The Notion of Presupposition*

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In this article we shall focus our attention upon the clarification of the notion of presupposition; First, we shall be concerned with what kind of notion is best understood as the proper notion of presupposition that grammars of natural language should deal with. In this connection, we shall defend "logical presupposition". Second, we shall consider how to specify the range of X and Y in the presupposition formula "X presupposes Y". Third, we shall discuss several difficulties with the standard definition of logical presupposition. In connection with this, we shall propose a clear distinction between "the definition of presupposition" and "the rule of presupposition".

1. The logical notion of presupposition

What is a presupposition? Or, more particularly, what is the alleged result of a presupposition failure? In spite of the attention given to it, this question can hardly be said to have been settled. Various answers have been suggested by the various authors: inappropriate use of a sentence, failure to perform an illocutionary act, anomaly, ungrammaticality, unintelligibility, infelicity, lack of truth value — each has its advocates. Some of the apparent disagreement may be only a notational and terminological, but other disagreement raises real, empirically significant, theoretical questions regarding the relationship between logic and language. However, it is not the aim of this article to straighten out the various proposals about the concept of presupposition. Rather, we will be concerned with one notion of presupposition, which stems from Frege (1892) and Strawson (1952), that is:

(1) presupposition is a condition under which a sentence expressing an assertive proposition can be used to make a statement (or can bear a truth value)\(^1\)

We shall call this notion of presupposition "the statementhood condition" or "the condition for bivalence". Notice that this notion is logical in the sense that it does

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\(^1\) Note that Frege's view of presupposition may be interpreted in different way; that is, we may take his view as follows: "Anybody making the assertion assumes that the proper names used have a reference". This notion of presupposition is nothing but (2).
not directly involve the speaker, the hearer, or the context in which the sentence is uttered. All (1) says is that one sentence (or more accurately, one proposition) presupposes another whenever the latter must be true in order that the former have a truth value at all. In this respect, (1) contrasts with the following concepts of presupposition:

(2) A sentence $S_1$ presupposes a sentence $S_2$ if and only if whenever $S_1$ is uttered sincerely, the speaker of $S_1$ assumes $S_2$ and believes that the hearer assumes $S_2$ as well.2

(3) A sentence $S_1$ presupposes a sentence $S_2$ relative to a class $C$ of contexts of utterance if and only if $S_1$ conversationally implicates $S_2$ relative to $C$ and non-$S_1$ conversationally implicates $S_2$ relative to $C$.3

(2) may be interpreted as a variant of the following “person’s presupposition”:

(4) A speaker of $S_1$ presupposes $S_2$ at a given moment in a conversation if and only if he is disposed to act, in his linguistic behavior, as if he takes the truth of $S_2$ for granted, and as if he assumes that his audience recognizes that he is doing so.4

(2) may be also interpreted as a variant of the following “sincerity condition” or “good faith condition.”

(5) A speaker ought not to utter $S_1$ unless he judges $S_2$ to be true, and unless he expects the hearer to consider $S_2$ to be true.

Furthermore, (2) may also be interpreted as a variant of Katz’s notion (1972, p. 428) of “presumption”:

(6) A sentence $S_2$ is a presumption of a sentence $S_1$ if and only if we are normally entitled to take the speaker to believe $S_2$ and to presume that the speaker wants the hearer to know that he believes.

Thus, although at first sight (2) seems to stipulate a relation between sentences (or propositions), it is actually a relation between a person and a sentence (or proposition). Needless to say, (3) is a typical notion of “pragmatic presupposition”.

Now, our claim is that if there exists a notion of presupposition which is significant in grammar, it is neither (2) nor (3) but (1) that is qualified to be such a grammatical notion. Grammars of natural languages are responsible for accounting for all aspects of the linguistic competence of native speakers. A part of this competence is the ability to recognize the semantic property of a given sentence and the semantic relation of sets of sentences in a language $L$. Notice that those semantic properties and relations, like syntactic or phonological properties and relations, are independent of the speaker or the hearer or of anyone’s

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2. I owe this formulation to Karttunen (1973, p. 42).
3. I owe this formulation to Thomason (1973).
4. I owe this particular formulation to Stalnaker (1973, p. 448).
factual beliefs about the world. Furthermore, they are also independent of any special context or situation in which the sentence is uttered. They are part of the speaker's knowledge of his native language, quite apart from his specific beliefs or circumstances. For instance, the answer to the question whether or not a given sentence is synonymous with another sentence, or to the question whether or not a given sentence is anomalous involves only a native speaker's internalized grammar. Such a question must be answered in the same way by every member of an ideal homogeneous speech-community. Therefore, if we can assume that there is a semantical notion of presupposition, it must meet this requirement, as must any notion that purports to be semantic. From these considerations, notions like (2) and (3), or (4), (5), and (6), are not entitled to be semantic whereas a notion like (1) is. Although this point is not controversial, it is still worth emphasizing. For in the recent linguistic literature, we can find some ambitious attempts to explain even notions like (2) and (3) within a theory of transformational grammar, and to incorporate highly complex rules and devices. These attempts do nothing but confuse logical notions and non-logical notions (or pragmatic notions). This confusion is one potential source of trouble in the linguistic treatment of presupposition. As an example, consider the following classical case:

(7) a. The present king of France is bald.
b. There is a present king of France.

If it is a fact that (7b) must be true in order that (7a) make a statement, then grammar (especially semantics) must explain this logical fact as long as it is relevant to the grammatical structure of these sentences. Even if it is a fact that in a normal situation the speaker of (7a) takes the truth of (7b) for granted, and even if he assumes the hearer does the same, such a fact has no bearing on grammar.

It will be, however, misleading to say that a logical notion like (1) is identical with a grammatical (or semantical) notion of presupposition. First, we are not suggesting that a logical notion like (1) is the only kind of notion qualified to be a semantical notion of presupposition. There may be other notions of presupposition which happen to meet the requirement on any notion that purports to be semantical (or grammatical). Second, notice that a semantical (or grammatical) notion of presupposition is not supposed to deal with all aspects of a notion of logical presupposition like (1). Note that we added a qualification "...as long as it is relevant to the grammatical structure" in the above discussion. By this remark, we mean that we have to exclude grammatically (or semantically) in-

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5. As far as we know, we have no clear example of this case. This, however, does not imply that such a case is inconceivable. If we can claim that all selection restrictions determine a presupposition, this may be such a case.
relevant logical aspects from a genuine semantical (or grammatical) notion of presupposition. In order to clarify this point, consider the following:

(8) a. The female king is bald.
   b. It is raining.

(9) a. The president of the United States is bald.
   b. Mary is alive or not alive.

Let us assume that (8a) is indeterminable and that (9b) is logically false. Now, one might claim that according to (1), (8a) logically presupposes (8b), and that (9a) logically presupposes (9b). For (8b) and (9b) are necessary conditions for either the truth or falsity of (8a) and (9a), respectively. This is because it is not logically possible that (8a) has a truth value and (8b) is false, and that (9a) has a truth value and (9b) is false. However, it seems obvious that the logical relations between (8a) and (8b), and between (9a) and (9b) are, at least, semantically irrelevant. Thus, an adequate definition of semantical (or grammatical) notion of presupposition would exclude these cases. We are concerned with a logical notion of presupposition as long as it is determined from the grammatical (especially semantical) structure of sentences. We shall come back to this point later.

So far we have assumed that there is a logical notion of presupposition like (1). This assumption is based on the view that there is a class of sentences which are both syntactically well-formed and semantically meaningful but which do not make statements. For instance, we assume it is a fact that the falsity of (7b) would render (7a) truth-valueless, though (7a) is still meaningful and syntactically well-formed. One might challenge such an assumption. He might argue, following Russell's analysis of definite descriptions, that the falsity of (7b) would render (7a) false rather than truth-valueless. He might further argue that the alleged fact that one who assertively utters (7a) (or its negation) would normally be thought to be committed to the truth of (7b) should be explained by using notions like (2) and (3) rather than by using (1). Stalnaker (1973), Thomason (1973), and Wilson (1973) seem to suggest this line of argument. Since this is really an interesting challenge, we should perhaps make a few comments on this issue, though we cannot go into the details.

First, let us summarize some points Katz (1972, pp. 131-143) made against the Russellian analysis:

(i) Consideration of how we ordinarily use the words 'true' and 'false' provides evidence of the above assumption about truth-gaps. The natural way to state the truth conditions for a simple subject-predicate sentence is to say that it is true just in case what its subject refers to has the property expressed by its predicate and it is false just in case what its subject refers to lacks this

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6. With this qualification, we may sometimes use "logical presupposition" and "semantical presupposition" interchangeably in this article.
The notion of presupposition as a statementhood condition has a corresponding place in the treatment of different sentence types.

(10) a. The king of France is healthy.
   b. Is the king of France healthy?
   c. Make the king of France healthy!
   d. Oh, were the king of France healthy!

Katz argues that on the Russellian analysis, if there is no king of France at the moment of utterance, the sentence (10a) is counted as making a false statement, but the answer to (10b) is not correspondingly, “no”, but rather “can’t be answered either way” (p. 134)

(iii) There are cases where a distinction must be drawn between assertion and presupposition to provide for the elements of being questionable and for the scope of negation.

(iv) If we abandon the assumption that an Epimenidean sentence like

(11) the sentence (11) is not true

expresses a statement, then we get an easy way out of the Epimenidean paradox. Furthermore, by adopting this way out, we can avoid Tarski’s conclusion that natural languages are logically inconsistent (pp. 136–137).

In connection with these points, notice that (i) and (ii) are intuitive evidence for the existence of ‘referential presupposition’ belonging to the logical notion of presupposition in the sense of (1). We shall leave open the question whether or not there is another type of logical presupposition which is not referential. Note that although (ii) may not be crucial evidence for the existence of truth-gaps, it would be convincing to the extent that the alternative theory without a logical notion of presupposition cannot account for these intuitive facts more satisfactorily. Note, further, that (iv) is crucial. For any alternative theory without truth-gaps must pay a high price in that natural languages would be inconsistent.

Secondly although notions like (2) and (3) are not clear, they could be interpreted as consistent with the existence of a logical notion of presupposition like (1). Therefore, even if the relation between (7a) and (7b) can be regarded as a case of the speaker’s presumption or pragmatic presupposition, this may not cause us to reject the possibility of a logical interpretation of this relation. For instance, the following “good faith condition”, which is a variant of “presumption”, would be consistent with the existence of logical presupposition:

(12) a. An individual ought not to utter a sentence $S_1$ which logically presupposes $S_2$ unless he believes $S_2$ to be true.
   b. An individual ought not to utter a sentence $S_1$ which logically presupposes $S_2$ to anyone who does not, in the speaker’s opinion, believes $S_2$. 

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Thus, unless there is an independent argument against the theory of logical presupposition, the fact that linguistic data are consistent with notions like (2) and (3) is not convincing enough to reject a notion like (1).

Our third point is this: There is a fairly well-established semantic theory which can treat many semantic properties and relations such as analyticity, contradictioriness, anomaly, synonymy, redundancy, entailment, paraphrase, etc. within the same framework. If the information about logical presupposition (in the sense of (1)) is indispensable, directly or indirectly, in order to stipulate those semantic relations and properties, then the existence of logical presupposition would be theoretically motivated. Consider the following:

(13) a. The present king of France is male.
   b. The present king of France is female.

(14) There is a present king of France.

According to Katzian semantic theory, (13a) is analytic, whereas (13b) is contradictory, whether or not their presupposition (14) is satisfied. This means that an analytic sentence like (13a) is semantically secured against falsehood, whereas a contradictory sentence like (13b) is semantically secured against truth. Thus, if (13a) ever makes a statement, that is, if its presupposition (i.e., 14) is satisfied, then (13a) can be said to be necessarily true. Similarly, if (13b) ever make a statement, that is, if its presupposition (i.e., 14) is satisfied, then it can be said to be necessarily false. This result is intuitively acceptable. Now compare this account with a Russellian account. Let us suppose (14) is false. According to Russellian theory both (13a) and (13b) are false. Thus, an analytic sentence like (13a) becomes false, whereas a contradictory sentence like (13b) also becomes false. Thus, on a Russellian theory, one would have to tolerate a wholly unmotivated asymmetry in the treatment of analytic sentences and contradictory sentences. Furthermore, the existence of a "false analytic sentence" would be intuitively unacceptable.

These considerations lead us to the conclusion that it is reasonable to assume that there is a class of sentences which are both syntactically well-formed and semantically meaningful, but which do not make statements. In other words, there is good evidence to assume the existence of a logical notion of presupposition like (1).

2. The value of the variables $X$ and $Y$ in the formula "$X$ presupposes $Y"$

If we understood that the notion of presupposition with which we must primarily be concerned is that of a logical presupposition in the sense of a statementhood condition, then at the next atage, we must deal with the question of what it is that presupposes and what it is that is presupposed, though we have so far loosely talked about a presuppositional relation between sentences. That
is, we must consider the following important problem:

(1) What sort of entities are the variables X and Y supposed to range
over in every true instance of the formula “X logically presupposes
Y”?  

Since our notion of presupposition is not pragmatic, it is obvious that the variable
X cannot be a sentence act token (i.e., the individual act of producing a particular
sentence), nor a sentence act type (i.e., any act of uttering an instance of a
given sentence). Furthermore, since our notion of presupposition is supposed to
be dealt with within the grammar, it is also obvious that the variable X cannot be
a sentence object token (i.e., a specific occurrence of a particular sentence). Then,
should we assume that X ranges over a sentence type (i.e., a sentence treated as a
repeatable type)? No, we cannot take this view on the grounds that the sentence
itself should not be regarded as the bearer of truth value. It is customary to
argue that it is not sentences that are true or false, as follows: (i) There are non-
declarative sentences, which cannot have truth value. (ii) One type of declarative
sentence (i.e., so called ‘explicit performative sentence’) does not express an
assertive proposition: Rather it expresses an erotetic, requestive, promissory
proposition, which has no truth value. (iii) Sentences are frequently ambiguous,
either semantically or syntactically. Thus, it would be nonsense to ask whether
an ambiguous sentence is true or not. (iv) Sentences may be anomalous, that is,
express no proposition at all. Thus, it would also be nonsense to wonder whether
an anomalous sentence is true or not. Notice that these points are not convincing
enough to reject the thesis that sentences are the bearers of truth value. For all
the preceding arguments show, at best, is that not every sentence has a truth value.
One might still claim that at least some, but not all, members of the set of sentences
have a truth value. Thus, we need a stronger argument. Consider the following:

(2) It is true that it is raining.
(3) C’est vrai qu’il pleut.

It is quite clear that (2) and (3) expresses the same proposition, and assert the
same thing. But according to the thesis that sentences are the bearers of truth
value, (2) would be talking about an English sentence, “it is raining”, whereas (3)
would be talking about a French sentence, “il pleut”. Thus, (2) and (3) could not
assert the same thing. Therefore, the original thesis that sentences are the bearers
of truth value must be mistaken. Once this thesis has turned out to be mistaken,
it is easy to show that sentences cannot have presupposition. Let us suppose a
sentence $S_1$ has a presupposition. Suppose, further, that presupposition is
satisfied. Then, by the definition of logical presupposition, the sentence $S_1$ must

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8. We shall call this formula the ‘presupposition formula’.
9. We borrowed these terminologies from Garner (1971, p. 23–5).
10. I owe this argument to Brody (1973, p. 54).
have a truth value. As we showed above, however, this is impossible. Therefore, we have to reject one of two premises: “S₁ has a presupposition” or “That presupposition is satisfied”. Since it seems absurd to reject the latter premise, we have to reject the former premise. Since we can generalize this argument, sentences cannot have presupposition. Therefore, X in the presupposition formula does not range over sentences.

In the present connection, it is sometimes suggested that it is the propositions (meanings) expressed by a sentence that are true or false. There is, however, a well-known objection to this thesis. It is that a certain type of proposition expressed by a sentence that includes token indexical elements referring to contingent persons, places, times, things, etc., cannot have a fixed truth value. Now let us call ‘statement’ the logical object which has a unique truth value. Notice that the above objection merely shows that statements cannot in general be identical with the propositions expressed by the sentences used to make them. As Cartwright (1962, p. 95) and Katz (1972, p. 123) correctly pointed out, this fact is compatible with the view that the class of statements can be identified with the proper subset of the class of propositions. Following Katz (1972, p. 125), let us identify that proper subset of the class of propositions with “the class of non-occasion propositions”, i.e., “with the union of the classes of eternal and standing propositions”. Note that the propositions of this special class do not change their truth value depending on the occasions of uttering the sentences that express them. Therefore, it seems reasonable to regard this class of propositions (namely, statements) as the bearers of truth value.

Now let us return to the consideration of the variable X in the presupposition formula. Again note that when its presupposition is satisfied, X must have a truth value. This indicates that X must range at least over the bearers of truth value. However, when its presupposition is not satisfied, X should not range over this special class, i.e., over statements. Rather it can range over the class of occasion propositions. These considerations would lead us to the view that the variable X in the presupposition formula “X presupposes Y” ranges over any type of proposition. However, further qualification may be required. If we are now restricting ourselves to presupposition in the sense of a statementhood condition, then we have to expel non-assertive propositions such as erotetic.

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11. It would be worth noting that our usage of the term ‘statement’ differs from Strawson’s (1952). Strawson seems to use this term as follows:

A statement S presupposes another statement S’ if and only if the truth of S’ is a necessary condition of the truth or falsity of S.

That is, for Strawson, when a presupposition fails, “Statement S lacks a truth value” rather than “No statement is made”. Thus, we should take it that Strawson did not commit himself to the view that a statement is either true or false by definition. Therefore, it would not be fair to criticize Strawson for overlooking the distinction between proposition and statement in our terminology.

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requestive, covetive, or promissory propositions from the range of X. Next, Katz (1972, p. 128) seems to expel eternal propositions from the range of the variable X. The reason seems to be that for Katz, the statementhood condition (i.e., the logical notion of presupposition) is identical with the referential condition. Since the eternal propositions, by definition, lack any token indexical elements referring to contingent persons, places, times, things, etc., it would be vacuous to talk about the referential condition for eternal propositions. According to Katz, one of the typical eternal proposition is a generic proposition like each of (4):

(4)  
a. Owls are nocturnal.
b. The dodo is an animal.
c. A carpenter builds.
d. The dog is domesticable.
e. The unicorn is quadrupedal.

Katz suggests that in fact these cases have no presupposition. Although we cannot go into the details, perhaps we should make one or two comments on such a treatment. First, let us take Katz’s notion of “eternal proposition” as (5)

(5) A proposition P is an eternal proposition if and only if it lacks any token indexical elements referring to contingent persons, places, times, or things.

From this, does it follow that any eternal proposition has no referential presupposition? Well, the answer depends upon how to interpret the notion “referential presupposition”. In this connection, Katz suggests as follows:

(6) The referntial condition is a condition that token indexical elements in a proposition impose on things in the world in order for some of them to qualify as the referents of these elements (p. 128).

From (5) combined with (6), it follows that any eternal proposition has no referential presupposition. Now consider the following sentence:

(7) The smallest prime number is divisible by itself.

Does this express an eternal proposition? Notice that this is a statement of pure mathematics. Thus, it, of course, lacks any token indexical elements referring to contingent matters. Thus, (5) would tell us (7) expresses an eternal proposition. Next consider the following:

(8) The largest prime number is divisible by 423.

For a similar reason, (5) would tell us (8) expresses an eternal proposition. Now, does (8) make a statement? That is, does the proposition expressed by (8) have a truth value? It seems obvious that the proposition expressed by (8) has no truth value. Therefore, as long as the referential condition is identical with the statementhood condition, (8) must have some referential condition. In other words, the proposition expressed by (8) must have presupposition. Therefore, Katz’s view that any eternal proposition has no (referential) presupposition is
Furthermore, this result would indicate that Katz's thesis that the class of statements is the union of the classes of eternal and standing propositions must be modified. Indeed, (6) should be revised such that it might cover the referential conditions of (7) and (8). Incidentally, it might be worth noting that the proposition expressed by (8) seems somewhat similar to the indeterminable proposition expressed by (9):

(9) The female king is bald.

For both of them cannot have truth value in any possible world. However, there is a difference in the reasons: The reason that the proposition expressed by (8) has no truth value in any possible world is a mathematical one. On the other hand, the reason that the proposition expressed by (9) has no truth value in any possible world is a linguistic one. Thus, on a point of semantics, (8) should be called "indeterminate" rather than "indeterminable". We might as well attribute a property "necessarily indeterminate" to (8). Therefore, it seems adequate to assume that X in the presupposition formula "X presupposes Y" belongs to any kind of propositions.

Now let us turn to the consideration of the variable Y in the presupposition formula. Notice that Y is a condition. Thus, it is either 'satisfied or non-satisfied' or 'neither satisfied nor non-satisfied' by the world. To say this is to say that Y is supposed to be either true or false or else indeterminate. Therefore, Y must be, at least, an assertive proposition. Now, the difficult problem is how we can further restrict this class. At first sight it seems unlikely that Y itself is either indeterminate or indeterminable, as far as referential presupposition is concerned. For in the case of a referential presupposition, Y has a special form such as an existential or quasi-existential form, which seems to have no further referential presupposition. But consider the following:

(10) a. There are two books on the desk in John's room.
    b. There is a desk in John's room.
    c. John has a room.

(11) a. The girl friend of the present king of France exists.
    b. There is a present king of France.

If we can interpret that there are presuppositional relationships between (10a) and (10b), between (10b) and (10c), and between (11a) and (11b), then we have the case where Y itself has another referential presupposition. Therefore, Y should not be restricted to the statement.\footnote{I am indebted to Sylvain Bromberger for the point underlying this argument and for other helpful suggestions.}

\footnote{I wish to thank Fred Katz for this point.}

\footnote{If the so called factive presupposition turns out to be a special case of referential presupposition, then we have another crucial case where Y can be indeterminate or indeterminable.}
3. The definition of presupposition vs. the rule of presupposition

An explicit definition of logical presupposition, although usually contrasted with a definition of the entailment relation, is often stated by logicians and linguists nearly in like form. For example,

(1) a. A statement $S_1$ entails another statement $S_2$ if and only if the truth of $S_2$ is a necessary condition of the truth of $S_1$.
   b. A statement $S_1$ presupposes another statement $S_2$ if and only if the truth of $S_2$ is a necessary condition of the truth or falsity of $S_1$.
   (Strawson 1952, p. 175).

(2) $S_1$ presupposes $S_2$ if and only if
   a. $S_1$ necessitates $S_2$.
   b. not-$S_1$ necessitates $S_2$.
   where $A$ necessitates $B$ if and only if, whenever $A$ is true, $B$ is also true. (Van Fraassen 1968, p. 138).

(3) a. $L_1$ entails $L_2$ if and only if whenever $V(L_1)=T$, $V(L_2)=T$; and whenever $V(L_1)=F$, $V(L_2)=F$.
   b. $L_1$ presupposes $L_2$ if and only if whenever $V(L_1)=T$, $V(L_2)=T$; and whenever $V(L_1)=F$, $V(L_2)=T$, where ‘$L_2$’ stands for a logical form of a given sentence $S$, and ‘$V(X)$’ stands for truth value of $X$.
   (Lakoff and Railton 1970, pp. 5–10).

Some linguists have stated this in a slightly different, but essentially similar way as follows:

(4) a. if $(S_1 \rightarrow S_2)$ and $(\sim S_2 \rightarrow \sim S_1)$; then $S_1$ entails $S_2$.
   b. if $(S_1 \rightarrow S_2)$ and $(\sim S_1 \rightarrow S_2)$, then $S_1$ presupposes $S_2$ (to be read “if from $S_1$ we can conclude $S_2$…”).
   (Horn 1969, p. 98).

(5) a. $S_1$ semantically entails $S_2$ if and only if $S_2$ is true under every assignment of truth values (i.e., in every possible world) under which $S_1$ is true.
   b. $S_1$ presupposes $S_2$ if and only if $S_1$ semantically entails $S_2$, and $\sim S_1$ semantically entails $S_2$, where $\sim S_1$ is an internal negation of $S_1$.
   (Horn 1972, pp. 11–12).

(6) a. A sentence $S_1$ logically implies $S_2$ if and only if $S_2$ is true in every world (that is, under all the conditions) in which $S_1$ may be a set of sentences.
   b. A sentence $S_1$ logically presupposes $S_2$ if and only if $S_1$ logically implies $S_2$ and the negation of $S_1$, namely $\sim S_1$ also logically implies $S_2$.
   (Keenan 1971, pp. 45–6).

In connection with this type of definition, the following points should be noticed. First, we can criticize (4) for stating only a sufficient condition rather than a
necessary and sufficient condition. Further note that the significance of the relation "conclude from" in (4) is no clearer than that of \( \rightarrow \). It is open to various interpretations: (i) material implication, (ii) logical implication,\(^{15}\) (iii) mere entailment,\(^{16}\) (iv) semantic entailment in Katz's sense (1972, p. 134ff).\(^{17}\) In this respect, other definitions except (4) seem to be more explicit. Secondly, the definition (6) faces its own difficulty. Katz (1973) argued that this type of definition fails since the property of being logically implied by a sentence and also by its negation is neither necessary nor sufficient for being a presupposition. In the course of this argument, Katz pointed out that there are three things wrong with (5) and (6): (i) Each fails to generalize to cover non-assertive propositions like questions, requests, promises, etc., because the so called 'negation test of presupposition' does not apply at least to those non-assertive cases. (ii) Each fails to rule out logical truths as presuppositions of every sentence. (iii) Each implies the unnatural consequence that no presupposition can be false. From this, Katz seems to reject definitions like (6) and to defend Fregean-Strawsonian definition of presupposition. Obviously, Katz's criticism also applies to (2) and (5). For Van Fraassen's usage of 'necessitate' in (2) and Horn's usage of 'semantically entail' in (2) are equivalent to 'logically imply' in Keenan's sense. Note, however, that Katz's second criticism seems to apply to Strawsonian definition like (1) and (3), too. In order to make this point clear, let us consider (1) more carefully. (1b) says that \(S_1\) presupposes \(S_2\) if and only if

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\text{(7) It is logically necessary that if } S_1 \text{ has a truth value then } S_2 \text{ is true.}
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Now suppose \(S_2\) is a logical truth. Since the consequent of (7) is necessarily true, the statement (7) is true whether or not its antecedent is true. This means \(S_1\) can be everything. Hence, it follows that there are presuppositional relations between (8) and each of (9):

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\text{(8) It is raining.}
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\text{(9) a. John is both alive and dead.}
\]

\[
\text{b. If John is tall then John is tall.}
\]

etc.

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\(^{15}\) We use 'logical implication' as follows: P logically implies Q if and only if it is logically impossible that P should be true and Q false. To say this is, of course, equivalent \textit{either} to saying that it is logically necessary that if P is true then Q is also true, \textit{or} to saying that Q is validly deducible from P. Note further that terms like 'entail' or 'necessitate' are often used in this technical sense especially in philosophical literature (Cf. (1), (2), and (3)).

\(^{16}\) We use 'mere entailment' as follows: P merely entails Q if and only if (i) Q is a necessary condition for the truth of P, and (ii) it is not the case that Q is a necessary condition for the falsity of P.

\(^{17}\) 'Semantic entailment' (in Katz's sense) is a meaning relation between P and Q under which P follows necessarily (or logically) from Q not by virtue of any law of logic but by virtue of a certain semantic relation between them. Thus, Horn's usage of 'semantically entail' in (5) is different from ours.
Hence, Strawsonian definition, (1), suffers from exactly the same difficulty as Keenan's, where Katz's second point is concerned. Furthermore, if $S_1$ is indeterminable, a similar problem arises with (lb): When $S_1$ is indeterminable, the antecedent of (7) is logically false. Hence, it is not possible that the antecedent is true and the consequent is false, regardless of whether or not the consequent is true. This means that any arbitrary indeterminable sentence presupposes everything. Thus, for instance, (10) bears presuppositional relations not only to (11), but also to each of the infinitely many sentences in (12):

(10) The female king visited Bertrand Russell.
(11) a. There is a female king.
    b. Bertrand Russell exists.
(12) a. It is raining.
    b. The king of France is bald.
    c. John is hungry.
    etc.

Note that according to (lb), (11) is in no sense preferable to arbitrary sentence in (12). Furthermore, even the denial of (11),

(13) a. There is no female king.
    b. Bertrand Russell does not exist.

must be regarded as one of the presuppositions of (10). This would be absurd. We should certainly not say that (10) presupposes (13). Generally, if we adhere to the definition (1b), we shall be committed to saying that every sentence presupposes any arbitrary logical truth, and that any arbitrary indeterminable sentence presupposes every sentence whether it is true or not. Due to the oddity of this result, the Strawsonian definition of presupposition is not adequate. This result, however, is not surprising at all. It is well known that a definition of entailment like (1a) (or (3a), (5a), and (6a)) faces a similar problem if it is supposed to capture the semantic notion of valid inference in natural language. Note that all (1a) says is:

(14) It is logically necessary that if $S_1$ is true then $S_2$ is true.

From this, it follows that a logically false statement (contradiction) or indeterminable sentence entails everything, and that everything entails logical truths. Thus, (15) bears an entailment relation not only to each (16) but also to each of (17):

(15) The female king had a nightmare.
(16) a. The female king had a dream.
    b. The monarch had a nightmare.
(17) a. It is raining.
    b. John died in misery.
    c. The monarch had no nightmare.

Again, according to (1a), the relation between (15) and each of (16) is supposed to
be the same as the relation between (15) and each of (17), which would be absurd from the standpoint of the semantic notion of entailment. Of course, we cannot avoid these cases just by adding the condition that \( S_1 \) does not range over either logically false or indeterminable sentences. For clearly there is a genuine entailment relation between (15) and each of (16). Furthermore, definitions like (1b) would not distinguish the relation between (18a) and (18b) from the relation between (19a) and (19b):

(18)  
(a) This number is an even number greater than 12.  
(b) This number is the sum of two primes.

(19)  
(a) John is a bachelor.  
(b) John is unmarried.

Since in both pairs, it is not possible that (a) is true and (b) is false, (a) logically implies (b). In other words, the argument from (a) to (b) is valid in each case. Note, however, that the basis of the validity is different in each. The validity of (18) depends on the mathematical facts, whereas the validity of (19) depends on the meaning of language. Since the concept of semantic entailment is concerned with the latter, a Strawsonian definition of entailment like (1b) cannot be regarded as an adequate definition of semantic entailment.

Note, however, that the above discussion of (1) does not show that the definition (1) is inherently untenable. All we tried to show was that as long as (1) is intended to capture the purely semantic notion of entailment or presupposition, it would not be adequate. On the other hand, if (1) is supposed to capture, so to speak, a logical notion of entailment or presupposition in general, there might be no reason to reject it. Under this interpretation, it might make sense to say that (15) 'logically' entails each of (17), and that (18a) 'logically' entails (18b), and so on. Similarly, it might make sense to say that (8) 'logically' presupposes each of (9), and that (10) 'logically' presupposes each of (12), though neither (9) nor (12) should be regarded as the semantic presupposition of (8) and (10), respectively. These considerations lead us to the following definition for the semantic notions 'entailment' and 'presupposition'.

(20) A proposition \( P \) semantically entails another proposition \( Q \) if and only if it is necessary, simply by virtue of meaning, that if \( P \) is true then \( Q \) is true.

(21) A proposition \( P \) semantically presupposes another proposition \( Q \) if and only if it is necessary, simply by virtue of meaning, that if \( P \) has a truth value then \( Q \) is true.

In short, a semantic entailment is a relation which is semantically secured against invalidity. On the other hand, a semantic presupposition is a relation which is semantically secured against the lack of truth value. Both (20) and (21) are, of course, only first approximations to adequate definitions of these notions. We
leave open the possibility of expanding these notions to non-assertive cases like requests, questions, promises, etc.

Note, furthermore, that definitions like (20) and (21) are not designed to determine when a proposition \( P \), by virtue of its semantical structure, bears the entailment or presupposition relation to another proposition \( Q \). Rather, this type of definition is intended to provide answers to the following questions:

(22) What does “\( P \) (semantically) entails \( Q \)” mean?

(23) a. What does “\( P \) (semantically) presupposes \( Q \)” mean?
   b. What is thought to result when a presupposition is not satisfied?

That is to say, this type of definition explicates what kind of relation is to be attributed to what is marked as ‘entailment’ or ‘presupposition’: the relation attributed to a set of propositions marked as ‘entailment’ is security against invalidity whereas the relation attributed to a set of propositions marked as ‘presupposition’ is security against the lack of truth value.

However, this type of definition is not supposed to provide answers to the following:

(24) a. Which sets of propositions are instances of the entailment (or presupposition) relation?
   b. Does a certain proposition entail (or presuppose) another proposition?

This is important especially in linguistics, because unless we can provide an adequate answer to questions like (24), we will fail to explain the ability of a native speaker to determine intuitively the presupposition (or entailment) of a given sentence on its reading. Therefore, we need a type of definition different from (21). Such a new type of definition must be a recursive mechanism in the sense that it be an algorithm of the form:

(25) \( G(P_i, P_j) = P_i \) presupposes \( P_j \).

That is to say, (25) is a decision procedure with input pairs consisting of propositions \( P_i \) and \( P_j \) which determines whether or not the presuppositional relation holds between them. The linguistic theory must specify such an algorithm \( G \). If we consider other kinds of semantic properties and relations such as ‘synonymy’, ‘paraphrase relation’ and so on, then the significance of the definition (25) is obvious. To construct this type of definition within a semantic theory is significant not only because it provides a basis for predicting when a proposition, by virtue of its structure, bears the presuppositional relation to another proposition, but also because it would provide a basis for explaining why a given proposition stands in a presuppositional relation to another proposition. That is, it would explain why a certain (set of) proposition(s) is a necessary condition for the truth or falsity of a given (assertive) proposition. Although the importance of constructing an adequate definition of this type is not controversial, it is still worth
insisting upon, especially when talking about presupposition.\(^{18}\)

In sum, there are two types of definitions of presupposition. The first characterizes the notion in terms of what is thought to result when a presupposition fails. The second determines the particular presupposition of a given sentence by virtue of its grammatical structure.\(^{19}\) As for the first, (21) or something like it, may be an approximation. As for the latter, we have no adequate definition as yet. It is this type of definition that remains unclear and mysterious. In order to avoid a terminological confusion, we shall call the definition of presupposition in the former sense “the definition of presupposition” and the definition of presupposition in the latter sense “the rule of presupposition”.\(^{20}\) The definition and the rule are related in such a way that the latter tells us when the condition specified by the former is met.\(^{21}\) Now, the empirical question is what kind of rule of presupposition is adequate to account for a native speaker’s ability to recognize the presupposition whose meaning is roughly given by (21).

REFERENCES


Horn, L.R. (1969) “A Presuppositional Analysis of only and even", in Binnick et al., eds. Papers from the Fifth Regional Meeting of the Chicago Linguistic Society, University of Chicago, Chicago, Illinois.


\(^{18}\) Many generative grammarians who treat presupposition seem not to be interested in this task. Far from constructing an adequate definition in this type, they too often seem to be satisfied with providing a definition like (5) or (6), and occupying themselves with identifying the presuppositions that certain kind of sentences have.

\(^{19}\) I am indebted to Katz’s seminar (1974, M.I.T.) and to Bromberger’s seminar (1973, M.I.T.) for the point underlying this argument. Katz seems to call the first type ‘interpretive definition’, and the second one ‘grammatical (or structural) definition’. Katz and Nagel (1974 p. 314) seem to call the former simply ‘definition’. As for the latter, they suggest that the linguistic theory is supposed to tell us how the definition is used to determine which pair of proposition belongs to the appropriate relation.

\(^{20}\) I owe this terminology to Bromberger’s seminar (1973, M.I.T.).

\(^{21}\) Linguists are not always conscious of such a distinction. For instance, this distinction is collapsed in Horn’s definition (5), in Keenan’s definition (6), and in Van Fraassen’s definition (2). They seem to be designed to tell us not only the properties of presupposition (i.e., what is preserved under negation), but also an algorithm to determine what is an instance of presuppositions.