speaker assertively uttering (55a) or (55b) must believe that he has evidence for (52).

52. The King of Thessalonia didn't come to the party.

Wilson must also maintain that a speaker cannot believe that he has such evidence unless he believes (53).

53. There is a (unique) King of Thessalonia.

Only if she accepts this can she hold that (55a-b) W-implicate (53).

However, since she also claims that (54) entails (52), she must simultaneously hold the following two assumptions.

Assumption 1

One can believe that one has evidence for (52) only if one believes (53).

Assumption 2

The negation of (53) [i.e., (54)] entails (52).

"27. If I stop playing chess with Fischer, I'll start playing with Spassky.
"28. I (will) have been playing chess with Fischer.
"29. Either it wasn't Blossom who put Gluefast in my contact lenses or she is lying to me.
"30. Someone put Gluefast in my contact lenses.
What I do deny is that this suggestion can be successfully treated as either a logical presupposition or an entailment. (Presuppositions and Non-Truth-Conditional Semantics, p. 22)"

Wilson thinks that, in general, the putative presuppositions of disjuncts are suggested by the entire disjunction and that the putative presuppositions of the antecedent are suggested by the conditional.

These assumptions lead to a false conclusion.

From Assumption 1 it follows that if a speaker does not believe (53), then he does not believe that he has evidence for (52). Suppose that he does not believe (53). Instead he believes its negation (54) and recognizes that (54) entails (52). On Wilson's assumptions, such a speaker believes (52) but does not think that he has any evidence for his belief. Surely this need not be the case. On the contrary, such a speaker would naturally regard his evidence for (54) as evidence for (52).[60]

This argument shows that either Assumption 1 or Assumption 2 (or both) is false. Assumption 1 is a consequence of Wilson's pragmatic analysis of disjunctions and conditionals. Assumption 2 is a consequence of her semantic analysis of negation. Therefore, the two analyses conflict.

If (55a-b) W-implicate (53), then (54) does not entail (52).

52. The King of Thessalonia didn't come to the party.

53. There is a (unique) King of Thessalonia.

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[60] On Wilson's account (52) and (i) are semantically equivalent.

(52) The King of Thessalonia didn't come to the party.
(i) It is not true that the King of Thessalonia came to the party.

(54) entails both. Surely one can believe that one's evidence for (54) is evidence for (i). Thus, on Wilson's account the same should be true of (54) and (52).

54. There isn't a (unique) King of Thessalonia.

55. a. If the King of Thessalonia didn't come to the party, then the party was a flop.

    b. Either the King of Thessalonia didn't come to the party, or all the monarchs in Europe were there.

From this it does not automatically follow that (52) entails (53). However, on any reasonable account of negation it will. For example, both Russell and theorists of logical presupposition agree that (52) entails (53) on the reading in which (52) is not entailed by (54). If there is such a reading, then there is no plausible alternative to this assumption. Consequently, Wilson is faced with a dilemma. Either she must hold that her analysis of disjunctions and conditionals does not account for the presuppositions of (55a-b)[61] or she must give up her central claim that negative sentences do not entail their presuppositions.

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[61] The same point holds for all disjunctions whose presuppositions are inherited from a negative disjunct and all conditionals whose presuppositions are inherited from a negative antecedent.

3.3 Recursion

Negative sentences are not the only sentences that cause Wilson difficulties. Compound sentences are also a problem. When they are embedded in larger compounds, they give rise to presuppositions that Wilson cannot explain. Consider (57).

57. a. If the King of Thessalonia or the Queen of Moravia went to the party, then it was a success.

    b. If the King of Thessalonia was injured or the Queen of Moravia was insulted, then there will be war.

Although (57a) and (57b) each suggest the truth of (58) and (59), Wilson cannot account for this.[62]

58. There is a (unique) King of Thessalonia.

59. There is a (unique) Queen of Moravia.

Wilson's principle (21) requires a speaker asserting (57a) to have some evidence for (60a); likewise a

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[62] Wilson seems not to have noticed sentences like those in (57). Karttunen has. Since Wilson's theory is supposed to explain everything that Karttunen's does, without its problems, Wilson is called upon to account for (57). She gives no indication that she would deny that the sentences in (57) suggest (58) and (59).

speaker asserting (57b) is required to have evidence for (60b).

60. a. Either the King of Thessalonia or the Queen of Moravia went to the party.
    b. Either the King of Thessalonia was injured or the Queen of Moravia was insulted.

However, one can have evidence for a disjunction without having evidence for both of its disjuncts. Thus, even on Wilson's account, one can have evidence for (60a-b) without believing *both* (58) and (59). Consequently, (57a-b) do not W-implicate (58) or (59). Wilson fails to account for these suggestions.

If it were possible to invoke principle (20), then she could explain these suggestions. This principle stipulates that a speaker who *asserts* a disjunction must have evidence for both disjuncts. Applying the principle to (60a) would require the speaker to have evidence for (61) and (62).

61. The King of Thessalonia went to the party.
62. The Queen of Moravia went to the party.

Applying it to (60b) would require the speaker to have evidence for (63) and (64).

63. The King of Thessalonia was injured.

64. The Queen of Moravia was insulted.

According to Wilson, such a speaker must believe (58) and (59).

However, (20) cannot be invoked. It requires a speaker *asserting* a disjunction to have evidence for both disjuncts. But (60a-b) are not asserted. In this example, they are the antecedents of conditionals. Since one who asserts a conditional does not assert its antecedent, one who asserts (57a) or (57b) does not assert (60a) or (60b). Thus, Wilson's account of disjunctions and conditionals leaves (57a-b) unexplained.

This shortcoming of Wilson's analysis is no minor matter. Her theory cannot account for the way presuppositions are recursively "passed on" from smaller to larger constituents in a compound sentence, nor is there any obvious way of revising (20) to handle these cases. Wilson cannot maintain that whenever one *uses* a disjunction one must have evidence for both of its disjuncts. (65), (66), and (67) show this.

65. I have no evidence to support the claim that either the King of Thessalonia or the Queen of Moravia went to the party.

66. It is not true that either the King of Thessalonia or the Queen of Moravia went to the party.

67. Bill said that there is a King of Thessalonia and a Queen of Moravia and that either the King of Thessalonia was injured or the Queen of Moravia was insulted.

Consequently, I see no way of salvaging Wilson's account.

3.4 Spurious Maxims

In subsections 3.2 and 3.3 I showed that there are disjunctions and conditionals that Wilson's maxims cannot handle. In this subsection I will show that the maxims themselves are not acceptable. It is simply not true that speakers are presumed to follow them unless they indicate otherwise.

First consider (68).

68. Either there is no King of Thessalonia or the King of Thessalonia is in hiding.

There is no presumption that a speaker asserting (68) has evidence for both disjunctions--i.e., there is no presumption that Wilson's maxims are being obeyed.

Wilson would agree with this, but she probably would not find it troubling. On her account, one cannot have any evidence for (69) unless one believes (70.

69. The King of Thessalonia is in hiding.

70. There is a King of Thessalonia.

A speaker who believed (70) would never used (68)--provided that he was observing Grice's maxims. Rather he would make the stronger statement (69).

Wilson's explanation of (68) would probably be the following: a speaker using (68) is not presumed to be obeying (20) because he *is* presumed to be obeying Grice's maxims. More generally, a speaker will be presumed to be observing *Wilson's* maxims only if this presumption is consistent with the claim he is also observing *Grice's*.

A more troublesome example is (71).

71. Either the president elected in 1980 will be a Republican or the president elected in 1980 will be a Democrat.

One can assert (71) without having evidence for either of its disjuncts. For example, if one were discussing the strength of the two major parties in the United States, then one could appropriately assert (71) on the basis of the historical weakness of third party candidates. No disclaimers would be necessary nor would one have to indicate the basis for one's assertion. Hearers would simply not presume that the speaker must have evidence for *either* disjunct.

Why is there no presumption? I think it is because Wilson's maxims do not guide conversation. What would Wilson say? On her account, (20) requires the speaker to have evidence for incompatible propositions[63]--(72) and (73).

72. The president elected in 1980 will be a Republican.
73. The president elected in 1980 will be a Democrat.

Wilson might claim that the incompatibility of (72) and (73) explains why hearers do not presume her maxims are being observed. For example, she might claim that

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[63] I assume that it is understood that if one is a Republican, then one is not a Democrat and vice versa.

it is impossible to have evidence for incompatible propositions.

It isn't. One cannot have *conclusive* evidence for such propositions, but Wilson's maxims do not require this. In fact, it is commonplace to have *some* evidence for incompatible claims. For example, I now have evidence for both (74) and (75).[64]

74. Ford will be the Republican Party's nominee in 1976.

75. Reagan will be the Republican Party's nominee in 1976.

Evidence for the former is the fact that Ford is the incumbent and incumbent presidents are traditionally nominated. Evidence for the latter is a recent Gallup Poll showing Reagan ahead. Thus, if I were to assert (76), then I would have evidence for both disjuncts, even though they are incompatible. Moreover, this evidence would be part of my evidence for (76).

76. Either Ford will be the Republican Party's nominee in 1976 or Reagan will be.

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[64] Here I assume that it is understood that only one of these can be true.

Hearers do not, in general, presume that someone who asserts a disjunction has evidence for the individual disjuncts; nor do they presume that he doesn't have evidence. In some contexts, they presume that he does; in others, that he doesn't; and in still others, they make no presumption at all. This means that there is no general presumption that Wilson's maxims are being obeyed. They simply do not guide conversation.

The same point is illustrated by (77) and (78).

77. Either the president elected in 1980 will be a Republican or the Republican Party will go broke.

78. If the president elected in 1980 is a Republican, then the Democrats will have to reorganize.

Here there is no question of having evidence for incompatible propositions. Moreover, (77) and (78) can be appropriately asserted by a speaker who does not have evidence for (72).

72. The president elected in 1980 will be a Republican.

Consider (78). If the point of the conversation were to indicate what it would mean for the Democrats to be out of power for many years, then (78) would be appropriate

even if there were no evidence for its antecedent. The speaker would not have to make it clear that he was opting out of Wilson's maxims. It would not enter anyone's mind that the maxims were relevant. A similar point holds for (77).

It won't do to claim that the contexts I have suggested are special and that the normal presumption in favor of (20) and (21) is suspended in these cases. To claim this would be to make Wilson's theory unacceptably vague. The danger is that it may become vacuous. Unless some account can be given of where these maxims can and cannot be invoked, she has no theory at all.

In fact, she is in trouble no matter what move she makes. If she claims that the presumption in favor of (20) and (21) is suspended in these contexts, then she has no explanation of the fact that asserting (77) or (78) in these contexts suggests (79).

79. There will be a president elected in 1980.

On the other hand, if she claims that the presumption her maxims are being obeyed remains in force, then (77) and (78) show this claim to be false. To be sure, these sentences suggest (79). Hence, the speaker must have evidence for (79). However, it is crucial to Wilson's

argument that evidence for (79) is *not* evidence for (72). "What have been treated as presuppositions of various types are exactly those truth conditions which would not be counted as evidence for the truth of their related sentences."[65] Consequently, Wilson cannot handle (77) and (78).

(80) and (81) are also counterexamples to Wilson's maxims.

80. If there is a doctor in the house, then I'll be surprised.

81. Either there is a doctor in the house, or Susan's done for.

A speaker asserting these statements is not presumed to have evidence for (82).

82. There is a doctor in the house.

Thus, Wilson's maxims do not apply to them.

Now consider the sentences in (83) and (84).

83. a. If there is a doctor in the building and he is on duty, then I'll be surprised.

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[65] Wilson, Presuppositions and Non-Truth-Conditional Semantics, p. 109.

b. If the doctor in the building is on duty, then I'll be surprised.

84. a. Either there is a doctor in the building and he is on duty, or Susan is done for.

b. Either the doctor in the building is on duty, or Susan is done for.

Since Wilson's maxims do not apply to the (a) examples, there is no reason to suppose that they apply to the (b) examples. Of course, (83b) and (84b) suggest (85).

85. There is a doctor in the buiding.

Thus, a speaker asserting one of these statements must have evidence for (85). Note the explanation. (83b) and (84b) suggest (85); therefore, the speaker must have evidence for (85). What is primary is the *suggestion*, not the *evidence*. Consequently, the suggestion is not explained by the need for evidence.

IV. Summing Up

In Part 4 I have shown two things. First, negative sentences do not conversationally implicate their presuppositions. Second, Wilson's principles of confirmation

do not account for the presuppositions of disjunctions and conditionals. Thus, Wilson's positive theory of how presuppositions arise is wrong.

I want to emphasize that although her positive theory fails, there is much in Wilson's discussion of presupposition that is of permanent value. Her posing of issues, marshalling of data, and criticism of certain alternative accounts is very effective. I have not mentioned some of these issues simply because Wilson does such a good job on them herself.

One place where I did follow Wilson was in Part 2 where I argued that the presuppositions of compound sentences are non-logical and have the force of suggestions rather than entailments. The status of negative sentences is less clear. Such sentences *might* carry logical presuppositions. If they do, they are ambiguous between internal and external negation readings. On the other hand, they may only suggest their presuppositions. Nothing that I have said decides conclusively between these alternatives.

PART 5

KARTTUNEN'S THEORY OF PRESUPPOSITION

I. Overview

1.1 Introduction

Like Wilson, Karttunen not only attacks theories of logical presupposition, he also develops his own account of how presuppositions arise. Unlike Wilson, he does not try to "explain away" the notion of presupposition. He does not appeal to any independent principles of evidence or conversation. Instead, he focuses on compound sentences and tries to develop a mechanism that allows one to compute the presuppositions of a compound sentence from the presuppositions and entailments of simpler sentences.

The starting point for his work was provided by Langedoen and Savin in "The Projection Problem for Presuppositions."[1] They argued that the presuppositions of a subordinate clause always become presuppositions of the entire sentence of which the clause is a part. Karttunen showed that this is wrong and tried to develop a more adequate account. His theory covers many different

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[1]Langendoen, D. Terence, and Savin, Harris B., "The Projection Problem for Presuppositions," in Studies in Linguistic Semantics edited by Charles Fillmore and D. T. Langendoen, (New York: Holt, Rinehart, and Winston, Inc., 1971), pp. 55-62.

types of sentences and constructions. In this paper I will be concerned with his analysis of disjunctions, conjunctions, and conditionals. Karttunen discusses this aspect of his theory in "Presuppositions of Compound Sentences" and "Presupposition in Linguistic Context."[2]

In Parts 1 and 2, I outlined a simplified version of Karttunen's account. Karttunen presents his theory in two stages. Theses (1-3) comprise the first stage.[3]

1. a. If A k-presupposes C, then ⌜If A, then B⌝ k-presupposes C.
   b. If B k-presupposes C, and A does not entail C, then ⌜If A, then B⌝ k-presupposes C.
2. a. If A k-presupposes C, then ⌜A and B⌝ k-presupposes C.
   b. If B k-presupposes C and A does not entail C, then ⌜A and B⌝ k-presupposes C.
3. a. If A k-presupposes C and ⌜-B⌝ does not entail C, then ⌜Either A or B⌝ k-presupposes C.
   b. If B k-presupposes C and ⌜-A⌝ does not entail

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[2]Karttunen, "Presuppositions of Compound Sentences," Linguistic Inquiry 4, no. 2 (Spring 1973): 169-194; and "Presupposition and Linguistic Context," Theoretical Linguistics 1, no. 1/2 (1974): 182-194.

[3]Karttunen refers to the principles that determine the presuppositions of conditionals, conjunctions and disjunctions as "filtering principles". If A is a constituent of such a compound sentence S, and if A presupposes P, then P is "filtered out" in the context of S iff S does not presuppose P.

C, then ⌜Either A or B⌝ k-presupposes C.[4]

In the second stage, presupposition is relativized to context. The fact that compound sentences carry suggestions in certain situations but not in others leads Karttunen to abandon (1-3) and to express the ideas behind them in a radically different way. I will first examine the simplified account (theses 1-3) in order to provide a better understanding of the fundamental nature of the theory. I will then move on to the more complex analysis.

1.2 Simplifying Assumptions

In this subsection I will lay the foundation for my analysis of Karttunen's theory. I will state several assumptions and clarify certain notions that are essential to an evaluation of his account.

1.2.1 K-Presupposition

In developing his theory Karttunen is not always explicit about what it means to say that one sentence

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[4]Principles 1 and 2 are Karttunen's. Principle 3 is a modification of his proposal to make the conditions for disjunctions symmetrical. Later in Part 5 I will discuss whether or not the conditions for conjunctions and conditionals should also be symmetrical.

It is also understood that the only k-presuppositions of conjunctions, disjunctions, and conditionals are those that arise from these filtering principles.

k-presupposes another. He does not begin with a formal definition of k-presupposition. Rather he assumes that simple positive sentences and their negations bear their standard presuppositions. Whether or not other sentences bear k-presuppositions is determined by a number of linguistic tests.

According to Karttunen, if one were unsure about whether or not a sentence S k-presupposes something P, then one could test for this by embedding S in 'It may be that . . .' or by embedding it in a disjunction or a conditional.[5] If the resulting complex sentence does not implicate P, then P is not a k-presupposition of S. If the complex sentence does implicate P, then this is evidence that S k-presupposes P.

Suppose that one wanted to know whether or not the conjunction (4) k-presupposes or merely entails (5).

4. It is Susan who has the jewels, and it is Mary who has the paintings.
5. Someone has the jewels, and someone has the paintings.

Since (6), (7), and (8) implicate (5), this is evidence

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[5]More precisely, one must embed S in a disjunction or a conditional in which filtering does not occur.

that (4) k-presupposes (5).

6. It may be that it is Susan who has the jewels and it is Mary who has the paintings.
7. Either it is Susan who has the jewels and it is Mary who has the paintings, or we'll never recover the missing items.
8. If it is Susan who has the jewels and it is Mary who has the paintings, then the missing items will soon be returned.[6]

For Karttunen, k-presupposition is (roughly) what is preserved by the contexts mentioned in his tests. The standard presuppositions of simple positive sentences and their negations are k-presuppositions. ⌜It may be that S⌝

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[6]Note: the contexts in question do not always preserve entailment nor do they always preserve suggestion. Although (i) entails (5), examples (ii), (iii), and (iv) do not suggest (5).

(i) Susan has the jewels and Mary has the paintings.
(ii) It may be that Susan has the jewels and Mary has the paintings.
(iii) Either Susan has the jewels and Mary has the paintings, or the items have been lost.
(iv) If Susan has the jewels and Mary has the paintings, then the missing items will soon be returned.

Similarly, although an assertive utterance of (v) suggests (vi), examples (vii), (viii), and (ix) do not suggest (vi).

(v) It is snowing.
(vi) I believe it is snowing.
(vii) It may be that it is snowing.
(viii) Either it is snowing, or the streets will be clear.
(ix) If it is snowing, then the children will be happy.

k-presupposes P if and only if S does. A disjunction, conjunction, or conditional k-presupposes P if and only if principle (1), (2), or (3) says that it does.

This is a reconstruction of Karttunen's procedure. On this reconstruction, his tests provide the basis for an inductive definition of k-presupposition. Karttunen assumes that there is a way of defining the class of k-presuppositions of simple positive sentences and their negations. The definition is completed by principles like (1), (2) and (3).[7] If this procedure can be carried through, Karttunen will have succeeded in formally characterizing a notion of presupposition.[8]

Of course, this is not enough. Karttunen must also specify the empirical claim that is made by saying that one sentence k-presupposes another. Although he is not fully explicit about this, he seems to assume (9).

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[7]This is only a partial account of Karttunen's definition. A complete account would include principles for determining the k-presuppositions of other types of complex sentences like factives, propositional attitudes, and modals.

[8]Note: Karttunen's procedure is different from that of many theorists. Karttunen's definition of k-presupposition is inductive and mechanical. Although it formally characterizes the class of k-presuppositions, it does not indicate what empirical claim is made by saying that one sentence k-presupposes another. This is accomplished by principles (9) and (10) below. In short, Karttunen first formally characterizes a theoretical notion, and then gives partial specification of its role in an empirical theory.

9. If a sentence S k-presupposes a sentence P, then a speaker who assertively utters S (in normal circumstances and without clarification) indicates that he believes P and that he assumes his audience accepts (or will accept) P.[9]

I suspect that Karttunen would also be willing to adopt (10).

10. If S k-presupposes P, then it is inappropriate for a speaker to utter S assertively (in normal circumstances and without clarification) unless he believes P and his audience accepts (or will accept) P.

These principles give his theory empirical content.

(9) and (10) are a good beginning. Although they are by no means final, they are clear enough to serve as working principles and to provide us with data to test Karttunen's theory.[10] In addition, they contain a theoretical insight worth noticing. Karttunen observes that in certain cases it is appropriate to assertively utter a sentence even if one knows that the audience does

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[9](9) is compatible with the claim that some sentences entail their k-presuppositions, and others do not.

[10]Although the data is not ideal, there are enough clear cases to justify the enterprise. I will try to follow the commonly accepted characterizations of this data wherever possible.

not share one's assumptions. (9) and (10) are designed to take this into account.

For example, one might appropriately assert each of the (a) statements below even if one knew that one's audience had no prior opinion as to truth or falsity of the corresponding (b) statements.

11. a. If I had a dime, I'd buy you a Coke.[11]
    b. I don't have a dime.
12. a. Jones lives in the third brick house down the street from the post office.[12]
    b. There are at least three brick houses down the street from the post office.
13. a. My brother is smarter than anyone in this room.
    b. I have a brother.

When can a speaker assert the (a) statements without assuming that his listeners already accept the (b) statements? When he knows they *will* accept them. For example, (12a) may be used in giving directions to someone who hasn't the slightest idea that there are any brick houses near the post office. This is because the hearer

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[11] Karttunen takes counterfactual conditionals to presuppose the falsity of their antecedents. He cites this sentence on page 170 of "Presuppositions of Compound Sentences," Linguistic Inquiry 4 (Spring 1973).

[12] Karttunen cites this sentence on page 191 of "Presupposition and Linguistic Context," Theoretical Linguistics 1 (1974).

is prepared to accept the speaker's assumptions and has no reason to doubt them. Similarly, in asserting (13a), I assume that my audience will grant that I have a brother no matter how much they might disagree with my assertion. If I thought they weren't willing to grant this, then I would not use (13a), but would use (14) instead.

14. I have a brother and he is smarter than anyone in this room.

In short, presuppositions can introduce new information, but (normally) this information should not be controversial.

1.2.2 The Basis Step of the Induction

My statement of Karttunen's program leaves it open as to whether or not simple positive sentences and their negations bear logical presuppositions. The question at issue involves the clause(s) covering these sentences in the inductive definition of k-presupposition. If they do bear logical presuppositions, then the clause may be (15).

15. If P is a necessary condition for S to have a

truth value, then S k-presupposes P.[13]

Incorporating (15) in a semantic theory in which certain simple sentences and their negations are truth-valueless would allow Karttunen to predict which of these sentences carry k-presuppositions.[14] The addition of principles like (1-3) would complete the inductive definition.

Karttunen's program is also compatible with the claim that there are no logical presuppositions. If this claim is correct, then the theory must somehow specify certain entailments of simple positive sentences as being k-presuppositions. The clause for negation might then be (16).

16. If S k-presupposes P, and S' is a negation of S, then S' k-presupposes P.[15]

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[13] This clause could be formulated differently depending on one's favorite definition of logical presupposition.

[14] If one adopts (15), then one must be careful how one defines the connectives. (15) (together with semantic theory) should not introduce k-presuppositions where principles (1-3) do not sanction them. If "and", "or", and "if, then" are truth functional, then one who accepts (1-3) has the option of including truth-valuelessness in their truth tables only in the positions occupied by "*" below.

and	T	F	*
T			
F			
*	(*)	(*)	(*)

if, then	T	F	*
T			
F			
*	(*)	(*)	(*)

or	T	F	*
T			
F			
*			(*)

[15] (16) treats all negations of a sentence alike. It is not necessary that Karttunen accept this. For example, he could distinguish different types of negation exemplified in (i) and (ii).

(i) The King of France isn't wise.
(ii) It is not the case that the King of France is wise.

On this account, there is no need to suppose that negative sentences entail their k-presuppositions. Thus, within the context of Karttunen's theory, adopting (16) is an alternative to positing logical presupposition.

When Karttunen reformulates his theory to account for the relativization of presupposition to context, he does adopt (16). However, he gives no argument for rejecting logical presupposition.[16] I will not follow Karttunen in this respect. For the present, I will leave it open whether or not the (a) and (b) sentences in (17-21) logically presuppose the (c) sentences.

17. a. The man in the next room is a philosopher.
    b. The man in the next room isn't a philosopher.
    c. There is a man in the next room.
18. a. All of John's children are intelligent.
    b. Not all of John's children are intelligent.
    c. John has children.
19. a. It is Susan who has the jewels.
    b. It isn't Susan who has the jewels.
    c. Someone has the jewels.
20. a. Sam has stopped smoking.
    b. Sam hasn't stopped smoking.

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[16] He gives some arguments in "Presuppositions of Compound Sentences." I have already shown in Part 2 that these arguments are unsound.

c. Sam used to smoke.

21. a. Bill realizes that the Red Sox won the pennant.

b. Bill doesn't realize that the Red Sox won the pennant.

c. The Red Sox won the pennant.

This will allow me to raise certain issues that might otherwise be obscured. In particular, I will raise the issue of whether or not Karttunen's theory provides any reason for abandoning logical presupposition.

1.2.3 Entailment

In this essay I have assumed that a sentence A entails a sentence B if and only if the truth of B is necessary for the truth of A. Karttunen also accepts this definition. He says that "In general, we say that A semantically entails B (A ||- B) if (and only if) B is true whenever A is."[17] However, he recognizes that this definition leads to problems in the formulation of his filtering principles (1-3).[18]

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[17] Karttunen, "Presuppositions of Compound Sentences," p. 177.

[18] Ibid, p. 183.

According to the above definition of entailment, every sentence entails every necessary truth. Now consider (22).

22. a. Either my information is incorrect, or John doesn't know that 2^{11} equals 2048.
    b. 2^{11} equals 2048.

(22b) is necessarily true and hence is entailed by (23).

23. My information isn't correct.

Thus, according to Karttunen's principle (3), (22a) does not k-presuppose (22b).[19] Consequently, Karttunen fails to predict that a speaker who asserts (22a) takes (22b) for granted--i.e., Karttunen fails to predict that such a speaker suggests that he believes (22b) and indicates that he assumes that his audience accepts (or will accept) (22b).

This example might not be problematic for Karttunen if the notion of entailment used in (1-3) is one that belongs strictly to semantic theory as opposed to mathematics or formal logic.[20] But this raises the

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[19] Principle (3) does not mark (22b) as one of the k-presuppositions of (22a). Since all k-presuppositions of a disjunction arise from this principle, (22a) does not k-presuppose (22b).

[20] Such a notion would have to have an extension different from the extension of the notion of entailment that I have been using in this paper.

question as to what notion(s) of entailment is (are) specially the province of semantics. Karttunen does not try to answer this question; nor will I.[21]

Nevertheless, I suspect that Karttunen's theory demands an entailment relation that captures some notion of immediate inference.[22] That is, I suspect that the entailment relation needed for (1-3) is such that if S entails E, then competent speakers will recognize the entailment without laborious calculation and demonstration.[23] Unless this is the case, the connection between k-presupposition and what a speaker takes for granted will be seriously weakened. Thus, I will follow Karttunen in presenting examples in which the entailments in question would be easily recognized by all competent speakers.

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[21] Jerrold Katz discusses this question in Chapter 6 of Semantic Theory, (New York: Harper and Row, 1972).

[22] On page 189 of "Presuppositions and Linguistic Context," Karttunen says that "It is implicit in this treatment that every individual's beliefs are considered to be closed under entailment. I am not sure whether this is a defect."

[23] This principle is meant to be a *necessary* condition for characterizing the notion of entailment that Karttunen requires. I do not claim that it is a sufficient condition. Another necessary condition is that if S entails E, then the truth of E is a necessary condition for the truth of S.

1.3 The Aims of My Analysis

In the sections that follow I will do three things. I will explicate Karttunen's theory starting with what I have already presented and going on to his more complex account. Second, I will indicate several problems with his theory. Third, I will show how Karttunen might modify his theory in order to resolve some of the problems he encounters.

II. Counterevidence

The evidence that Karttunen cites for his analysis is inconclusive. Consider the filtering principle for conditionals.

1. a. If A k-presupposes C, then ⌜If A, then B⌝ k-presupposes C.
   b. If B k-presupposes C, and A *does not entail C*, then ⌜If A, then B⌝ k-presupposes C.

The crucial part of this principle is the italicized clause that "filters out" the presuppositions of B that are entailed by A. Karttunen's evidence for this clause is provided by the contrast between (24) and (25).

These are the only sentences that he cites.

24. If baldness is hereditary, then all of Jack's children are bald.

    A = 'Baldness is hereditary'

    B = 'All of Jack's children are bald'

    C = 'Jack has children'

25. a. If Jack has children, then all of Jack's children are bald.

    A = 'Jack has children'

    B = 'All of Jack's children are bald'

    C = 'Jack has children'

b. If it is true that Jack has children, then all of Jack's children are bald.

    A = 'It is true that Jack has children'

    B = 'All of Jack's children are bald'

    C = 'Jack has children'

c. If Fred has managed to kiss Cecilia, Fred will kiss Cecilia again.

    A = 'Fred has managed to kiss Cecilia'

    B = 'Fred will kiss Cecilia again'

    C = 'Fred has kissed Cecilia'

d. If Harry is married, then his wife is no longer living with him.[24]

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[24]Karttunen, "Presuppositions of Compound Sentences," p. 177.

A = 'Harry is married'

B = 'Harry's wife is no longer living with him'

C = 'Harry has a wife'

A speaker who assertively utters (24) implicates that Jack has children. He does not implicate this if he utters either (25a) or (25b). Moreover, a speaker assertively uttering (25c) or (d) does not implicate the k-presuppositions of their consequents. Since (1b) allows Karttunen to account for this, he takes these sentences as evidence for (1b).

However, they are also evidence for the following alternative conditions.

1. b'. If B k-presupposes C, and *A is not logically equivalent to C*, then ⌜If A, then B⌝ k-presupposes C.

   b*. If B k-presupposes C, and *C does not entail A*, then ⌜If A, then B⌝ k-presupposes C.

   b#. If B k-presupposes C, and *neither A nor C entails the other*, then ⌜If A, then B⌝ k-presupposes C.

Each of these conditions, together with (9), predicts

that one who assertively utters (24) implicates that Jack has children. No such prediction is made for (25a) or (25b).

> 9. If a sentence S k-presupposes a sentence P, then a speaker who assertively utters S (in normal circumstances and without clarification) indicates that he believes P and that he assumes his audience accepts (or will accept) P.[25]

These conditions also account for (25c) and (d). Thus, Karttunen's data does not distinguish among the different formulations of (1).

Karttunen presents only two kinds of cases--those in which the k-presupposition C is logically independent of the antecedent and those in which it is equivalent to it. (24) is an example of the first type. The sentences in (25) are examples of the second type.[26] Since A is logically equivalent to C in (25), the italicized clauses

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[25] In what follows I will sometimes talk of a speaker who "takes P for granted". I use this locution as short for "believes P and assumes the audience accepts (or will accept) P".

[26] Note: to say that two sentences are logically equivalent is not to say that they mean the same thing. For example, A and C of (25c) are not synonymous. My claim is only that they entail one another.

In the case of (25d) someone might claim that the consequent also k-presupposes that Harry's wife used to live with him. If so, then this is a k-presupposition that is not entailed by A, and (25d) is an apparent counterexample to (1b). Other apparent counterexamples of this type will be discussed in a moment. For the present, I note only that Karttunen says that C of (25d) is "just what the consequent proposes. ("Presuppositions of Compound Sentences," p. 177)"

in (1b), (1b'), (1b*), and (1b#) are not satisfied, and C is "filtered out". Consequently, each of the conditions handles Karttunen's data.

To decide among these alternatives, we must look for conditionals in which the antecedent is not logically equivalent to the k-presupposition of the consequent. The sentences below are examples of this.

26. If Sam paid the bill promptly, then his payment is in the mail.

    A = 'Sam paid the bill promptly'

    B = 'Sam's payment (of the bill) is in the mail'

    C = 'Sam paid the bill'

27. If Bill killed Martha, then he knows she is dead.

    A = 'Bill killed Martha'

    B = 'Bill knows Martha is dead'

    C = 'Martha is dead'

28. If there is a King of France and he is intelligent, then the King of France is one of the few intelligent monarchs in the world.

    A = 'There is a King of France and he is intelligent'

    B = 'The King of France is one of the few intelligent monarchs in the world'

    C = 'There is a King of France'

In these cases, A entails C but not vice versa. Principles (1b') and (1b*) (together with (9)) incorrectly predict that a speaker assertively uttering (26), (27), or (28) takes C for granted. Thus, if (9) is correct, then (1b') and (1b*) are false.

This leaves (1b) and (1b#). Sentences (29-31) bear on the choice among these alternatives.

29. If there was a mouse in the bathtub, then Susan knows who put it there.

    A = 'There was a mouse in the bathtub'

    B = 'Susan knows who put the mouse in the bathtub'

    C = 'Someone put a mouse in the bathtub'

30. If Martha is dead, then it was Bill who killed her.

    A = 'Martha is dead'

    B = 'It was Bill who killed Martha'

    C = 'Someone killed Martha'

31. If John has children, then all of John's sons are bald.[27]

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[27]This sentence is somewhat odd. It is hard to see how a speaker could regard the truth of the antecedent as warranting the claim that John has sons. In Section VI I will show how Karttunen exploits this oddity in attempting to account for (31) within the context of his "second stage" theory. For the present, it is enough to note that (31) does not implicate C. Thus, it is a counterexample to (1b).

A = 'John has children'

B = 'All of John's sons are bald'

C = 'John has sons'

In each of these cases, C entails but is not entailed by A. Moreover, someone assertively uttering (29), (30), or (31) does not take C for granted. Thus, if (9) is correct, then Karttunen's (1b) is false and must be replaced by (1b#).

The same point holds for conjunctions. Karttunen's filtering principle for these sentences is (2).

2. a. If A k-presupposes C, then ⌜A and B⌝ k-presupposes C.

   b. If B k-presupposes C, and *A does not entail C*, then ⌜A and B⌝ k-presupposes C.

Again, the crucial part of this principle is the italicized clause that "filters out" the presuppositions of B that are entailed by A. Karttunen's evidence for this clause is provided by the contrast between (32) and (33-36).[28]

32. Baldness is hereditary, and all of Jack's children are bald.

A = 'Baldness is hereditary'

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[28]Karttunen, "Presuppositions of Compound Sentences," pp. 178-179.

B = 'All of Jack's children are bald'

C = 'Jack has children'

33. Jack has children and all of Jack's children are bald.

A = 'Jack has children'

B = 'All of Jack's children are bald'

C = 'Jack has children'

34. It is true that Jack has children, and all of Jack's children are bald.

A = 'It is true that Jack has children'

B = 'All of Jack's children are bald'

C = 'Jack has children'

35. Fred has managed to kiss Cecilia and Fred will kiss Cecilia again.

A = 'Fred has managed to kiss Cecilia'

B = 'Fred will kiss Cecilia again'

C = 'Fred has kissed Cecilia'

36. Harry is married, and his wife is no longer living with him.

A = 'Harry is married'

B = 'Harry's wife is no longer living with him'

C = 'Harry has a wife'[29]

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[29]Someone might claim that the second conjunct also k-presupposes that Harry's wife used to live with him. See footnote 26.

First consider (32). Since A does not entail C, (2b) predicts that (32) k-presupposes that Jack has children. Next consider (33-36). In each case, A entails C. Thus, (2b) "filters out" the k-presupposition, and the conjunction is not claimed to k-presuppose C.

All of these predictions are correct. This can be seen by embedding (32-36) in certain complex sentences.

37. a. It may be that baldness is hereditary and that all of Jack's children are bald.
    b. If baldness is hereditary and all of Jack's children are bald, then Jack is resigned to his fate.
    c. Jack has children.
38. a. It may be that Jack has children and that all of Jack's children are bald.
    b. If Jack has children and all of Jack's children are bald, then Jack is resigned to his fate.
    c. Jack has children.
39. a. It may be that it is true that Jack has children and that all of Jack's children are bald.
    b. If it is true that Jack has children and all of Jack's children are bald, then Jack is

resigned to his fate.

c. Jack has children.

40. a. It may be that Fred has managed to kiss Cecilia and that Fred will kiss Cecilia again.

b. If Fred has managed to kiss Cecilia and Fred will kiss Cecilia again, then he is a happy man.

c. Fred has kissed Cecilia.

41. a. It may be that Harry is married and that his wife is no longer living with him.

b. If Harry is married and his wife is no longer living with him, then Harry is living alone.

c. Harry has a wife.

A speaker assertively uttering (37a) or (37b) implicates (37c). This is accounted for by the fact that (32) k-presupposes (37c). The principles for modals and conditionals predict that (37a-b) inherit this k-presupposition. On the other hand, a speaker assertively uttering (38a,b-41a,b) does not implicate the corresponding (c) statement. Karttunen's filtering condition (2) handles this by not including (c) among the k-presuppositions of (33-36).

Unfortunately, these facts are also accounted for by the following alternatives to (2b).

2. b. If B k-presupposes C and *A does not entail C*, then ⌜A and B⌝ k-presupposes C.

2. b'. If B k-presupposes C, and *A is not logically equivalent to C*, then ⌜A and B⌝ k-presupposes C.

2. b*. If B k-presupposes C, and *C does not entail A*, then ⌜A and B⌝ k-presupposes C.

2. b#. If B k-presupposes C, and *neither A nor C entails the other*, then ⌜A and B⌝ k-presupposes C.

Since the only examples of filtering that Karttunen gives are ones in which A is logically equivalent to C, his data does not distinguish among the different formulations of (2). To distinguish among these alternatives, one must find cases in which A entails but is not entailed by C, and cases in which C entails but is not entailed by A. (42-44) are examples of the first type. (45-47) are examples of the second type.

42. Bill used to smoke a lot and he hasn't stopped smoking.

A = 'Bill used to smoke a lot'

B = 'Bill hasn't stopped smoking'

C = 'Bill has smoked.

43. Bill killed Martha and knows she is dead.

A = 'Bill killed Martha'

B = 'Bill knows Martha is dead'

C = 'Martha is dead'

44. Harry kissed Susan last week and today he kissed her again.

    A = 'Harry kissed Susan last week'

    B = 'Today Harry kissed Susan again'

    C = 'Harry has kissed Susan at least once'

45. John has children and his sons are bald'

    A = 'John has children'

    B = 'John's sons are bald'

    C = 'John has sons'

46. There was a mouse in the bathtub, and Susan knows who put it there.

    A = 'There was a mouse in the bathtub'

    B = 'Susan knows who put the mouse there'

    C = 'Someone put a mouse in the bathtub'

47. Martha is dead and it was Bill who killed her.

    A = 'Martha is dead'

    B = 'It was Bill who killed Martha'

    C = 'Someone killed Martha'

If principle (9) is correct, then none of (42-47) k-presupposes C. This can be seen by embedding these conjunctions under 'It may be that' or by including them as one of the constituents in a disjunction or conditional. A speaker assertively uttering the (a) or (b) sentences

below does not take the corresponding (c) statements for granted.

48. a. It may be that Bill used to smoke a lot and that he hasn't stopped smoking.
    b. If Bill used to smoke a lot and he hasn't stopped smoking, then he'll probably get cancer.
    c. Bill has smoked.
49. a. It may be that Bill killed Martha and knows she is dead.
    b. If Bill killed Martha and knows she is dead, then he must be a terrible person.
    c. Martha is dead.
50. a. It may be that Harry kissed Susan last week, and today he kissed her again.
    b. If Harry kissed Susan last week and today he kissed her again, then he must be in love.
    c. Harry has kissed Susan.
51. a. It may be that John has children and that his sons are bald.
    b. If John has children and his sons are bald, then Mary will be disappointed.
    c. John has sons.

52. a. It may be that there was a mouse in the bathtub and that Susan knows who put it there.
    b. If there was a mouse in the bathtub and Susan knows who put it there, then someone's in trouble.
    c. Someone put a mouse in the bathtub.
53. a. It may be that Martha is dead and that it was Bill who killed her.
    b. If Martha is dead and it was Bill who killed her, then Bill must be a terrible person.
    c. Someone killed Martha.

Examples (42-44) and (48-50) are counterexamples to (2b') and (2b*). Examples (45-47) and (51-53) are counterexamples to Karttunen's (2b). Consequently, (2b) must be replaced by (2b#).

A similar point holds for disjunctions. The evidence that Karttunen cites does not distinguish among (3b), (3b'), (3b*) and (3b#).

3. b. If B k-presupposes C, and ⌜-A⌝ [30] *does not entail C*, then ⌜Either A or B⌝ k-presupposes C.
3. b'. If B k-presupposes C, and ⌜-A⌝ *is not logically equivalent to C*, then ⌜Either A or B⌝ k-presupposes C.

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[30] It is not always clear what sentence Karttunen has in mind as ⌜-A⌝ for a given A. I discuss this issue in detail in Section IV.

3. b*. If B k-presupposes C and *C does not entail* ⌜-A⌝, then ⌜Either A or B⌝ k-presupposes C.

3. b#. If B k-presupposes C, and neither ⌜-A⌝ *nor C entails the other,* then ⌜Either A or B⌝ k-presupposes C.[31]

Unfortunately, the data needed to choose among these alternatives is not as clear as it is for conditionals

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[31]The evidence Karttunen cites for (3b) is provided by (i-v).

(i) Either baldness is not hereditary, or all of Jack's children are bald.
⌜-A⌝ = 'Baldness is hereditary'
B = 'All of Jack's children are bald'
C = 'Jack has children'

(ii) Either Jack has no children, or all of Jack's children are bald.
⌜-A⌝ = 'Jack has children'
B = 'All of Jack's children are bald'
C = 'Jack has children'

(iii) Either it is false that Jack has children, or all of Jack's children are bald.
⌜-A⌝ = 'It isn't false that Jack has children'
B = 'All of Jack's children are bald'
C = 'Jack has children'

(iv) Either Bill has always refrained from beating his wife, or Bill has already stopped beating her.
⌜-A⌝ = 'Bill hasn't always refrained from beating his wife'
B = 'Bill has already stopped beating his wife'
C = 'Bill has beaten his wife'

(v) Either Harry is not married at all, or his wife is no longer living with him.
⌜-A⌝ = 'Harry is married'
B = 'Harry's wife is no longer living with him'
C = 'Harry has a wife'

A speaker assertively uttering (i) implicates C. This is not the case with (ii-v). In these cases A is logically equivalent to C. Thus, (3b), (3b'), (3b*) and (3b#) each "filter out" C.

and conjunctions. Consequently, I will not decide here among the different formulations of (3).[32]

III. Relativizing to Context

3.1 Abandoning "Stage 1"

In the last section I showed that if (9) is correct, then Karttunen's filtering principles (1) and (2) are false and (3) is questionable. The alternatives to (1-3) are (1#-3#).

1#. a. If A k-presupposes C, then ⌜If A, then B⌝ k-presupposes C.

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[32] Two sentences that provide some evidence for (3b#) are (i) and (ii).

(i) Either Sam didn't pay his bill promptly, or his payment is in the mail.
⌜-A⌝ = 'Sam paid his bill promptly'
B = 'Sam's payment (of his bill) is in the mail'
C = 'Sam paid his bill'

(ii) Either there is a treasure on the island and Harold has found it, or he knows by now that there is no treasure at all on the island.
⌜-A⌝ = 'It is not the case that there is treasure on the island and Harold has found it'
B = 'Harold knows by now that there is no treasure at all on the island'
C = 'There is no treasure on the island'

It seems to me that a speaker assertively uttering either (i) or (ii) does not implicate C. If this is so, then (i) and (ii) are counterexamples to (3b), (3b') and (3b*).

b. If B k-presupposes C, and neither A nor C entails the other, then ⌜If A, then B⌝ k-presupposes C.

2#. a. If A k-presupposes C, then ⌜A and B⌝ k-presupposes C.

b. If B k-presupposes C, and neither A nor C entails the other, then ⌜A and B⌝ k-presupposes C.

3#. a. If A k-presupposes C, and neither ⌜-B⌝ nor C entails the other, then ⌜Either A or B⌝ k-presupposes C.

b. If B k-presupposes C, and neither ⌜-A⌝ nor C entails the other, then ⌜Either A or B⌝ k-presupposes C.

However, one need not adopt (1#-3#). One might try to reformulate (9) so as to save (1-3). Alternatively, one might simply reject (9) together with all the filtering principles considered thus far and adopt a radically different approach. This is what Karttunen does.[33]

Karttunen doesn't consider any alternatives to (1-3) in presenting the first stage of his theory; nor does he mention any of the evidence against (1-3) and in favor of

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[33] Karttunen, "Presupposition and Linguistic Context," Theoretical Linguistics 1, no. 1/2 (1974).

(1#-3#). However, (1-3) are merely steps on the way to a more sophisticated theory. The principles of this theory make use of context in a way that (1-3) do not. This changes the import of some of the examples in the last section. But before I can show this I must present the more sophisticated theory.

Up to now I have been considering sentences in isolation without taking into account the effects of different contexts. I have been assuming that if S k-presupposes P, then a speaker assertively uttering S takes P for granted unless he explicitly indicates otherwise. The only role of context that I have considered is that of explicitly denying the k-presuppositions of an assertion.[34]

Karttunen points out that context plays a much larger role than this. He says that context is involved in "filtering out" the presuppositions of compound sentences. Consider the following examples given by Karttunen.

54. a. Either Geraldine never wore Holy Underwear, or she has given up wearing them.

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[34]I have also limited my attention to utterances in neutral contexts--viz., contexts in which the speaker is not trying to be sarcastic, confuse the issue and so forth. I will continue to limit my attention to such contexts.

⌜-A⌝ = 'Geraldine has worn Holy Underwear'

B = 'Geraldine has given up wearing them'

C = 'Geraldine has worn Holy Underwear'

54. b. Either Geraldine never was a Mormon, or she has given up wearing Holy Underwear.

⌜-A⌝ = 'Geraldine is (or was) a Mormon'

B = 'Geraldine has given up wearing Holy Underwear'

C = 'Geraldine has worn Holy Underwear'

55. a. If Nixon appoints a homosexual to the Cabinet, then he will regret it.

A = 'Nixon will appoint a homosexual to the Cabinet'

B = 'Nixon will regret appointing a homosexual to the Cabinet'

C = 'Nixon will appoint a homosexual to the Cabinet'

b. If Nixon appoints J. Edgar Hoover to the Cabinet, then he will regret having appointed a homosexual.

A = 'Nixon will appoint J. Edgar Hoover to the Cabinet'

B = 'Nixon will regret having appointed a homosexual'

C = 'Nixon will appoint a homosexual to the Cabinet'

56. a. If Haldeman is guilty, then Nixon is guilty, too.

A = 'Haldeman is guilty'

B = 'Nixon is guilty, too'

C = 'Someone other than Nixon is guilty'

b. If Miss Woods destroyed the tapes, then Nixon is guilty, too.

A = 'Miss Woods destroyed the tapes'

B = 'Nixon is guilty, too'

C = 'Someone other than Nixon is guilty'

(1-3) predict that the k-presupposition C is "filtered out" in (54a), (55a), and (56a).[35] In these cases, the compound sentence does not, in fact, inherit the k-presupposition of the relevant constituent. Thus, (1-3) block the incorrect prediction that a speaker assertively uttering one of these sentences takes C for granted.

The situation is otherwise with the (b) sentences. In (54b) ⌜-A⌝ does not entail C. In (55b) and (56b), A doesn't entail C. Thus, (1-3) predict that (b) k-presupposes C in each case.[36] This consequence together with (9) predicts that a speaker assertively

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[35] (1#-3#) also "filter out" these k-presuppositions.

[36] The same point holds for (1#-3#).

uttering one of these sentences takes C for granted.

This prediction is false. In some contexts a speaker may take C for granted, but he does not do so in all contexts. In the case of (54b), Karttunen asks us to imagine a situation in which both speaker and hearer assume (54c).

54. c. All Mormons wear Holy Underwear.

In such a context one might appropriately utter (54b) without believing that Geraldine ever wore Holy Underwear and without assuming that the audience believes this either.

The relevant contexts for (55b) and (56b) are those in which (55c) and (56c) respectively are included in the background assumptions common to speakers and hearers.

55. c. J. Edgar Hoover is a homosexual.

56. c. Destroying the tapes is a crime.

A speaker assertively uttering (55b) or (56b) in such a context need not be taking the k-presupposition of the consequent for granted.

(54-56) show that Karttunen's "first stage" theory is incorrect. He locates the problem in the failure of principles (1-3) to use the conversational context of an utterance in "filtering out" the relevant presuppositions.

According to Karttunen, a speaker who utters (54b) in a context that includes (54c) does not suggest C because *the context* together with ⌜-A⌝ entails C. Similar remarks apply to (55b) and (56b). If Karttunen is right, then the filtering clauses in his principles must be modified to reflect the role played by the conversational context.[37]

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[37]Initially, Karttunen had some difficulty in reformulating his conditions. He talked about the presuppositions of simple sentences and their negations as being "absolute" and those of compound sentences as being "relative to context". "Absolute presuppositions" were to be invariant from context to context. "Relative presuppositions" were not. The "relative presuppositions" of a compound sentence S were to be computed on the basis of the constituents of S, their presuppositions (relative and absolute), and the context X.

The problem with this approach was not that Karttunen developed inadequate machinery, but that he had difficulty giving a coherent account of what he was doing. What, on this account, does it mean to say that one sentence presupposes another? Karttunen said that he had some definition like (i) in mind.

(i) "Surface sentence A pragmatically presupposes a logical form L, if and only if it is the case that A can be felicitously uttered only in contexts which entail L ("Presupposition and Linguistic Context," pp. 181-182)."

Note: according to (i) the presuppositions of a sentence can't vary from context to context. If a sentence S can be felicitously uttered in a context that does not entail P, then clearly it is not the case that S can be felicitously uttered *only* in contexts that entail P. Nevertheless, Karttunen continued to talk of the presuppositions of compound sentences as varying from context to context.

Karttunen's problem was that his filtering principles were stated in terms of relative presuppositions; however, the definition of presupposition that he adopted to give his theory empirical content [i.e., (i)] did not apply to this relative notion. For this reason some of his theoretical discussion is obscure and needs to be reconstructed.

Fortunately, it is easy to do this, and, in the end, Karttunen himself came up with the account that he needed. He said, "...we say that the sentence 'If A, then B' can be felicitously uttered in context X only if X entails all of the logical forms in the set [of presuppositions of 'If A, then B' relative to X] (ibid, p. 184)"

This suggests a more general characterization.

(ii) If a sentence S k-presupposes a sentence P with respect to

3.2 "Stage 2"

In modifying his theory, Karttunen abandons the notion of k-presupposition for compound sentences and replaces it with the notion of a context X *satisfying-the-presuppositions-of* S. As before, his definition is inductive. Although the basis step is provided by simple positive sentences, Karttunen has no theory about how the presuppositions of these sentences are characterized. He simply assumes that they bear the presuppositions that they are customarily said to carry. A context X *satisfies-the-presuppositions-of* a simple positive sentence S if and only if X entails all of the presuppositions of S. Karttunen's clauses for negations, conditionals, conjunctions, and disjunctions are as follows:

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a context of background assumptions X, then either X entails P or uttering S in X is inappropriate.

Of course, this is not a *definition* of presupposition with respect to context; nor can it be turned into one by making it a biconditional. If this were done, then all entailments of X would be presuppositions of S with respect to X. Still (ii) is sufficient to give a theory of "relative presupposition" empirical content provided that the notion of "relative presupposition" can be recursively characterized by Karttunen's filtering conditions.

Although this kind of theory is possible, Karttunen eventually found a much more elegant way of accounting for the data. This account is discussed in Section 3.2.

57. A context X *satisfies-the-presuppositions-of* ⌜-S⌝ if and only if X *satisfies-the-presuppositions-of* S.[38]

58. A context X *satisfies-the-presuppositions-of* ⌜If A, then B⌝ if and only if

    (i) X *satisfies-the-presuppositions-of* A; and

    (ii) X U A *satisfies-the-presuppositions-of* B.

59. A context X *satisfies-the-presuppositions-of* ⌜Either A or B⌝ if and only if

    (i) X U ⌜-A⌝ *satisfies-the-presuppositions-of* B;

    (ii) X U ⌜-B⌝ *satisfies-the-presuppositions-of* A.[39]

60. A context X *satisfies-the-presuppositions-of* ⌜A and B⌝ if and only if

    (i) X *satisfies-the-presuppositions-of* A; and

    (ii) X U A *satisfies-the-presuppositions-of* B.

Karttunen is not fully explicit about what empirical claim is made by saying that a context satisfies or does not satisfy the presuppositions of a sentence; yet he seems to accept (61).

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[38] Karttunen says that this condition applies to "internal negations". He does not say what he means by this, nor does he give any argument for or against the claim that negatives sentences bear logical presuppositions. I will discuss this issue in Section IV below.

[39] Karttunen gives both symmetric and asymmetric conditions for disjunctions. For reasons cited in Part 2, I will consider only the symmetric condition.

61. If X does not *satisfy-the-presuppositions-of* S, then it is inappropriate for a speaker to assertively utter S in X.[40]

The reason for not making (61) a biconditional is that there may be factors independent of presupposition that make the utterance of a sentence inappropriate in a given context. Thus, a context X might *satisfy-the-presuppositions-of* S without it being appropriate to assertively utter S in X. Since (61) is not intended to be a definition, this is not a problem.

For Karttunen, a context is the set of background assumptions common to speakers and hearers. He says that

> . . . a conversational context, a set of logical forms, specifies what can be taken for granted in making the next speech act. What this common set of background assumptions contains depends on what has been said previously and other aspects of the communicative situation. In a fully explicit discourse, the presuppositions of the next sentence uttered are satisfied by the current context . . .
>
> . . . Once the new sentence has been uttered, the context will be incremented to include the new shared information. Viewed in this light, a theory of presupposition amounts to a theory of a rational order of contexts from smaller to larger sets of shared information. At each step along the way that a fully explicit discourse proceeds, the current context satisfies the presuppositions of the next sentence that in turn increments it to a new context.[41]

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[40] Although this principle is vauge, it is clear enough for us to recognize certain obvious cases. Note, (61) parallels the earlier principle (10).

[41] Karttunen, "Presupposition and Linguistic Context," p. 190. Karttunen notes that this conception of presupposition was developed independently by Stalnaker.

One qualification to this view must be made. In discussing Karttunen's first stage theory I noted that k-presuppositions can introduce new information so long as this information is uncontroversial. This is why the italicized clause in (10) was included.

> 10. If S k-presupposes P, then it is inappropriate for a speaker to utter S assertively (in normal circumstances and without clarification) unless he believes P and his audience accepts (*or will accept*) P.

A similar point holds for the notion of a context satisfying-the-presuppositions-of a sentence. Karttunen says

> . . . ordinary conversation does not always proceed in the ideal orderly fashion described earlier. People do make leaps and shortcuts by using sentences whose presuppositions are not satisfied in the conversational context. This is the rule rather than the exception, and we should not base our notion of presupposition on the false premise that it does not or should not happen. But granting that ordinary discourse is not always fully explicit in the above sense, I think we can maintain that a sentence is always taken to be an increment to a context that satisfies its presuppositions. If the current conversational context does not suffice, then listener is entitled and expected to extend it as required. He must determine for himself what context he is supposed to be in on the basis of what was said and, if he is willing to go along with it, make the same tacit extension that his interlocutor appears to have made.[42]

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[42] Ibid, p. 191.

This suggests that (61) be reformulated as (62).

62. If X does not *satisfy-the-presuppositions-of* S, then it is inappropriate for a speaker to assertively utter S in X unless there is a proposition Q such that

    (i) Q U X *satisfies-the-presuppositions-of* S; and

    (ii) Q is uncontroversial--i.e., the audience is prepared to grant this.

Although (62) is not as precise as one might wish, it is clear enough to provide empirical content for Karttunen's principles (57-60).

According to (57-60), (63) is inappropriate in normal contexts that do not include (64),[43] whereas (65) is appropriate (so far as presupposition is concerned) in any context.[44]

63. If baldness is hereditary, then all of John's children are bald.

64. John has children.

65. If John has children, then all of his children are bald.

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[43](63) is satisfied by a context X only if X U 'Baldness is hereditary' entails 'John has children'.

[44]I am ignoring here the fact that a context for (65) must entail that John exists.

(57-60) and (1-3) treat (63) and (64) in roughly the same way. (57-60) differ from (1-3) in that the former take account of the difference between assertively uttering a compound sentence in one context rather than another.

For example, (1-3) incorrectly predict that a speaker assertively uttering (66) implicates (67).

66. If Plunkett leaves the Patriots, the Patriots will regret losing the best quarterback they ever had.
67. The Patriots will lose the best quarterback they ever had.

(57-60) avoid this incorrect prediction. According to these principles, a context X satisfies-the-presuppositions-of (66) if X entails (68).

68. Plunkett is the best quarterback the Patriots ever had.

Thus, Karttunen's second stage theory correctly predicts that a speaker assertively uttering (66) in a context that includes (68) is not interpreted as taking (67) for granted.[45]

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[45]Nevertheless, it remains to be seen whether or not Karttunen's second stage theory can accommodate the counterexamples to (1-3) mentioned in Section II. I will deal with this topic in Section VI.

3.3 Filtering and Cancellation

In discussing Karttunen's first stage theory of k-presupposition I distinguished between filtering and cancellation.[46] I will now show how this distinction is carried over to his second stage theory.

In the first stage theory, filtering is used to define what k-presuppositions are carried by a compound sentence. Cancellation, on the other hand, is used to determine when an inference to a k-presupposition is sanctioned.

69. A k-presupposition P of a sentence S is filtered in a compound sentence containing S if and only if the compound sentence does not inherit the k-presupposition P.

70. A k-presupposition P of a sentence S is cancelled in a conversational context X, if and only if the speaker in X explicitly indicates that he is not assuming P.

All k-presuppositions can be filtered--even those that are entailed by the sentences that presuppose them. In contrast, only those k-presuppositions that are not

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[46] See Part 2, Section II.

entailed can be cancelled.

In Karttunen's second stage theory, he abandons the notion of k-presupposition for compound sentences. Thus, the distinction between filtering and cancellation cannot be stated in the same way that it is stated for his first stage theory. Nevertheless, the distinction remains. Karttunen's principles (58-60) determine whether or not a given context satisfies-the-presuppositions-of a compound sentence. This corresponds to filtering in the first stage theory. Cancellation, on the other hand, is involved in clarifying the empirical claim that is made by saying that a context satisfies-the-presuppositions-of a sentence.

In cases of cancellation, a sentence S may be appropriately uttered in a context X even though X does not satisfy-the-presuppositions-of S. For example, Karttunen's principles (58-60) predict that the (a) sentences require contexts that entail the (b) sentences.

71. a. If all the particles released by the collision were negatively charged, then the experiment was a success.
    b. Some particles were released by the collision.

72. a. If the jewels are still here, then it's Susan who's got them.

    b. Someone has the jewels.

73. a. Either John gave up smoking, or he gave up drinking.

    b. John used to smoke.[47]

However, if the speaker makes it clear that he is not assuming (b), then he may assertively utter (a) even though the context does not entail (b). For example, he may appropriately utter both (a) and (c) in such a context.

71. a. If all the particles released by the collision were negatively charged, then the experiment was a success.

    c. However, this assumes that the collision was strong enough to separate some particles from the nucleus, and I am not sure that it was.

72. a. If the jewels are still here, then it's Susan who's got them.

    c. But I am afraid that they were lost while we were on vacation and that no one has them.

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[47] (58-60) also predict that (73a) requires a context that entails that John used to drink. This is irrelevant to the argument.

73. a. Either John gave up smoking, or he gave up drinking.

c. Since he never smoked at all, it must be drinking that he gave up.

These examples indicate that an additional clause should be added to (62).

74. If a context X does not *satisfy-the-presuppositions-of* a sentence S, then it is inappropriate for a speaker to assertively utter S in X unless

(a) there is a proposition Q such that Q U X *satisfies-the-presuppositions-of* S, and Q is uncontroversial--i.e., the audience is prepared to grant this; or

(b) there is a proposition Q such that X U Q *satisfies-the-presuppositions-of* S, and the speaker explicitly indicates that he is not assuming Q.

The second clause allows Karttunen to account for cases of explicit cancellation like (71a, c)-(73a,c).[48]

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[48]Although Karttunen does not discuss cancellation, (74) would allow him to accommodate such facts.

IV. Negation and Disjunction

In Part 2 I showed that the filtering principle for disjunctions must be symmetric. Karttunen denies this in his earlier article "Presuppositions of Compound Sentences" but later says in "Presupposition and Linguistic Context"[49] that the principle may be symmetric after all. His symmetric condition is (59).

59. A context X *satisfies-the-presuppositions-of* ⌜Either A or B⌝ if and only if

(i) X U ⌜-A⌝ *satisfies-the-presuppositions-of* B;

(ii) X U ⌜-B⌝ *satisfies-the-presuppositions-of* A.

This principle fails to handle cases in which both disjuncts presuppose the same thing.

75. Either Sam's son is at home or he is at school.

A = 'Sam's son is at home'

⌜-A⌝ = 'Sam's son is not at home'

B = 'Sam's son is at school'

⌜-B⌝ = 'Sam's son is not at school'

C = 'Sam has a son'

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[49] Karttunen says
"It is possible that the principle for disjunctions, and perhaps that for conjunctions as well, should be symetric [sic]. . . A symetric [sic] condition for 'or' would read [as] follows
"X satisfies-the-presuppositions-of 'A or B' iff X U [-A] "satisfies-the-presuppositions-of 'B' and X U [-B] satisfies-the-"presuppositions-of 'A'. For 'and' substitute 'A' for '-A' and "'B' for '-B'. ("Presupposition and Linguistic Context," footnote 5, page 185)"

Both ⌜-A⌝ and ⌜-B⌝ entail C. Thus, for any context X, X U ⌜-A⌝ satisfies-the-presuppositions-of B, and X U ⌜-B⌝ satisfies-the-presuppositions-of A. Therefore, (59) fails to account for the fact that (75) can be appropriately uttered only in contexts that entail that Sam has a son.

This objection assumes two things. The first assumption is that (76) and (77) are instances of logically internal negation. That is, they entail (78).

76. Sam's son is not at home.

77. Sam's son is not at school.

78. Sam has a son.

The second assumption is that the negation mentioned in (59) is logically internal.[50] Since these assumptions might be questioned, I will show that no matter what is said about negation, there are disjunctions that (59) cannot handle.

If the negation mentioned in (59) is logically internal, then (75) shows that (59) is inadequate. If the negation is external, then there are two possibilities to consider. Either some sentences are instances of

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[50]Instances of logically internal negation entail what they are customarily said to presuppose. Instances of logically external negation do not. They are true if and only if their corresponding affirmatives are not.

logically internal negation, or all negations are external.[51]

If there are no logically internal negations, then (59) cannot handle (79).

79. Either Sam's son isn't going to the party, or he hasn't left himself enough time to get ready.

A = 'Sam's son isn't going to the party'

⌜-A⌝ = 'Sam's son is going to the party'

B = 'Sam's son hasn't left himself enough time to get ready'

⌜-B⌝ = 'Sam's son has left himself enough time to get ready'

C = 'Sam has a son'[52]

Both ⌜-A⌝ and ⌜-B⌝ entail C. Therefore, (59) fails to account for the fact that (79) can be appropriately uttered only in contexts that entail that Sam has a son.

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[51] For example, Wilson seems to believe that all negations are external. On this view, (76) and (77) are true if and only if their corresponding affirmatives are not.

[52] If there are no logically internal negations in English, then [(i) and (ii)] and [(iii) and (iv)] are logically external negations of one another.

(i) Sam's son is going to the party.
(ii) Sam's son isn't going to the party.
(iii) Sam's son has left himself enough time to get ready.
(iv) Sam's son hasn't left himself enough time to get ready.

There is only one possibility left to consider. Suppose there are both internal and external negations, but that the negation mentioned in (59) is external. (59) would then account for (79),[53] however, there are other disjunctions that it could not handle. Which disjunctions are counterexamples depends on whether or not ⌜It is not {true / the case} that S⌝ shares the k-presuppositions of S. If the negative sentence does share the k-presuppositions of S, then (80) is a counterexample to (59).

80. Either it is not true that Sam's son is intelligent, or it is not true that he is a skeptic about the external world.

A = 'It is not true that Sam's son is intelligent'

⌜-A⌝ = 'Sam's son is intelligent'

B = 'It is not true that Sam's son is a skeptic about the external world'

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[53] If (ii) is an internal negation of (i), then the external negation of (ii) is not equivalent to (i).

(i) Sam's son is going to the party.
(ii) Sam's son is not going to the party.

For example, where '∿' is internal negation and '-' is external negation and S bears logical presuppositions, S is not logically equivalent to ⌜-∿S⌝. ⌜-∿S⌝ does not entail what S logically presupposes. Thus, the logically external negation of (ii) does not entail that Sam has a son.

$\ulcorner -B \urcorner$ = 'Sam's son is a skeptic about the external world'

C = 'Sam has a son'

Given that A and B can be appropriately uttered only in contexts that entail C, we must assume the same is true of (80). (59) fails to predict this.

On the other hand, if $\ulcorner$It is not $\{^{\text{true}}_{\text{the case}}\}$ that S$\urcorner$ does not share the k-presuppositions of S, then (81) is a counterexample to (59).

81. Either Sam's son is a fool, or it is not true that he is a skeptic about the external world.

A = 'Sam's son is a fool'

$\ulcorner -A \urcorner$ = 'It is not true that Sam's son is a fool'

B = 'It is not true that Sam's son is a skeptic about the external world'

$\ulcorner -B \urcorner$ = 'Sam's son is a skeptic about the external world'

C = 'Sam has a son'

$\ulcorner -B \urcorner$ entails C. If B is satisfied by every context,[54] then (59) fails to predict that (81) can be appropriately uttered only in contexts that entail that Sam has a son.

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[54] i.e., if it does not k-presuppose anything.

(75) and (79-81) show that no matter what assumption is made about negation, there are counterexamples to (59). This suggests that (59) should be replaced by (82).[55]

82. A context X *satisfies-the-presuppositions-of* ⌜Either A or B⌝ if and only if

(i) X U ⌜-A⌝ *satisfies-the-presuppositions-of* B;

(ii) X U ⌜-B⌝ *satisfies-the-presuppositions-of* A;

(iii) For all sentences S, if S is entailed by all contexts that satisfy both A and B, then X entails S.[56]

With the possible exception of example (81), (82) handles all the cases discussed in this section regardless of what we say about negation.

(81) is not so clear.

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[55] Similarly, if the principle for conjunctions is symmetric, then it should be (i) rather than (ii).

(i) A context X *satisfies-the-presuppositions-of* ⌜A and B⌝ if and only if
  (a) X U A *satisfies-the-presuppositions-of* B;
  (b) X U B *satisfies-the-presuppositions-of* A;
  (c) For all sentences S, if S is entailed by all contexts that satisfy both A and B, then X entails S.

(ii) A context X *satisfies-the-presuppositions-of* ⌜A and B⌝ if and only if
  (a) X U A *satisfies-the-presuppositions-of* B;
  (b) X U B *satisfies-the-presuppositions-of* A.

[56] Where A and B are simple sentences, clause (iii) is equivalent to (iv).

(iv) X entails all the k-presuppositions that are common to both A and B.

81. Either Sam's son is a fool, or it is not true that he is a skeptic about the external world.

If ⌜It is not {true / the case}⌝ that S⌝ shares the k-presuppositions of S, then there is no problem. Since both disjuncts share the same presuppositions, clause (iii) correctly predicts that (81) can be appropriately uttered only in contexts that entail that Sam has a son. But if ⌜It is not {true / the case}⌝ that S⌝ does *not* share the k-presuppositions of S, then clause (iii) is irrelevant. On this assumption, (82) fails to predict that (81) can be appropriately uttered only in contexts that entail that Sam has a son.

B in (81) is 'It is not true that Sam's son is a skeptic about the external world'. Thus, negations of B entail that Sam has a son.[57] Consequently, for any context X, X U ⌜-B⌝ satisfies-the-presuppositions-of A.

A = 'Sam's son is a fool'

On this analysis, B does not k-presuppose that Sam has a son. Thus, (82) incorrectly predicts that (81) can be

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[57]This is the case no matter whether the relevant negation of B is internal or external.

appropriately uttered in any context.

To avoid this problem, Karttunen might claim that ⌜It is not {true / the case} that S⌝ shares the k-presuppositions of S. If this is so, then clause (iii) in (82) comes into play and (81) ceases to be problematic. Moreover, Karttunen can then argue that there is no need to posit logical presupposition at all. (83) does not *logically presuppose* (84).

83. It is not {true / the case} that Sam's son is a skeptic about the external world.

84. Sam has a son.

If (83) *k-presupposes* (84), then the clause for negation in Karttunen's recursive definition must be (85) rather than (86).

85. A context X *satisfies-the-presuppositions-of* a negation of S if and only if X *satisfies-the-presuppositions-of* S.

86. A context X *satisfies-the-presuppositions-of* a negative sentence if and only if X entails all of its logical presuppositions.

This does not prove that negative sentences do not bear logical presuppositions. However, it eliminates

the main motivation for claiming that they do. If (85) is needed independently, we do not require any further device to explain the presuppositions of negative sentences.[58]

V. Symmetry vs. Asymmetry

I have already argued that the filtering principle for disjunctions should be symmetric. In this section I will argue that the condition for conjunctions is also symmetric and that the condition for conditionals may be symmetric as well, Karttunen disputes this. In "Presuppo-

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[58] I think that this is the strongest argument that can be based on Karttunen's theory for rejecting logical presupposition entirely. It rests on four claims.

(i) The filtering principle for disjunctions is (82).

(ii) A context X satisfies-the-presuppositions-of ⌜It is not {true / the case} that S⌝ if and only if X satisfies-the-presuppositions-of S.

(iii) ⌜It is not {true / the case} that S⌝ does not logically presuppose what S presupposes.

(iv) (81) can be appropriately uttered only in contexts that entail that Sam has a son.

I am not certain that (ii) is correct. Thus, I am not completely convinced that Karttunen's theory provides a reason for abandoning logical presupposition. Moreover, if (ii) is false, and (iii-iv) are true, then (81) is a problem for (i). This is a loose end I have not been able to tie up.

sitions of Compound Sentences" he considers (87) and (88).

87. a. If Jack has children, then all of Jack's children are bald.

    b. If all of Jack's children are bald, then Jack has children.

88. a. Jack has children and all of Jack's children are bald.

    b. All of Jack's children are bald and Jack has children.

He says

> . . . in [87a] the presupposition of the consequent clause gets filtered away, since [87a] as a whole does not presuppose that Jack has children. [87b] is a somewhat peculiar example. There would be no point in uttering such trivial tautologies unless one were engaged in some painstaking deductive reasoning, trying to track down all of the logical consequences of "all of Jack's children are bald." *What concerns us here is that unlike [87a], [87b] is similar to . . . in presupposing that Jack has children.*[59] (my emphasis)

He says the same thing about (88).

> [88b] is even stranger than [87b]; since the second conjunct is a consequence of the first, why bother at all? One may want to rule out such conjunctions as violations of some pragmatic principle. ("Thou shalt not be utterly pointless") *However, the only thing that matters for us here is that [88b] as a whole seems to share the presuppositions of its first conjunct.*[60] (my emphasis)

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[59] Karttunen, "Presuppositions of Compound Sentences," Linguistic Inquiry 4, no. 2 (Spring 1973): 177

[60] Ibid, p. 178.

This is all that Karttunen says to justify his claim that the filtering conditions for conjunctions and conditionals are asymmetric, but it is not enough. The fact that (87b) and (88b) would be odd in normal conversation has nothing to do with presupposition. The (a) and (b) sentences below are odd in the same way even though the (a) sentences do not bear presuppositions on Karttunen's account.

89. a. If Susan left early, then someone left early.
    b. If it is Susan who left early, then someone left early.
90. a. Susan left early and someone left early.
    b. It is Susan who left early and someone left early.
91. a. If John correctly claimed that Mary won the election, then Mary won the election.
    b. If John knew that Mary won the election, then Mary won the election.
92. a. John correctly claimed that Mary won the election and Mary won the election.
    b. John knew that Mary won the election, and Mary won the election.

Karttunen seems to have recognized that the oddity

of (87b) and (88b) is independent of presupposition. Even so, he claims that (87b) and (88b) k-presuppose that Jack has children.[61] It seems to me that this is wrong. A speaker who assertively utters these sentences doesn't take it for granted that Jack has children. In the case of (88b) he explicitly asserts that Jack does. In the case of (87b) the speaker indicates that the claim that all of Jack's children are bald is sufficient grounds for asserting that Jack has children. Similar remarks apply to (89-92).

It is not easy to find additional evidence that bears on this; however, there is some. For example, someone might assertively utter (93a) knowing full well that (93b) is controversial.

93. a. Our saviour has never broken a promise, and make no mistake, we really do have a saviour.
    b. We have a saviour.

The whole point of adding the second conjunct is to make it clear that (93b) is not being tacitly assumed, but

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[61] Karttunen's discussion of these examples occurs within the context of his first stage theory. Thus, he talks about compound sentences bearing k-presuppositions rather than contexts satisfying-the-presuppositions-of compound sentences. The difference between Karttunen's first and second stage theories is irrelevant to the issue at hand. The issue of symmetry arises in exactly the same way for both theories.

rather is being explicitly asserted.

Further evidence is provided by 'but'. This conjunction behaves like 'and' in (94a-96a).

94. a. There is a King of France, but the King of France is in hiding.
    b. There is a King of France.
95. a. Sam has children, but all of his children are at school.
    b. Sam has children.
96. a. Harry voted for Nixon, but he regrets doing so.
    b. Harry voted for Nixon.

A context X may satisfy-the-presuppositions-of one of these conjunctions even if X does not entail the k-presupposition of the second conjunct (i.e., even if X does not entail (b)). This can be shown by embedding (94a-96a) in larger contexts.

94. c. It may be that there is a King of France, but that the King of France is in hiding.
    d. If there is a King of France, but the King of France is in hiding, then the French are in trouble.
95. c. It may be that Sam has children but that all of his children are at school.

d. If Sam has children but all of his children are at school, then Susan won't have anyone to play with.

96. c. It may be that Harry voted for Nixon but that he regrets doing so.

d. If Harry voted for Nixon but he regrets doing so, then Harry isn't all bad.

A speaker may appropriately utter (c) or (d) even if he does not believe (b). To account for this, Karttunen must maintain that X may satisfy-the-presuppositions-of (a) without entailing (b).[62] In this respect, 'but' behaves exactly like 'and'.

Now consider (97-100).

97. a. The King of San Martin isn't well-known, but San Martin has a king.

b. San Martin has a king.

98. a. It wasn't Bill who told the cops about us, but someone did.

b. Someone told the cops about us.

99. a. Sam didn't know that the experiment was a success, but it was.

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[62] Karttunen's principle for 'It may be . . .' is (i).

(i) X satisfies-the-presuppositions-of ⌜It may be that S⌝ iff X satisfies-the-presuppositions-of S.

b. The experiment was a success.

100. a. Not all of Bill's novels are well-done, but he has written two masterful novels.

b. Bill has written some novels.

These sentences are not odd. Moreover, a speaker uttering the (a) sentences does not take the (b) statements for granted. Notice also that a speaker may appropriately utter (97c) and (98c) even if he does not believe (97b) and (98b).

97. c. If the King of San Martin isn't well-known, but San Martin has a king, then the people of San Martin are lucky.

98. c. If it wasn't Bill who told the cops about us, but someone did, then we are in trouble.

To account for this Karttunen must hold that a context X may satisfy-the-presuppositions-of (97a) or (98a) even though X does not entail (97b) or (98b).

(94-100) indicate that the condition for 'but' is symmetrical.

101. A context X *satisfies-the-presuppositions-of* ⌜A but B⌝ if and only if

(i) X U A *satisfies-the-presuppositions-of* B

(ii) X U B *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.

Clause (i) accounts for (94-96). Clause (ii) accounts for (97-100). Clause (iii) accounts for sentences like (102).

102. The King of France is wise, but he is also weak.

The reason that (97-100) are better with 'but' than 'and' is that 'but' is used when there is a contrast between the two conjuncts. This difference seems to be independent of the question of symmetric versus asymmetric filtering. Consequently, I propose that the condition for 'and' is identical with (101) except for containing 'and' where (101) contains 'but'.

The principle for conditionals is the hardest to establish. Certainly Karttunen hasn't shown that it must be asymmetric. In fact, I don't see any evidence that supports his conclusion. Moreover, if the other principles are symmetric, then it is most natural to handle conditionals in the same way. In any case, Karttunen *can* make all

his conditions symmetric without damaging his system.[63]

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[63]This point has not always been clearly recognized. For example, Wilson says that

> "Karttunen's most important claim is that there is an asymmetry between the behavior of presuppositions on the first and second clauses of conditionals, conjunctions and disjunctions. Presuppositions on the first clauses can never be cancelled, but presuppositions on the second clauses can. If this asymmetry can be established, the entailment analysis I have proposed will automatically be disproved, since it predicts symmetrical behavior. However, Karttunen's claim seems to be false. (Presuppositions and Non-Truth-Functional Semantics, (London: Academic Press, 1975) p. 37)"

I agree with Wilson that Karttunen's conditions should be symmetric. However, I disagree with her about the importance of this question. Karttunen's system can accommodate either symmetric or asymmetric principles. In fact, the question of symmetry vs. asymmetry is not crucial to Wilson's "entailment analysis" either.

What leads Wilson astray is that she fails to distinguish between filtering and cancellation. Karttunen's asymmetric principles concern the former; he has little to say about the latter. Wilson's confusion can be seen by comparing her claims (i) and (ii).

(i) If Karttunen's asymmetric principles are right, then presuppositions of first clauses can never be *cancelled* whereas presuppositions of second clauses can.

(ii) If there is asymmetric *cancelling*, then Wilson's "entailment analysis" is wrong since it predicts symmetric cancelling.

If Wilson's use of 'cancelling' is the same as mine, then (ii) may be true, but (i) is false. On her analysis, all non-cancellable presuppositions are entailments, and ⌜A or B⌝ is logically equivalent to ⌜B or A⌝. Since these sentences have the same entailments, she believes they must have the same non-cancellable presuppositions. However, Karttunen's conditions involve filtering, not entailment or cancellation. Thus, Wilson's claim (i) is false.

On the other hand, if by 'cancellation' she means 'filtering' then (i) is true, but (ii) is false. Her "entailment analysis" acknowledges that some presuppositions are defeatable suggestions rather than entailments. Nothing in her analysis requires the principles that give rise to these suggestions to be symmetric. Since Karttunen's filtering principles are responsible for such suggestions, Wilson has nothing to fear from asymmetric filtering conditions.

VI. Filtering and Conversation

6.1 The Problem

The last problem that I will take up is the most serious one. The filtering conditions for Karttunen's second stage theory are based on the incorrect filtering conditions (1-3) of his first stage theory. They differ from (1-3) in allowing the conversational context of an utterance to play a role in entailing, and hence, in "filtering out", the presuppositional requirements carried by constituents of compound sentences. This difference is the fundamental one and is independent of the issues involving symmetry, asymmetry, and negation that I have just discussed. The question at issue is this: does the introduction of context allow Karttunen's second stage filtering conditions to handle the counter-examples to (1-3) cited in Section II, or do these examples also falsify his second stage theory?

6.1.1 The First Set of Data

In Section II I considered conditionals in which the k-presupposition of the consequent entails, but is not

entailed by the antecedent. One such conditional is (31).

31. If John has children, then all of John's sons are bald.

A = 'John has children'

C = 'John has sons'

Since a speaker assertively uttering (31) does not take C for granted, this example falsifies filtering principle (1).

What about (103)?

103. A context X *satisfies-the-presuppositions-of* ⌜If A, then B⌝ if and only if

(i) X U A *satisfies-the-presuppositions-of* B

(ii) X U B *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.[64]

According to (103), a context X satisfies-the-presuppositions-of (31) only if X U (104) entails (105).

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[64](103) is a symmetric principle for conditionals. However, the issue of symmetry vs. asymmetry is irrelevant to the question at hand.

104. John has children.

105. John has sons.

In other words, X satisfies-the-presuppositions-of (31) only if X entails (106).

106. If John has children, then he has sons.

This means that a speaker may appropriately utter (31) only if (i) he assumes (106) and

(ii) his audience already assumes (106) or is willing to grant this assumption.

This prediction seems plausible. Thus, (31) does not falsify (103). However, it is not clear to me that (103) explains *why* (31) requires (106). Note, (107) seems to require the same thing independently of presupposition.

107. If John has children, the he has bald sons.

First consider the claim that a speaker assertively uttering (31) or (107) must believe (106). These examples entail (106).[65] Thus, someone asserting them must believe (106).

Next consider the claim that (31) and (107) are inappropriate in contexts in which the audience is not

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[65] I take it that 'All of John's sons are bald' entails 'John has sons'.

prepared to grant (106). This claim is vague and hard to evaluate. However, it seems to me that if it is true of (31), then it is also true of (107).[66] Since (107) does not involve presuppositional requirements on Karttunen's account, whatever explanation is invoked for it must be independent of his theory of presupposition. But this suggests that the explanation of (31) is also independent of presupposition. Thus, I conclude that although (31) does not falsify Karttunen's analysis, it does not provide any additional evidence for it either.

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[66] Perhaps a better comparison can be made between (i) and (ii).

(i) If John has children, then at least two of his sons are bald.
(ii) If John has children, then he has at least two bald sons.

It seems to me that (i) and (ii) stand in the same relation to (106). Nevertheless, on Karttunen's account, (iii) presupposes that John has sons whereas (iv) does not.

(iii) At least two of John's sons are bald.
(iv) John has at least two bald sons.

This can be seen by comparing (v) and (vi).

(v) It may be that at least two of John's sons are bald.
(vi) It may be that John has at least two bald sons.

(v) but not (vi) suggests that John has sons. Thus, for Karttunen, (iii) presupposes this, but (iv) does not.

6.1.2 The Second Set of Data

One sentence that does falsify Karttunen's analysis is (45).

45. John has children and his sons are bald.

According to the filtering principle for conjunctions, a context X satisfies-the-presuppositions-of (45) only if X U (104) entails (105)--i.e., only if X itself entails (106).

104. John has children.

105. John has sons.

106. If John has children, then he has sons.

Naturally a speaker sincerely asserting (45) believes (106), but this has nothing to do with presupposition. Moreover, it does not seem necessary that one's audience be prepared to grant (106) in order for an utterance of (45) to be appropriate.[67] If this is right, then Karttunen's analysis is incorrect.

This conclusion is strengthened by (108) and (109).

108. It may be that John has children and his sons are bald.

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[67] An assertion does not have to be accepted in order to be appropriate.

109. If John has children and his sons are bald, then baldness is hereditary.

Karttunen's principle for 'may' is (110).

110. A context X *satisfies-the-presuppositions-of* ⌜It may be that S⌝ if and only if X *satisfies-the-presuppositions-of* S.[68]

This principle, together with the principle for conjunctions, predicts that X *satisfies-the-presuppositions-of* (108) only if X entails (106). Since a speaker assertively uttering (108) does not suggest and need not believe (106), Karttunen's theory is incorrect.

The same point can be made using (109). Karttunen's principle for conditionals [(103)] predicts that X satisfies-the-presuppositions-of (109) only if X U (111) satisfies-the-presuppositions-of (45).

111. Baldness is hereditary.

X U (111) satisfies-the-presuppositions-of (45) only if X U (111) U (104) entails 'John has sons'. In other words, Karttunen's theory predicts that a speaker may appropriately utter (109) only if he believes (112).

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[68] Karttunen, "Presupposition and Linguistic Context," Theoretical Linguistics 1, no. 1/2 (1974): 188.

112. If John has children and baldness is hereditary, then John has sons.[69]

Since this prediction is false, Karttunen's theory is wrong.

Finally, the kind of argument that is here applied to conjunctions can also be applied to disjunctions and conditionals. For example, a speaker assertively uttering (113) and (114) does not suggest and need not believe (106).

113. It may be that if John has children, then all of his sons are bald.

114. It may be that either John has no children, or all of his sons are bald.

Hence, the interaction of Karttunen's principle for modals and his principles for conjunctions, disjunctions, and conditionals leads to false predictions.

6.1.3 The Third Set of Data

A different kind of counterexample is provided by (115).

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[69] If the principle for conditionals is asymmetric, then Karttunen's theory predicts that a speaker asserting (109) must believe (106). This prediction is false.

115. Either Bill met Susan's only son, or he met the oldest of her sons.

According to Karttunen's first stage theory, (115) k-presupposes both (116) and (117).

116. Susan has only one son.

117. Susan has more than one son.

Since (116) and (117) are incompatible, Karttunen's first stage theory incorrectly predicts that someone assertively uttering (115) makes inconsistent suggestions.[70]

What does the second stage theory say about (115)? In "Presupposition and Linguistic Context" Karttunen answers this question in discussing a similar example. He says,

> As a final example, consider a case of the kind first discussed in Liberman (1973).
>
> (28) Bill has met either the King or the President of Slobovia.
>
> The two disjuncts that constitute (28) have conflicting presuppositions [sic]: Slobovia is a monarchy/Slobovia is a republic. Yet, (28) as a whole is not contradictory. It seems to assert that Bill has met the Slobovian Head of State and indicates that the speaker does not know much about Slobovia. What sort of context does it take to satisfy-the-presuppositions-of (28)?
>
> Assuming that the condition for "or" is symmetric . . ., we find that, according to our principles, (28) can be admissible at

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[70] Note, however, that principle (3#) avoids this incorrect prediction.

least in contexts which entail the logical forms of the three sentences in (29).

(29) (a) Slobovia is either a monarchy or a republic.
(b) If Slobovia is a monarchy, Bill has met the King of Slobovia.
(c) If Slobovia is a republic, Bill has met the President of Slobovia.

Such a context can satisfy the presuppositions of (28) for the following reason. By incrementing it with the negation of the first disjunct, "Bill has not met the King of Slobovia", we get a context which entails that Slobovia is a republic, which is what the second disjunct presupposes. By incrementing the original context with the negation of the second disjunct, we get a context which entails that Slobovia is a monarchy, which is a presupposition for the first disjunct. Given that both constituent sentences in (28) are admissible in their respective local contexts (28) as a whole is admissible.[71]

One problem with Karttunen's example [his (28)] is that its disjuncts do not have conflicting presuppositions--i.e., a country can have both a king and a president. Thus, it is more convenient to concentrate on (115). Karttunen's remarks indicate that this sentence is admissible in a context that entails (118a-c).

118. a. Either Susan has only one son or she has more than one son.
b. If Susan has only one son, then Bill met him.
c. If Susan has more than one son, then Bill met the oldest of her sons.

But this is not helpful. (115) is *logically equivalent*

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[71]Karttunen, "Presupposition and Linguistic Context," pp. 192-193.

to the conjunction of (118a-c). Naturally, a speaker assertively uttering (115) believes the propositions expressed by these sentences. Moreover, he cannot assume that his audience takes these propositions for granted, since, if they did, then there would be no point in uttering (115) at all. Thus, if Karttunen's theory predicts that (115) requires a context that entails (118a-c), then this prediction is a *reductio ad absurdum* of the theory.

Unfortunately, his theory does predict this. The principle for disjunctions is (119).

119. A context X *satisfies-the-presuppositions-of* ⌜Either A or B⌝ if and only if

(i) X U ⌜-A⌝ *satisfies-the-presuppositions-of* B

(ii) X U ⌜-B⌝ *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.

According to this principle, a context X satisfies-the-presuppositions of (115) only if

(i) X U 'Bill didn't meet the oldest of Susan's sons' entails 'Susan has only one son'; and

(ii) X U 'Bill didn't meet Susan's only son' entails 'Susan has more than one son'; and

(iii) X entails that Susan has at least one son.[72]

This means that X satisfies-the-presuppositions-of (115) only if X entails (120a-c).

120. a. If Bill didn't meet the oldest of Susan's sons, then Susan has only one son.

b. If Bill didn't meet Susan's only son, then Susan has more than one son.

c. Susan has at least one son.

Since the conjunction of (120a-c) is logically equivalent to the conjunction of (118a-c), Karttunen's theory predicts that (115) is admissible only in contexts that entail (118a-c).[73] I have already argued that this

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[72](iii) results from the fact that both disjuncts presuppose that Susan has at least one son.

[73]It follows from this that (115) is logically equivalent to the conjunction of (120a-c). This can also be demonstrated independently.

First, suppose that (115) is true. Then (120c) is true. If Bill met Susan's only son, then (120b) is true by falsity of the antecedent and (120a) is true because of the truth of the consequent. If Bill met the oldest of Susan's sons, then (120a) is true by falsity of the antecedent, and (120b) is true because of the truth of its consequent. Thus, (115) entails the conjunction of (120a-c).

Next suppose that (120a-c) are true. If, in addition, (115) isn't true, then either Susan has only one son and Bill didn't meet him, or Susan has more than one son and Bill didn't meet the oldest. The first alternative contradicts the assumption that (120b) is true. The second alternative contradicts the assumption that (120a) is true. Thus, the conjunction of (120a-c) entails (115). In short,

is absurd.

To make sure that (115) does not require contexts that entail (118a-c)--and hence that entail (115) itself--one needs only to embed it in another compound sentence.

121. If Bill met Susan's only son or the oldest of her sons, then he must know what a fine mother she is.

A speaker assertively uttering this sentence need not assume that (118a-c) are true and hence that the antecedent of (121) is true.[74] For example, he may not assume that Bill met anyone. Thus, (115) shows that Karttunen's theory is incorrect.[75]

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(115) is logically equivalent to the conjunction of (120a-c).

Note: for those who have qualms about the logical form of English conditionals, it can also be shown that a context X entails (115) iff

(i) X U 'Bill didn't meet the oldest of Susan's sons' entails 'Susan has only one son'; and

(ii) X U 'Bill didn't meet Susan's only son' entails 'Susan has more than one son'; and

(iii) X entails that Susan has at least one son.

This result is a *reductio ad absurdum* of Karttunen's account.

[74] He also need not assume that X U 'Susan is a fine mother' satisfies-the-presuppositions-of the antecedent of (121).

[75] Another environment that makes the same point is 'It may be that'. A speaker may assertively utter (i) in contexts that do not entail (ii).

(i) It may be that either Bill met Susan's only son or he met the oldest of her sons.

(ii) Bill met Susan's only son or he met the oldest of her sons.

Karttunen's theory does not account for this.

6.2 An Attempted Solution

6.2.1 An Undesirable Alternative

The counterexamples discussed in 6.1 were based on the sentences discussed in Section II. In each case (⌜If A, then B⌝, ⌜Either A or B⌝, and ⌜A and B⌝) A and B were simple positive sentences, and B k-presupposed a sentence C. In the case of conditionals and conjunctions, C entailed but was not entailed by A. In the case of disjunctions, C entailed, but was not entailed by ⌜-A⌝.[76]

One way to handle these counterexamples would be to give up trying to directly characterize the contexts that satisfy-the-presuppositions-of a sentence and to return to the notion of "relative presupposition" discussed in footnote 37. On this account, simple positive sentences and their negations k-presuppose their standard presuppositions in all contexts. The filtering principle for disjunctions would then be (122).

122. a. If A k-presupposes C with respect to X, and neither X U ⌜-B⌝ entails C nor C entails ⌜-B⌝, then ⌜Either A or B⌝ k-presup-

[76] In the case of (115), A also k-presupposed a sentence D where D entailed but was not entailed by ⌜-B⌝. Note, ⌜-A⌝ and ⌜-B⌝ are here taken to be logically external negations.

poses C with respect to X.

b. If B k-presupposes C with respect to X, and neither X U ⌜-A⌝ entails C nor C entails ⌜-A⌝, then ⌜Either A or B⌝ k-presupposes C with respect to X.

c. If both A and B k-presuppose C with respect to X, then ⌜Either A or B⌝ k-presupposes C with respect to X.

The principles for conjunctions and conditionals would be analogous.[77]

Although this is a possible approach, it is certainly not an attractive one. Thus, it is worthwhile to look for other alternatives. I will sketch such an alternative in 6.2.2.

6.2.2 Conversation and Presupposition

The disjunctions that I will consider are ones in which B k-presupposes C, and C entails but is not entailed by ⌜-A⌝. The conjunctions and conditionals are similar

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[77] Principle (ii) of footnote 37 could be invoked to give these principles empirical content.

except that C entails but is not entailed by A. Why doesn't a speaker assertively uttering ⌜Either A or B⌝, ⌜A and B⌝, or ⌜If A, then B⌝ take C for granted?

First consider ⌜-A⌝. By hypothesis, the speaker recognizes that C entails ⌜-A⌝.[78] Hence, if he took C for granted, then he would also assume that A is untrue. But then the first disjunct of ⌜Either A or B⌝ would be pointless and misleading. A cooperative speaker would not utter ⌜Either A or B⌝ in such a case, but rather would assert the stronger, more informative statement expressed by B. Thus, if he does utter ⌜Either A or B⌝ we assume that he is not taking C for granted.

The same reasoning can be applied to conditionals. Since C entails A, a speaker assuming C would have no need for the antecedent of ⌜If A, then B⌝. Instead of uttering the conditional, he would assert the stronger statement expressed by B. Thus, if a speaker does utter ⌜If A, then B⌝, then the presumption that he is being cooperative and not misleading implies that he is not taking C for granted.

Next consider conjunctions. If a speaker takes C

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[78] See Section 1.2.3.

for granted and knows that his audience does too, then there is no point in uttering ⌜A and B⌝. Rather he would assert the statement expressed by B. The issue becomes clearer when ⌜A and B⌝ is embedded in compound sentences. A speaker who takes C (and hence A) for granted would not utter ⌜If A and B, then D⌝. Rather he would utter ⌜If B, then D⌝. For example, if one assumed (123) and knew that one's audience either already shared this assumption or was prepared to grant it, then it would be misleading to use (124). Rather one would use (125).

123. Mary has daughters.

124. If Mary has children and her daughters are intelligent, then intelligence is hereditary.

125. If Mary's daughters are intelligent, then intelligence is hereditary.

If this analysis is correct, then Karttunen's filtering conditions can remain as they are. What must be modified is (74).

74. If X does not *satisfy-the-presuppositions-of* S, then it is inappropriate for a speaker to assertively utter S in X unless

(a) there is a proposition Q such that X U Q *satisfies-the-presuppositions-of* S, and Q is uncontroversial--i.e., the audience is prepared to grant it; or

(b) there is a proposition Q, such that X U Q *satisfies-the-presuppositions-of* S, and the speakeer explicitly indicates that he is not assuming Q.

This principle gives Karttunen's theory empirical content. Clause (b) was introduced to cover cases of *explicit* cancellation.[79] If the analysis given in this section is correct, then an additional clause covering cases of *implicit* cancellation must be added.

Intuitively, a speaker cancels the inference to Q if he explicitly indicates or conversationally implicates that he is not taking Q for granted. This suggests that (c) be added to (74).

74. (c) There is a proposition Q, such that X U Q *satisfies-the-presuppositions-of* S, and the speaker conversationally implicates that he is not assuming Q.

(74) can now be simplified and reformulated as (126).

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[79] See Section 3.3.

126. If X does not satisfy-the-presuppositions-of S, then it is appropriate for a speaker to assertively utter S in X only if there is a proposition Q such that X U Q *satisfies-the-presuppositions-of* S and either

(i) Q is uncontroversial; or

(ii) the speaker explicitly indicates or conversationally implicates that he is not assuming Q.

If the analysis in this section is correct, then Karttunen's modified filtering conditions together with (126) account for all of the data that I have considered. What makes this analysis seem plausible is the obviousness of much of the phenomena. Why doesn't ⌜Either A or B⌝ require a context in which C (and hence ⌜-A⌝) is assumed? To answer this, one does not need to know anything about presupposition. If the speaker were taking ⌜-A⌝ for granted, then he would never have uttered the disjunction at all.

6.2.3 Conversation, Filtering, and "the Cumulative Hypothesis"

The argument in 6.2.2 has interesting consequences. I see no other way for Karttunen to accommodate the counterexamples to his second stage theory mentioned in 6.1. If, for any reason, my argument should turn out to be incorrect, then his theory is seriously inadequate.[80] On the other hand, if the argument in 6.2.2 is correct, then the amount of data supporting Karttunen's filtering conditions is drastically diminished.

I will illustrate with conditionals.[81] I have argued that if B k-presupposes C and C entails A, then someone assuming C would not assertively utter ⌜If A, then B⌝. A speaker who did assertively utter this would conversationally implicate that he is not assuming C. But this means that we don't need a *filtering principle* to explain why C is not assumed.

The only cases for which we do need such a principle are those in which A *entails but is not entailed by* C--

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[80] I have some reservations about the argument. For example, I am not sure exactly which Gricean maxims are relevant in each case.

[81] Analogous remarks apply to conjunctions and disjunctions.

cases like (26).[82]

26. If Sam paid the bill promptly, then his payment is in the mail.

A = 'Sam paid the bill promptly'

B = 'Sam's payment (of the bill) is in the mail'

C = 'Sam paid the bill'

It seems to me that a speaker assertively uttering (26) would not normally implicate C. Grice's conversational principles do not explain this. Karttunen's filtering principles do. If it weren't for such examples, one could simply propose that all conditionals inherit the k-presuppositions of their constituents.[83] The inference to these k-presuppositions would remain in force only if they were not defeated by conversational principles. Fortunately for Karttunen, the existence of examples like (26) undermines this simple theory and provides some motivation for his more complex account.

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[82]Note, this is compatible with my statement of Karttunen's filtering conditions.

[83]This is a special case of "the cumulative hypothesis". The hypothesis states that compound sentences always inherit the presuppositions of their constituents.

VII. Summary of Part 5

In Part 5 I have examined Karttunen's theory of presupposition and have proposed several modifications. In particular I have argued that his theory should be modified to include the following principles.

127. A context X *satisfies-the-presuppositions-of* A $\{^{\text{and}}_{\text{but}}\}$ B if and only if

(i) X U A *satisfies-the-presuppositions-of* B

(ii) X U B *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.

128. A context X *satisfies-the-presuppositions-of* ⌜If A, then B⌝ if and only if

(i) X U A *satisfies-the-presuppositions-of* B

(ii) X U B *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.

129. A context X *satisfies-the-presuppositions-of* ⌜Either A or B⌝ if and only if

(i) X U ⌜-A⌝ *satisfies-the-presuppositions-of* B

(ii) X U ⌜-B⌝ *satisfies-the-presuppositions-of* A

(iii) For all sentences S, if S is entailed by every context that *satisfies-the-presuppositions-of* both A and B, then X entails S.

130. If X does not satisfy-the-presuppositions-of S, then it is appropriate for a speaker to utter S assertively in X only if there is a proposition Q such that X U Q *satisfies-the-presuppositions-of* S and either

(i) Q is uncontroversial; or

(ii) The speaker explicitly indicates or conversationally implicates that he is not assuming Q.

Although many questions remain unanswered, reformulating Karttunen's theory to include these principles results in a strengthening of his account.

PART 6

FINAL SUMMARY

In this essay I have tried to do two things. First I separated the arguments for (1) and (2) and critically evaluated them.

1. Theories of natural language require an account of non-logical presupposition.
2. The notion of logical presupposition should be eliminated from theories of natural language.

In Parts 1-3, I argued that (1) is correct, but that (2) has not been established. Although I see no conclusive evidence in favor of a theory of logical presupposition for simple sentences and their negations, I also see no conclusive evidence against such a theory.[1]

Second I examined two positive accounts of non-logical presupposition. I showed that Wilson's account is incorrect. Negative sentences do not conversationally implicate their presuppositions, and compound sentences do not W-implicate theirs. In Karttunen's case, I showed that several modifications of his theory need to be made. Although his modified theory is by no means the final word regarding the presuppositions of compound sentences, it seems to be the most promising account developed so far.

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[1] However, see the argument in Part 5, Section IV.

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