IS THE NOTION OF SEMANTIC
PRESUPPOSITION EMPTY?*

XINLI WANG

I. Introduction

Let us consider the following two sets of sentences:

(S1) The present king of France is bald.

(S2) The present king of France is not bald.

(S3) The present king of France exists.

(S4) Some unicorns in the African jungle are hairless.

(S5) Some unicorns in the African jungle are not hairless

(S6) There exists at least one unicorn in the African jungle.

There are two common features for each of the above sets of sentences: (a) It is clear that the first two sentences in each group somehow strongly "suggest" or "imply" their fellow, the third sentence. This kind of "felt implication" relationship between these sentences needs explanation. (b) When asked whether the first two sentences are true or false when the third sentence is not true, the respondent usually hesitates to give an affirmative or negative answer. He or she cannot simply choose one of the two classical truth values —namely, true or false— on the spot. Either answer seems to set a trap.

It is well known that Russell and Strawson gave different interpretations of the two facts observed above.[1] The debate has continued over

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[1] See Russell (1905), (1957), and Strawson (1950), (1952).

the truth-value status of vacuous existential sentences like S1 since then. Russell and Strawson agreed that appeal to ordinary intuitions is not sufficient to determine whether sentence S1 is false or neither-true-nor-false when sentence S3 is not true. We need to appeal to some theoretical considerations. (a) For Russell, the felt implication between S1 and S3 is nothing but the classical logical entailment relation in a subtle way. For Strawson, the felt implication is one of semantic presupposition[2] in the sense that whenever both S1 and S2 are true-or-false, S3 is true. (b) For Russell, when S3 fails to be true, S1 is simply false. There is no need to appeal to truth-value gaps. The classical bivalent semantics is thus preserved. For Strawson, when S3 fails to be true, both S1 and S2 are neither true nor false. We have to introduce some kind of trivalent semantics to accommodate the occurrence of truth-value gaps in our natural languages.

Despite its philosophical merits in the study of linguistic semantics and the philosophy of language, Strawson's notion of semantic presupposition has been under constant attack. Generally speaking, the attacks come from two main directions.[3] The critics can attack the notion indirectly by undermining the central notion of any theory of semantic presupposition, namely, the notion of truth-valuelessness. For many advocates of classical bivalent logic, the notion of truth-valuelessness is such a creeping disease that when it emerges in semantics, it will smite the semantics. On the other hand, the critics can attack the notion head on, either arguing that the notion itself is not theoretically coherent or contending that the notion, although theoretically coherent, is in fact empty since it cannot be exemplified. Therefore, it is not a philosophically interesting notion and should be given up. Böer and Lycan have presented lengthy and sophisticated arguments against the concept of semantic presupposition from both directions. To the best of my knowledge, for

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[2] There is a large body of literature on the notion of presupposition (see my references for some important works on the notion). I do not intend to give a comprehensive survey of all the related works on presupposition (the reader can refer to Soames (1989) for such a survey). The term "presupposition" has been used to describe pragmatic as well as semantic phenomena. A notion of presupposition is semantic iff the implications in question are a function of semantic status, semantic properties, propositional content, or logical form, not a function of context. In this paper, I restrict my discussion to semantic presupposition only, especially existential presupposition.

[3] For some criticisms of the notion, please see Bergmann (1981), Böer and Lycan (1976), Lycan (1984, 1987), Englebretsen (1973), Kempson (1975), Sellars, W. (1954), Wilson, D. (1975), Orenduff (1970), Gazdar (1979), Atlas (1989), and many others.

the past two decades nobody has responded successfully or done justice to their central arguments. Some of their arguments are now being repeated by others and having a great deal of influence. This is the reason why I think it is necessary for us to return to these more than ten-year-old works of Böer and Lycan and make a badly needed response to their attack on the notion of semantic presupposition. My response is both positive and negative in nature. I formally present a coherent and integrated notion of semantic presupposition after careful examination of several popular formulations of it in section III. For this purpose, I give a formal treatment of a three-valued language in section II. In section IV, two central arguments against the notion of semantic presupposition presented by Böer and Lycan are examined at length and responded to with care. My conclusion is that Strawson's notion of semantic presupposition is not damaged by these arguments. The notion is not empty; instead, it is philosophically significant.

II. A Formal Treatment of a Three-Valued Language

In this section, I would like to set up a formal treatment of a trivalent language.[4] This treatment will serve as a basic framework for the formal presentation of a trivalent version of semantic presupposition in section III.

1. Language

> Def. An uninterpreted language L is any pair <Syn, Val> such that Syn is a syntax and Val (a set of admissible valuations for L) is a set of functions mapping the sentences of Syn into truth values.

Here, Syn is a structure containing (a) sets of expressions or descriptive terms which are intended to have no fixed meaning; (b) a connected set of logical terms which are intended to have a fixed sense and be paired one-to-one in accordance with formation rules; (c) a series of formation rules which connect descriptive terms with logical terms to form well-formed formulae. Val is intended to represent the set of all logically possible worlds / interpretations consistent with the intended reading of the

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[4] I need to point out here that the present paper is directly inspired by Martin's (1979), which has helped me a great deal in straightening out my own thought on the topic. Especially in my formal treatment of the notion of semantic presupposition, I borrow many analytic tools from Martin.

logical terms of Syn. Val does not assign any specific meaning to descriptive terms in Syn.

2. Truth Operator, Falsity, and Truth-value Status

We need a truth predicate to be stated explicitly in order to formulate the notion of semantic presupposition in language L. Unfortunately, the truth of sentences within a given language is undefined in that language according to the proof of Gödel and Tarski. We can define truth for L in M, but not in L, truth for M in M', but not in M, and so on. Therefore, we have to extend L to M in which a truth predicate can be explicitly stated. We can achieve this by adding a sentential operator to L defined as follows:

$T_L(A) =$ df. It is true in L that A.

Here A represents any sentence.

In two-valued semantics, falsity is defined as the absence of truth by taking truth and falsity as contradictory concepts. Falsity is simply equal to non-truth. That is,

$F_L'(A) =$ df. It is not the case that it is true that A, or in symbols, not-$T_L(A)$.

By contrast, in three-valued semantics, non-truth is further divided into falsity and neither-truth-nor-falsity. Falsity is defined as the truth of the negation of a sentence A. That is,

$F_L(A) =$ df. It is true that the negation of A, or in symbols, $T_L(\text{not-}A)$.

I adopt the definition of falsity in three-valued semantics for obvious reasons. $F_L(A)$ is read as "It is false in L that A." The following is the truth table definition of the truth operator and the falsity operator in our three-valued semantics ("n" represents neither-true-nor-false):

A	T(A)	F(A)	F'(A)
t	t	f	f
n	f	f	t
f	f	t	t

In our system, "A is true or false from L's viewpoint" can be expressed as $T_L(A) \vee F_L(A)$. "A is neither true nor false from L's point of view" can be expressed as not-$(T_L(A) \vee F_L(A))$ or (not-$T_L(A)$ & not-$F_L(A)$).

3. Other Sentential Operators

In three-valued semantics, there are two notions of negation depending on what the designated truth values are. Truth is always designated and falsity is never designated in any system of three-valued semantics. Whether neither-truth-nor-falsity is designated depends on whether one wishes to preserve truth or to preserve non-falsity in a valid inference. If one's intention is to preserve truth, only truth is designated; if to preserve non-falsity, then both truth and neither-truth-nor-falsity are designated. If truth is the only designated truth value in L, we have a notion of unconditional negation:

> Def. The unconditional negation of a sentence, briefly, ~A, is true iff the sentence denied is false.

Correspondingly, if non-falsity is the designated truth value in L, we have a notion of conditional negation:

> Def. The conditional negation of a sentence A, briefly, ¬A, is true iff the sentence denied is not true.

The corresponding truth table of these two concepts of negation is as follows:

A	~A	¬A
t	f	f
n	n	t
f	t	t

In addition, let us extend the distinction between contradictories and contraries in traditional two-valued logic to our three-valued semantics:

> Def. Two sentences are contradictories of one another iff they cannot both be true and they cannot both be false, although they may both be neither true nor false.

> Def. Two sentences are contraries of one another iff they cannot both be true, but they can both be non-true.

Both unconditional and conditional negations are negations in the sense of contradictories.

Finally, conjunction, disjunction, and material implication can be defined in the following strong matrix (Kleene's strong matrix):

	&	v	→
	tfn	tfn	tfn
t	tfn	ttt	tfn
f	fff	tfn	ttt
n	nfn	tnn	tnn

4. Entailment and Formal Implication

Although logical entailment is essentially a notion of classical two-valued semantics, we can easily define it in three-valued semantics:

> Def. A entails B in a language L = <Syn, Val>, briefly, A $\vdash_L$ B, iff for any v in Val, (1) if v (A) = T, then v (B) = T; and (2) if v (B) = F, then v(A) = F.

A crucial feature of entailment is that it preserves the principle of contraposition; that is,

> A entails B iff ~B entails ~A, or in symbols, A $\vdash$ B iff ~B $\vdash$ ~A.

In addition, $\vdash_L$ A means that A is unconditionally valid in L, or A is true in all valuations of L. For example, $\vdash_L T_L(A)$ v $F_L(A)$ means that A is true-or-false in L unconditionally. Furthermore, we can use material implication and truth operator to formulate the entailment relation as defined above as follows:

> A $\vdash_L$ B   iff $\vdash_L T_L(A) \to T_L(B)$ and $\vdash_L F_L(B) \to F_L(A)$

Corresponding to the entailment relation, which is essentially a notion of two-valued logic, we can introduce the notion of formal implication in our three-valued semantics to represent the logical inference relationship:

> Def. A formally implies B in a language L = <Syn, Val>, briefly, A $\models_L$ B, iff for any v in Val, if v (A) = T, then v (B) =T.

Unlike entailment, formal implication does not preserve the principle of contraposition. ~B $\models$ ~A does not necessarily follow from A $\models$ B. Actually, the principle of contraposition is a principle of two-valued logic; it is dropped in any three-valued semantics. Furthermore, $\models_L$ A means that A is unconditionally valid in L, or more precisely, A is never false in all valuations of L (A is always either true or neither-true-nor-false). $\models_L T_L$ (A) v F_L (A) means that A is unconditionally true-or-false in L. Similarly,

we can formulate formal implication in terms of material implication and truth operator:

$$A \models_L B \quad \text{iff} \quad \models_L T_L(A) \rightarrow T_L(B).$$

5. A Few Useful Logical Rules[5]

R1. $\models (F(A) \rightarrow T(\sim A)) \ \& \ (T(\sim A) \rightarrow F(A))$

R2. $\models (F(\sim A) \rightarrow T(A)) \ \& \ (T(A) \rightarrow F(\sim A))$

R3.   If $A \models C$ and $B \models C$, then $A \lor B \models C$

R4. $A \models B$ iff $T(A) \models T(B)$

R5. $T(A) \lor T(B) \models T(A \lor B)$ and $T(A \lor B) \models T(A) \lor T(B)$

Especially, from R3, R4 and R5, we can infer that

if $A \models B$ and not-$A \models B$,   then $\models (T(A) \lor T(\text{not-}A)) \rightarrow T(B).$

This inference will be very useful in our formulation of semantic presupposition later. The same inference holds for entailment also. That is,

if $A \vdash B$ and not-$A \vdash B$, then $\vdash (T(A) \lor T(\text{not-}A)) \rightarrow T(B).$

III. A Definition of Semantic Presupposition

1. The Adequacy of the Notion of Semantic Presupposition

Let us set up the following necessary conditions for any satisfactory notion of semantic presupposition.

(I) Conforming to Strawson's Rules.

The debate between Strawson and Russell on the notions of semantic presupposition and truthvaluelessness emerged from their different intuitive readings of the sentences with non-denoting subject terms like S1. Both Russell and Strawson agree that S1 somehow implies S3 in the sense that if S1 is true, then the truth of S3 will necessarily follow. But they diverge when S3 is false. Russell conceives the case in traditional two-valued semantics. Hence the principle of contraposition holds between S1 and S3 since S1 entails S3. That means that S1 is necessarily false when S3 is false. On the contrary, Strawson treats the case in three-

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[5] From now on, for simplicity, whenever I use T(A), it is implicitly assumed that A is a sentence in a language L. So I will omit the explicit mention of L in $T_L(A)$. The similar treatment applies to "$\models_L$" and "$\vdash_L$."

valued semantics in which the principle of contraposition does not hold. S1 should be neither true nor false when S3 is not true. Furthermore, for Strawson, both S1 and the negation of S1, i.e., S2, bear a special relation to S3. If either S1 or its negation, S2, is true, then S3 would be true as well.

For comparison, we can formulate Russell's and Strawson's intuitions, which I call Russell's or Strawson's rules, in the following table:

Strawson's Rules	Russell's Rules	Comparison
Rule I:		
$\models T(S1) \rightarrow T(S3)$	$\vdash T(S1) \rightarrow T(S3)$	agree
Rule II:		(partially)
$\models T(S2) \rightarrow T(S3)$	$\vdash T(S2) \rightarrow T(S3)$ or $\vdash T(S2) \rightarrow F(S3)$	disagree
Rule III:		(completely)
$\models F(S3) \rightarrow \sim(T(S1)$	$\vdash F(S3) \rightarrow F(S1)$	disagree
$v\ F(S1))$		

Any satisfactory formal account of semantic presupposition has to validate Strawson's rules.

(2) Making a sound distinction between two kinds of non-truths.[6]

Although the truth value of S1, when S3 is not true, is controversial, it is widely accepted that the following claims should be agreed on by both sides. Given a sentence S7,[7]

(S7) The current president of China is bald.

Then,

(a)   Although both S1 and S7 are non-true, S1 is non-true in a way which differs from the non-truth of S7. The non-truth of the former is due to failure of denotation of the subject while the latter is due to the falsity of the predicate.

Consequently,

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[6] See Bergmann (1981).

[7] Let us put the issue of vague predicates aside, and suppose that "∩ is bald" is not a vague predicate. Actually, we can easily avoid a vague predicate by using other predicates, such as "∩ is female."

(b) It is possible for the negation of S1 to be non-true if S1 is non-true (when S1 is neither true nor false). But the negation of S7 is true if S7 is non-true (S7 is actually false).

In general, there is a distinction to be drawn between two kinds of non-true sentences that is both intuitively recognizable and theoretically productive. This intuitive difference between two kinds of non-truths needs explanation. A satisfactory account of semantic presupposition should regiment the data in (a) and (b).

(3) Giving a non-trivialized notion of semantic presupposition.

The semantic presupposition of a sentence should be contingent, not tautologous. In other words, the semantic presupposition of a sentence may fail to be true under some interpretations or models. This requirement is intended to exclude the possibility that any logical truth B (sentences that are true under all interpretations) is semantically presupposed by any sentence A.

2. An Examination of A Variety of Formulations of Semantic Presupposition

Many different formulations of the notion of semantic presupposition have been offered in the literature. The following are some typical definitions of semantic presupposition:

(P1) A semantically presupposes B iff both A and not-A imply B.

(P2) A semantically presupposes B iff both A and its logical contrary imply B.

(P3) A semantically presupposes B iff A entails B and the negation of A entails B.

(P4) A semantically presupposes B iff both A and the negation of A materially imply B.

(P5) A semantically presupposes B iff A necessitates B and $\models F(B) \rightarrow (\sim T(A) \& \sim F(A))$.

(P6) A semantically presupposes B iff A necessitates B and the negation of A necessitates B.

(P7) A semantically presupposes B iff B is a necessary condition of the truth or falsity of A. Or, whenever A is true or false, B is true.

Each of these definitions has some flaws and cannot meet our condition of the adequacy of the notion of semantic presupposition. For clarity, I will divide these definitions, according to their structures, into three groups and examine each group below.

A. Definitions P1, P2, P3, and P4

P1, P2, P3, and P4 define semantic presupposition in a broadly similar way. They share the common structure represented by P1. Actually, P1 can be used as a schema to represent most formal accounts of semantic presupposition. I would like to reformulate P1 in the following and call it Schema P:

> Schema P: A sentence A semantically presupposes B in a language L;
> briefly, A $\Rightarrow$ B, iff both A and its *negation*, not-A, *imply* B in L.

Schema P not only represents some existing formal formulations of semantic presupposition, like P2, P3, and P4, but also covers some potential candidates for it. By discussing Schema P, we will touch a rather broad range of possible interpretations of the notion of semantic presupposition.

Theories of semantic presupposition differ radically as to how to unpack Schema P, especially in their interpretations of the negation "not" and implication relation in it. This is because Schema P has two undetermined parameters. One is the sense of the negation "not-A," the other the sense of "imply." Let us examine each parameter in turn.

(1) Negation: conditional vs. unconditional negation and contradictories vs. contraries / subcontraries?

Suppose that A presupposes B. If "not-" in Schema P is understood as a conditional negation, then from Schema P we have

(a) A implies B   and   (b) $\neg$A implies B.

If "implies" means "formally implies" (It will not affect our argument if "implies" is read as "entails" or "materially implies"), then (c) follows from (a) and (b):

(c) $\models$ (T(A) v T($\neg$A)) $\rightarrow$ T(B).

By contraposition, we have

(c') $\models$ $\neg$T(B) $\rightarrow$ $\neg$(T(A) v T($\neg$A)).

Since T($\neg$A) $\neq$ F(A), when B is not true, A is not necessarily neither true nor false. This proves that the definition of semantic presupposition in terms of conditional negation does not conform to Strawson's rule III. So, this account is too weak.

However, perhaps the defender of conditional negation would protest that the notion of semantic presupposition in terms of conditional negation is intended to avoid truth-valuelessness. Then the fact that it does not conform to Strawson's rule III should be regarded as a merit instead of a flaw. Let us accept this defense for the sake of argument now. But this defense still cannot eliminate another serious problem faced by defining semantic presupposition in terms of conditional negation. If B is untrue, then the antecedent $\neg$T(B) is true. In order to make (c') unconditionally valid, the consequent $\neg$(T(A) v T($\neg$A)) has to be true. But the consequent is logically false. That establishes that the presupposition B of A can never fail to be true. So the notion of semantic presupposition is trivialized according to the definition in terms of conditional negation.

As we have pointed out before, either unconditional or conditional negation of a sentence is the contradictories of that sentence (in the sense that a sentence and its contradictory cannot both be false and both be true). When faced with the threat of trivializing semantic presupposition, one way around it is to employ the notion of contraries, instead of contradictories, in defining semantic presupposition. This is the way which is expressed in P2. The basic idea behind P2 is quite simple. Let us say that every sentence not only has a negation in the sense of logical contradictories (no matter whether as a conditional or as an unconditional negation), but has a logical contrary as well. Then we can define semantic presupposition in terms of logical contraries instead of logical contradictories. If a statement and its logical contrary both imply a common statement, then they presuppose that statement. Let us formalize P2 in our formal system (taking "imply" as formal implication for a reason that will become clear later). That is,

A presupposes B   iff $\models$ T(A) $\rightarrow$ T(B)   and $\models$ T(*A) $\rightarrow$ T(B).

Here "*A" represents the logical contrary of A. From this definition, we have,

(d) $\models$ (T(A) v T(*A)) $\rightarrow$ T(B)   and   (e) $\models$ ~T(B)$\rightarrow$ ~(T(A) v T(*A)).

When B is untrue, the antecedent of (e), ~T(B), is true. Since A and *A can both be false, the consequent of (e), i.e., ~(T(A) v T(*A)), may be true when B is false. Therefore, it is possible for B to be untrue while (e) is unconditionally valid. No truth-value gaps necessarily occur. P2 appears to be a decent solution which avoids trivializing presupposition and preserves bivalent logic as well.

According to the notion of logical contraries in traditional two-valued logic, the definition of logical contraries is clear. It has to be defined in such a way that when two sentences are contraries of one another they can both be non-true although they cannot both be true. Now, the real problem is how to formulate the logical contrary, *A, of a typical presupposing sentence A. Englebretsen suggests treating the logical contrary of a sentence A as the sentence with a negation occurring within A, which Russell called the secondary occurrence of negation. By contrast, the logical contradictory of A, which Russell called the primary occurrence of negation, is the sentence with a negation outside A. For example, the contrary of an universal subject-predicate sentence,

(S8)   All S is P,

is (*S8)   All S is not P,   or   No S is P.

But its logical contradictory would be

(~S8) It is not the case that all S is P, or in symbols, not-(all S is P) =
        Some S is not P.

For a singular subject-predicate sentence,

(S9)   S is P,

its logical contrary is

(*S9)   S is not P,

while its contradictory is

(~S9) It is not the case that S is P, or in symbols, not-(S is P)

It will become clear that such a distinction between logical contradictories and contraries is nothing but the distinction between external negation and one kind of internal negation (the internal negation of a sentence as the contrary or as the subcontrary of that sentence).

Since I will address in detail the problem with analyzing the notion of semantic presupposition with respect to the distinction between external and internal negation in section IV, I will leave my criticism of P2 until then. But the following two points should suffice to show the inade-

quacy of P2. On the one hand, not all presupposing sentences (such as particular subject-predicate sentences) have their corresponding contraries; on the other hand, the real trouble with P2 is that it does not conform to the essential property of any notion of semantic presupposition —namely, Strawson's rule III. It makes no sense to call a "felt implication" a semantic presupposition if it does not support the notion of truth-valuelessness. It is more appropriate to simply call such an implication another version of entailment.

From the above analyses we know that the negation of a presupposing sentence A, i.e. not-A, cannot be either the conditional negation of A or the logical contrary of it. An appropriate candidate for the negation in question seems to be the unconditional negation of A —namely, ~A within three-valued logic. Suppose that A presupposes B. Taking the negation of A as an unconditional negation, according to Schema P (taking "implies" as formal implication), we have

(f) $\models (T(A) \lor T(\sim A)) \to T(B)$

(g) $\models \sim T(B) \to (T(A) \lor T(\sim A))$.

A has to be neither true nor false when B is not true.

But I have to point out that ~A is not the only candidate for the negation used in the definition of semantic presupposition. There is another reading of negation available to define semantic presupposition. We know that some sentences not only have their contradictories but also have their subcontraries. We can define the notion of logical subcontraries as follows:

> Def. Two sentences are subcontraries of one another iff they cannot both be false but can both be non-false.

For example, the internal negation of a particular subject-predicate sentence is the subcontrary of that sentence.

(S10)   Some S is P.

(#S10)   Some S is not P.

Suppose that A presupposes B. Let us take the negation of A in Schema P as the subcontrary of A and use the symbol "#A" to represent it. Then, from Schema P (taking "implies" formal implication), we have,

(h) $(T(A) \lor T(\# A)) \to T(B)$.

(i) $\models \sim T(B) \to \sim (T(A) \lor T(\# A))$.

According to formula (i), A has to be neither true nor false when B is not true. The possibility of A being true or being false is ruled out when B is not true. Otherwise B cannot be untrue and is trivialized.

The requirement of the negation of a presupposing sentence in Schema P as the subcontrary of that sentence is weaker than the requirement of the negation as the contradictory. But the problem with it is that for some presupposing sentences, there is no corresponding subcontrary (for example, a universal subject-predicate sentence, "All S is P," does not have a subcontrary). From now on, *I will take the negation in Schema P (i.e., "not-A") as either the subcontrary of A (i.e., #A) or as the contradictory of A (i.e., ~A) if the subcontrary is not available.* Since the notion of subcontraries is more comprehensive than the notion of contradictories, we may read a contradictory as one case of subcontrary. In the following discussion, for clarity and simplicity of formal treatment,[8] I will only use ~A in the related formulae unless otherwise indicate. But please remember that reading "not-A" in Schema P as the subcontrary of A is more precise.

Comparison Table For Negation "not-A"

subcontraries/contraries			contradictories	
A	#A	*A	~A	¬A
t	t/f	f	f	f
n	n	n	n	t
f	t	f/t	t	t

(2) Implication: material, formal implication, or entailment?

P3 takes "implies" in Schema P as entailment. The major problem with P3 is that if the notion of semantic presupposition is defined in terms of entailment, then the notion of semantic presupposition would become trivialized since the presupposition of a sentence on such a definition can never be false. This can be shown easily by means of the formal system we have introduced in section II: If $A \vdash B$ and $\sim A \vdash B$, then by the definition of entailment, we have

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[8] The notions of subcontrary and contrary, unlike that of contradictory, are not well-defined truth-functional operators, though we could make them so by splitting '#' (or '*') into '#$_t$' and '#$_f$' (or '*$_t$' and '*$_f$').

(a) $\vdash T(A) \rightarrow T(B)$ (b) $\vdash F(B) \rightarrow F(A)$

(c) $\vdash T(\sim A) \rightarrow T(B)$ (d) $\vdash F(B) \rightarrow F(\sim A)$

By R2, the combination of (b) and (d) leads to

(e) $\vdash F(B) \rightarrow (T(A) \& F(A))$.

That means that if B is a semantic presupposition of A, then B cannot be false. Otherwise the formula (e) cannot be valid since its consequent, T(A) & F(A), can never be true (it is logically false). Furthermore, from (a) and (c) we have

(f) $\vdash \sim T(B) \rightarrow (\sim T(A) \& \sim F(A))$.

(f) is what we expect, but it is not consistent with (e).

If a theory interprets the implication in Schema P as material implication, we may call such a presupposition material presupposition on the analogy of material implication. P4 defines such a material presupposition. The problem with P4 is easy to see. If $\vdash (A \& \sim A) \rightarrow B$, then, by contraposition, $\vdash \sim B \rightarrow (A \& \sim A)$. When B is false, the antecedent $\sim B$ is true; then the consequent A & $\sim$A has to be true since the formula is unconditionally valid. But the consequent A & $\sim$A cannot be true. That means that the presupposition B of A cannot fail to be true and is trivialized.

The real reason why the definition of presupposition by virtue of entailment or material implication makes the notion trivialized is not very hard to see. This is because both relations, although they can be defined in three-valued logic, still preserve the principle of contraposition. And the principle of contraposition is essentially a principle valid in classical two-valued logic. All three-valued semantics rejects the principle of contraposition. It is plain now that the result of the failure to define presupposition in terms of classical entailment or material implication is that a notion of semantic presupposition requires a strict implication that does not preserve the principle of contraposition. A non-classical implication is called for. The formal implication defined in our three-valued semantics in section II is what we need.

B. Definition P5

Böer and Lycan correctly diagnose that defining semantic presupposition in terms of entailment relation would trivialize presupposition because entailment supports contraposition. They claim that the proper

way to analyze the notion of semantic presupposition is to employ a model-theoretic notion of strict implication that does not support contraposition. That is the notion of necessitation. It is clear that, in Böer and Lycan's hands, the notion of necessitation functions as the notion of formal implication as we have defined it before. "A sentence S1 necessitates a sentence S2, roughly, just in case there is no model relative to which S1 is true and S2 is untrue."[9] So, a sentence A necessitates another sentence B if and only if $\models T(A) \rightarrow T(B)$. Then P5 can be formulated as:

(a) $\models T(A) \rightarrow T(B)$ (b) $\models F(B) \rightarrow (\sim T(A)\ \&\ \sim F(A))$

The real problem with P5 is that it cannot justify Strawson's rule II, which can be restated here as $\models T(\text{not-}A) \rightarrow T(B)$. From (b), by contraposition, we have

-   (c) $\models (T(A)\ v\ T(\sim A)) \rightarrow \sim F(B)$.

(c) holds iff

(d) $\models T(A) \rightarrow \sim F(B)$ and   (e) $\models T(\sim A) \rightarrow \sim F(B)$

hold. In three-valued logic, $\sim F(B)$ does not imply $T(B)$. Hence, Strawson's rule II cannot be derived from P5. In fact, when A is false but B is untrue, Strawson's rule II is falsified while the same valuation validates (a) and (b). This establishes that, supposing that A presupposes B, according to P5, the truth of the negation of A does not necessarily imply the truth of B. This directly violates Strawson's rule II.

C. Definition P6 and P7

If we read necessitation relation as that defined by Böer and Lycan, P7 can be easily derived from P6, and vice versa. From P6, we have

$\models T(A) \rightarrow T(B)$ and $\models T(\sim A) \rightarrow T(B)$.

By R3, $\models (T(A)\ v\ T(\sim A)) \rightarrow T(B)$. By R2, P6 eventually becomes

$\models (T(A)\ v\ F(A)) \rightarrow T(B)$.

It is nothing but P7.

P7 seems to have an appealing character free from the theory of negation. It appears that without explicitly mentioning negation, we would avoid many confusions caused by different readings of negation. But this

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[9] Böer and Lycan (1976), p. 7.

appealing feature is only superficial. It is true that it is more convenient to use the concept of falsity directly, where Strawson's rule III is concerned. But in formulating and testing any definition of semantic presupposition, we have to deal with Strawson's rule II. In doing so, we need to explicitly use a specific reading of negation. For example, according to P7, the sentence S1 presupposes S3 iff both the truth of S1 and the falsity of it formally imply S3. How can we find whether the falsity of S1 implies S3, if the definition of formal implication only specifies the relation between the truth of an implying sentence and the truth of the implied sentence. We have to convert the falsity of S1 into the truth of its contradictory, namely, $F(S1) = T(\sim S1)$. Therefore, the employment of negation in defining presupposition is inevitable. For this reason, we can regard P7 as one version of Schema P.

Besides, P7 does not specify the notion of falsity. As we have mentioned before, there are two senses of falsity, one in classical logic, the other within three-valued logic. If the falsity of A in P7 refers to the bivalent notion of falsity, i.e., $F'(A)$, then P7 would be trivialized. For then P7 is equivalent to

$$\models T(B) \rightarrow \sim(T(A) \vee F'(A)).$$

Since $T(A) \vee F'(A)$ is a tautology $(F'(A) = \sim T(A))$, the consequent $\sim(T(A) \vee F'(A))$ is logically false. So B cannot fail to be true and is trivialized. For this reason, we cannot leave the notion of falsity in the definition of semantic presupposition unspecified. The only way out is to define falsity in three-valued logic. This feature is reflected in Schema P by T(not-A) which rep~esents the notion of falsity in three-valued logic.

3. A Definition of Semantic Presupposition

The general conclusion drawn from the above analyses of P1, P2, P3, P4, P5, P6, and P7 is plain: the best candidates for the two parameters of Schema P are: (1) reading "not-A" as the subcontrary (including contradictory) of A; (2) reading "imply" as formal implication. Then Schema P can be refined as follows:

Schema P: A sentence A semantically presupposes a contingent sentence B[10] in a three-valued language L, briefly, $A \Rightarrow B$, iff both A and its subcontrary, #A, (or its unconditional negation, ~A, if the subcontrary is not available) formally imply B in L.

That is, $A \Rightarrow B$ iff $\models (T(A) \lor T(\#A \:/\: \sim A)) \rightarrow T(B)$.

From now on, we will use this modified schema P as our formal definition of semantic presupposition.

Let us test Schema P against our three requirements of the notion of semantic presupposition. First, it is possible for B to fail to be true according to our definition. Actually, when B is not true, no matter whether we take the negation of A as the subcontrary or as the contradictory of A, A has to be neither true nor false. That is,

$$\models \sim T(B) \rightarrow \sim (T(A) \lor T(\sim A \:/\: \#A)).$$

Therefore, we have a non-trivialized notion of semantic presupposition. This takes care of the non-trivialization requirement and at the same time meets Strawson's rule III. Second, S1 is neither true nor false since its presupposition S3 fails while S7 is false since the presupposition of S7, namely, "The present president of China exists," is true. In this way, we make a reasonable distinction between two kinds of non-true sentences by assigning them different truth values.

Third, in order to satisfy Rule II, we need to show that both a presupposing sentence and its negation (in the sense of unconditional negation or subcontrary) bear a special relation to a third sentence, i.e., their presupposition. If A is a particular subject-predicate sentence, say, S10, then it is obvious that both A and its subcontrary #A, say, #S10, formally imply their presupposition S11,

(S11)   There exists at least one S.

Now the problem is whether both a singular subject-predicate sentence S9 and its contradictory ~S9 (or its subcontrary #S9) imply their presupposition S12 respectively,

(S12)   S exists.

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[10] The requirement of B as a contingent sentence is intended to exclude an extremely trivialized notion of semantic presupposition on which any logically true sentence B is presupposed by any sentence A.

It is plain that when S9 is true, S12 has to be true. So S9 $\models$ S12. However, there is a doubt whether the negation of S9 formally implies S12 (Böer and Lycan). I will argue below that the negation of S9 does formally imply S12.

Actually, our three-valued language L (which is a representation of our natural language) permits us to conclude that both S9 and ~S9 formally imply S12. What we need to do is to further specify its semantics Val.[11] Val is often defined by defining a set of formed structures called models. A model is a subset of possible worlds or interpretations. Such a model consists of two parts: one is the domain D of the discourse, the other the function f which maps the predicates in Syn into the elements in D. Valuations are then defined to represent the models by assigning specific truth values to each sentence under a specific model.

Following Martin,[12] let us specify a model M for Syn of L as any pair <D, f>. Syn is the syntax of L with a singular subject-predicate sentence, *S is P*. Syn also contains a logical term "exists," the existential predicate. Here, 'D' is a non-empty domain. 'f' is a function of *all* predicates and *some* subjects such that (a) for any predicate P, f(P) is a subset of D; (b) for any denoting subject S, f(S) is in D; (c) f(exists) = D. The set Val representing the model <D, f> maps sentences of Syn into truth values in the following way: for any singular subject-predicate sentence, *S is P*, it is true if f(S) is in f(P) ('S' refers to something in the extension of 'P'); *S is P* is false if f(S) is in D but not in f(P) ('S' refers to something which is not in the extension of 'P'); *S is P* is neither true nor false otherwise ('S' does not refer or f(S) is not in D). It follows directly from the above valuation that

S is P $\models$ S exists (or S9 $\models$S12) and ~(S is P) $\models$ S exists (or ~S9 $\models$ S12)

since they are theorems of L under the model M.

In conclusion, our definition of semantic presupposition meets all three requirements of any satisfactory notion of semantic presupposition. This shows that the notion of semantic presupposition is a theoretically coherent and integrated notion.

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[11] Professor Scott Lehmann pointed this out to me.

[12] Martin (1975), p. 257.

IV. A Defense of the Notion of Semantic Presupposition

The remaining problem is whether a theoretically coherent notion of semantic presupposition can be exemplified as a practically feasible notion. Böer and Lycan believe that it is not. In this section, I will respond to Böer and Lycan's two central arguments which were intended to show that the notion of semantic presupposition is empty.

1. The Argument from the Distinction Between Internal and External Negation.

This major critical argument against the notion of semantic presupposition has the following two basic components:

(1) The distinction between internal and external negation with respect to scope: It is believed that a negation in our natural language is ambiguous not only due to two different readings of a negation with respect to their senses (i.e., unconditional negation and conditional negation), but also due to the different scopes of a negation. For example, Russell's paraphrase of a grammatically simple sentence S1 is a logically complex sentence S1',

> (S1') There exists one and only one person who is the present king of France, and this person is bald, or in symbols, $\exists x \ (B(x) \ \& \ \forall y \ (K(y) \leftrightarrow x = y))$.

According to Russell, the negation of S1 is ambiguous with respect to the scope of the negation. The negation can attach to the widest possible scope (the primary occurrence of negation). That is,

> (ex-S1') It is not the case that there exists one and only one person who is the present king of France, and this person is bald, or in symbols, $\sim\exists x \ (B(x) \ \& \ \forall y \ (K(y) \leftrightarrow x = y))$.

Or the negation can attach to the narrow scope (the secondary occurrence of negation). That is,

> (in-S1') There exists one and only one person who is the present king of France, and this person is not bald, or in symbols, $\exists x \ (\sim B(x) \ \& \ \forall y \ (K(y) \leftrightarrow x = y))$.

Böer and Lycan adopt Russell's two readings of negation with respect to scope, and call ex-S1 the external negation of S1 and in-S1 the internal negation of S1. "The distinction between external and internal negation is a scope distinction, a negation being external when it has wide scope,

internal when it occurs within the scope of the 'presupposition'-generating locution."[13] Presumably, on the basis of our analysis of negation in Schema P, the external negation corresponds to the logical contradictory. For this reason, I will use ~A to represent the external negation of A later on. On the other hand, the notion of internal negation corresponds to either the notion of contraries or the notion of subcontraries, depending on the structure of the sentences in question.

(2) Two essential requirements of presupposition: Suppose A presupposes B. According to the adequacy of the notion of semantic presupposition, there are two essential requirements for the negation of A. First, the negation of A has to formally imply B. That is, not-A $\models$ B or $\models$ T(notA) → T(B). Second, the negation of A has to be the logical contradictory of A. If either one of these two conditions is not fulfilled, then A cannot be said to presuppose B.

The first requirement is obvious. The second appears to be convincing if we realize that in the following formula,

$$\models \sim T(B) \rightarrow \sim(T(A) \lor T(\text{not-}A)),$$

"not-A" has to be the contradictory of A; otherwise when B is not true, A would not be necessarily neither true nor false. Actually, if A and not-A can both be false at the same time, then A would be false when B is not true.

According to Böer and Lycan, the distinction between external and internal negation itself gives rise to an inescapable dilemma for the champion of semantic presupposition.[14] Suppose that A presupposes B and A is a logically complex sentence. The alleged dilemma goes as follows:

(a) There are two essential requirements for the negation of A: it has to be the contradictory of A, and it must formally imply B.

(b) The negation of A can be read *only* in two ways, either as the external negation of A, i.e., ~A, or as the internal negation of A, i.e., in-A.

(c) If "not-A" is read as the external negation of A, then it does not formally imply B.

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[13] Lycan (1984), p. 91.
[14] Böer and Lycan (1976), p. 77.

(d) If "not-A" is read as the internal negation of A, then it is not the logical contradictory of A.

Therefore,

(e) In either case, the two requirements of semantic presupposition cannot be fulfilled at the same time. Either way, semantic presupposition is ruled out.

The general conclusion drawn from the dilemma is that the notion of semantic presupposition, although it is theoretically coherent, is in fact empty since it cannot be exemplified.[15] We cannot even give any concrete sentence which presupposes another sentence in Strawson's sense. Taking S1 for an example, the external negation of S1, i.e., ~S1, does not formally imply S3 since the following sentence is consistent:

(~S1 & ~S3) It is not the case that the present king of France is bald, and there is not any present king of France.[16]

On the other hand, the internal negation of S1 is not the contradictory of S1. So, S1 does not presuppose S3 but only entails it.

In my judgment, this argument presents one of the most serious challenges to the tenability and integrity of the notion of semantic presupposition. If it worked, then the notion of semantic presupposition would become useless and should be dropped. However, the argument does not work in the way Böer and Lycan expected. I argue below that the alleged dilemma is a fallacy. It does not rule out the notion of semantic presupposition since the notion can be properly exemplified in many interesting cases.

As I have argued before, treating the negations in question as contradictories is not the only appropriate reading for the negation in an appropriate definition of semantic presupposition, namely, Schema P. Actually, taking the negation of a presupposing sentence A as the contradictory of A is too strong in many cases. The more appropriate reading of the negation of A is the subcontrary of A. if we take the negation of A as its subcontrary in general with its contradictory as one version of the subcontrary as I have suggested before, then the semantic presupposition can be properly exemplified. For instance, for a particular existential sentence S4, its subcontrary is

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[15] Böer and Lycan (1976), p. 10.
[16] Böer and Lycan (1976), p. 59.

(#S4) Some unicorns in the African jungle are not hairless.

Then, according to Schema P, both S4 and #S4 imply S6 respectively. Furthermore, when S6 is false, we have

$$\models \sim T(S6) \rightarrow \sim (T(S4) \text{ v } T(\#S4)).$$

There is no case in which T(S4) and T(# S4) can both be false since one is the subcontrary of the other. Although S4 and #S4 can be both true, this possibility is ruled out. Otherwise the formula cannot be unconditionally valid when S6 is not true. So, the only possible truth value for S4 is neither-true-nor-false when S6 is not true. It is clear that the relationship between S4 and S6 meets our three requirements of semantic presupposition. Therefore, S4 semantically presupposes S6. This shows that the premise (a) of the alleged dilemma is not justified and has to be given up. .

The power of the alleged dilemma depends upon a basic assumption that there is a distinction between external and internal negation for every presupposing sentence. However, the distinction is not universally applicable to many presupposing sentences.

For a singular subject-predicate sentence S9, the alleged distinction between external and internal negation is blurred. As every student of logic knows, we cannot read S9 as a particular sentence S10, because otherwise S9 would lose its universal aspect. The more proper way is to read S9 as the conjunction of a corresponding universal sentence S8 and a particular sentence S10. That is,

(S13)   S is P = $_{def.}$ (All S is P) and (Some S is P).

Then the external and the internal negation of S13 are respectively S13 and in-S13,

(~S13)   ~(S is P) = ~(All S is P) or ~(Some S is P) = (Some S is not P) or (No S is P)

(in-S13)   in-(S is P) = in-(All S is P) or in-(Some S is P) = (All S is not P) or (Some S is not P) = (No S is P) or (Some S is not P).

This shows that there is no real difference between the external and the internal negation for a singular subject-predicate sentence. if so, then the external negation of S9 (or S1) formally implies S12 (or S3) just as any internal negation of a presupposing sentence formally implies the same presupposition as that sentence itself does (I have proved this in section

III). In addition, ~S9 (or ~S1) is the contradictory of S9 (or S1). According to Schema P, S9 (or S1) presupposes S12 (or S3).

The opponents of semantic presupposition might point out that if we adopt Russellian treatment to paraphrase S9, which looks like a grammatically simple sentence, as a logically complex sentence, then the distinction between the internal and the external negation of S9 should be very clear. It is the distinction between internal and external negation with respect to scope as follows:

(S9') $\exists x \, (P(x) \, \& \, \forall y \, (S(y) \leftrightarrow x = y))$

(in-S9') $\exists x \, (\sim P(x) \, \& \, \forall y \, (S(y) \leftrightarrow x = y))$

(~S9') $\sim \exists x \, (P(x) \, \& \, \forall y \, (S(y) \leftrightarrow x = y))$

When the presupposition S12, or in symbols,

(S12') $\exists x \, \forall y \, (S(y) \leftrightarrow x = y)$,

is false, S9' and in-S9' are both false. Then S9' entails, instead of presupposes, S12'. So the dilemma stands.

The same strategy can be used against the two kinds of internal negations I have made —namely, an internal negation as a contrary or as a subcontrary. Taking S4 (or S10) as an example, we should read S10, which appears to be a grammatically simple sentence, as a logically complex sentence. In other words, we should transfer the short surface form of S10 into the following logical form of conjunction,

(S4') There exist some unicorns in the African jungle and they are hairless; or in symbols, $\exists x \, (U(x) \, \& \, H(x))$.

Then the so-called subcontrary of S4' would be

(#S4') There exist some unicorns in the African jungle, and they are not hairless; or in symbols, $\exists x \, (U(x) \, \& \, \sim H(x))$.

Besides, we have

(S6') $\exists x \, U(x)$.

We can see from the two formulas S4' and #S4' that if S6' is false, S4' and #4' can both be false at the same time. That means that #S4 is not the subcontrary of S4. There is hence no real case for subcontraries. The requirement of negations as subcontraries fails. If so, even when we read the negation in Schema P as the subcontrary, S4 is still not necessarily neither true nor false when S6' is not true since S4 can be false in the following formula:

$\models \sim T(S6') \rightarrow \sim(T(S4') \vee T(\# S4'))$.

Hence S4' fails to presuppose S6'.

Generally put, the essence of the above treatment of a presupposing sentence is as follows: Suppose that a sentence A presupposes B. We can always treat A as exponible into a conjunction with its presupposition B as one conjunct and a sentence C about the property of B as the other conjunct as shown in S14,

(S14) B & C.

Furthermore we can treat the internal negation of S14 as attaching a negation not to the presupposed conjunct B, but to the other conjunct C[17] as shown in in-S14,

(in-S14)   B & C.

It is obvious that both S14 and in-S14 imply B. Then if presupposition B of S14 and in-S14 is false, S14 and in-S14 must both be false. In this way, S14 is false when its presupposition B does not hold.[18]

I have two responses to this objection. First of all, there is a grave defect in the syntactic structure of exponible sentences. The method of exponibilia treats a simple grammatical form as masking a complex logical form. For example, for the simple identity sentence S15

(S15) The king of France is the king of France, or in symbols, k = k,

if we adopt a Russellian reading, we should paraphrase S15 as S16,

(S16)   One and only one person has the property ascribed to the king of France, and that person is self-identical, or in symbols, $\exists x \, (x = x \, \& \, \forall y \, (K(y) \leftrightarrow x = y))$.

It is objected, by Kaplan[19] and others, that we should not invoke hidden complexity unless there is good reason to do so. That is, we should not read S15 as S16 until we have investigated the options of identifying S16 with S15 and found S15 to be unworkable.[20] In addition, all things being equal, the logical form, if we have to paraphrase a simple grammatical sentence, should correspond as closely as possible to the surface form of a sentence. It is after all the surface form of a sentence in our natural

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[17] Treating the internal of S14 as attaching a negation to the presupposed conjunct B, namely, (~B & C), would make the internal negation of S14 not imply B.

[18] Martin (1979), pp. 251–2, 268.

[19] Kaplan (1975).

[20] Lehmann (1994), p. 309.

language that is being used and explained. However, Russellian treatment frequently requires such extensive rewriting of the surface from of sentences that their syntax becomes too complicated to be understood. For example, it is not convincing to construe simple sentence S15 as very complex sentence S16. A theory which treats S15 as a simple identity sentence would be better.[21]

A more crucial problem for the issue at hand is that treating the simple grammatical form of a sentence as a disguised complex logical form is a typical method employed by classical logic only. As a matter of fact, after a simple presupposing sentence is translated into a conjunction with its presupposition as one conjunct, it naturally follows that that sentence must be false when its presupposition is false. Therefore, accepting a Russellian reading of a presupposing sentence would amount to adopting Russell's treatment of a non-denoting sentence. In this sense, whether we should accept the method of exponibilia is a crucial issue. Adopting it without any convincing argument for it is to beg the question from Strawson's point of view. For this reason, non-classical theories of presupposition should not employ this method, not just because of its grave defect in syntax level, but because adopting it amounts to dropping Strawson's notion of semantic presupposition from the outset.

Finally, the premise (c) of the argument is false. Whether the external negation of A formally implies B depends on specific structures of sentences A and B. We cannot claim in general that any external negation of A does not formally imply B. Here is a counterexample. As I have argued in section III, the external negation of a singular subject-predicate sentence, namely, ~(S is P), formally implies the sentence "S exists" as the original sentence "S is P" does.

2. The Argument From Counterexamples

Another major critical argument raised by Böer and Lycan against the notion of semantic presupposition claims that it is easy to provide many perfect counterexamples to an enormous number of alleged semantic presuppositions. They contend that semantic presuppositions as species of formal implication must hold universally without conceivable counterexamples. So if they can give some counterexamples in which the so-called semantic presuppositions are cancelable, then the notion of semantic presupposition itself cannot be held consistently. In fact, there

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[21] Martin (1979), p. 253.

would be no genuine instance of semantic presuppositions if such counterexamples can be found. The strategy of Böer and Lycan is then to make up counterexamples in which the alleged semantic presuppositions can be canceled.

This argument runs as follows: Suppose that A presupposes B. That means, according to the general definition of semantic presupposition (the initial schema P), that both A and its negation formally imply B. That is,

(a) $\models$ T(A) → T(B)   and   (b) $\models$ T(not-A) → T(B).

Let us focus on the formula (b) only. It is obvious that B cannot be false if not-A is true since not-A formally implies B. That means that the possibility that

(c) the negation of A is true but B is false, or in symbols, T(not-A) & F(B) is ruled out by the very definition of semantic presupposition since (c) is *self-contradictory* or logically false if A really presupposes B. Therefore, if we can show some cases of alleged presuppositions in which (c) can be held *without contradiction*, then the alleged semantic presupposition B is canceled.

Böer and Lycan give a few counterexamples in which (c) can be held without contradiction, for example:

(S17)   a. It is false that the present king of France is bald because[22] there is no present king of France.

b. It is false that it was John who caught the thief because no one caught the thief.

c. It is false that my soul is red because my soul is not colored.

d. It is false that John managed to solve the problem because this problem is so easy to solve.

According to Böer and Lycan, it is important to notice that these sentences are fully intelligible and are clearly *not contradictory*. In this way, the various "presuppositions" carried by these negations of original pre-

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[22] "because" is not a well-defined truth-functional operator, or is not even a truth-functional operator at all. Presumably Böer and Lycan use "because" here as the conjunction "and." I guess the reasoning behind this usage is something like this: "C because D" implies "C and D." Hence, if "C and D" is contradictory (a logically false sentence), so must "C because D" be. For this reason, I will treat "because" as "and" in analyzing their argument.

supposing sentences can be easily canceled. No semantic presuppositions are involved in these cases. Again, they reach the same conclusion as before: the notion of semantic presupposition is empty since it cannot be exemplified.

I grant that semantic presuppositions should be held universally. Hence (c) is a contradiction and a counterexample to semantic presuppositions if A does presuppose B. The disagreement between the critics and me consists in whether the sentences given by the critics in S17 are really valid counterexamples, or whether they are genuine instances of (c). I will argue that these cases in S17 are not genuine instances of (c). Therefore they are not valid counterexamples to semantic presuppositions.

The crucial issue here is how to interpret the negation "not-A" in our definition of semantic presupposition. As we have mentioned before, there are a variety of readings of the negation "not-A" in our natural language: "not-A" may be read as the external negation or the contradictory of A, which in turn includes an unconditional negation or a conditional negation; "not-A" may be read as the internal negation of A, which may again be read either as the contrary of A or as the subcontrary of A. It seems to be clear that, for Böer and Lycan, "not-A" here is read as the external negation of A or the contradictory of A. If so, this argument shares the same assumption that not-A has to be the contradictory of A with the argument from the distinction between external and internal negation. But if not-A is the contradictory or the external negation of A, then not-A would not imply B. Therefore F(B) & T(not-A) would not involve self-contradiction.

But, as I have argued, "not-A" in the definition of semantic presupposition should be read as the subcontrary of A or the contradictory of A if the subcontrary is not available. Let us check out what the genuine instances of (c) are according to our reading of "not-A." Starting with S17.b, the cleft sentence, "It was John who caught the thief," can be read as "Someone who caught the thief was John." The subcontrary of the sentence is, "Someone who caught the thief was not John." Then the instance of (c) with respect to the sentence, "It was John who caught the thief," would be

(S17.b') Someone who caught the thief was not John because no one caught the thief.

S17.b' involves self-contradiction since the first conjunct formally implies the falsity of the second conjunct. By contrast, S17.b is not a genuine instance of (c) because the first conjunct of S17.b is the external negation of the original sentence, "It was John who caught the thief," instead of the internal negation of that sentence as it should be. The first conjunct, 'It is false that it was John who caught the thief," does not imply the falsity of the second conjunct. This is the reason why S17.b does not involve self-contradiction.

Turn to the singular sentence S17.a. If we understand "not-A" as the internal negation of A (more precisely, the subcontrary of A), then a genuine instance of (c) with respect to the sentence, "The present king of France is bald," is

(S17.a') The present king of France is not bald because there is no present king of France.

Since the first conjunct of S17.a' formally implies the falsity of the second conjunct, S17.a' is a self-contradictory sentence. On the other hand, as I have argued before, there is no real distinction between external and internal negation with respect to singular sentences like S17.a. The external reading of S17.a, that is, "It is false that the present king of France is bald," still formally implies the falsity of the second conjunct. Hence, S17.a is a self-contradictory sentence. Either way, S17.a does not constitute a valid counterexample of semantic presuppositions. A similar analysis can be applied to other alleged counterexamples given by the critics.

The conclusion drawn from the above analyses is plain: a set of sentences S17 does not provide valid counterexamples to semantic presuppositions. No refutation of semantic presuppositions is established.

V. Conclusion

In this paper I have met Böer and Lycan's challenge by presenting a workable, coherent, and integrated notion of semantic presupposition, and by arguing that the notion of semantic presupposition, on the basis of my formulation of it, can be exemplified in many interesting cases. Therefore, the notion of semantic presupposition is not empty, but rather is philosophically and linguistically feasible, interesting, and fruitful.

Trinity College, Connecticut

Bibliography

Atlas, J.D., 1989, *Philosophy Without Ambiguity: A Logic-Linguistic Essay*, NY Clarendon.

Atlas, J.D., 1980, "A Note on A Confusion of Pragmatic and Semantic Aspect of Negation", *Linguistic and Philosophy*, 3, 411–414.

Atlas, J.D., 1978, "On Presupposing", *Mind*, 87, 396–411.

Bergmann, M., 1981, "Presupposition and Two-Dimensional Logic", *The Journal of Philosophical Logic*, 10, 27–53.

Böer, S. and Lycan, W., 1976, *The Myth of Semantic Presupposition*, Indiana University Linguistic Club.

Cooper, D. E., 1974, *Presupposition*, The Hague, Mouton.

Cosgrove Jr. and Robert, J., 1980, "A Three-valued Free Logic for Presuppositional Languages", *Nortre Dame Journal of Formal Logic 21*, 549–571.

Davidson, D. and Harman, G. (eds.), 1972, *Semantics of Natural Language*, D. Reidel, Holland.

Dahl, O., 1981, "In Defense of A Strawsonian Approach to Presupposition", in Klein, W. (ed.), *Grossing the Boundaries in Linguistics*, Reidel, 1981.

Englebretsen, G., 1973, "Presupposition, Truth and Existence", *Philosophical Papers*, 2, 39–40.

Englebretsen, G., 1983, "Presupposition and Existence", *Philosophical Papers*, 12, 1–8.
Gaifman, H., 1975, "Ontology and Conceptual Frameworks", Part I in *Erkenntnis 9*, 329–353, Part II in *Erkenntnis 10*, 21–85.

Gazdar, G., 1979, *Pragmatics, Implicature, Presupposition, and Logical Form*, New York: Academic Press.

Hamberstone, I, and Bell, J., 1977, "Two Systems of Presuppositional Logic", *Notre Dame Journal of Logic*, 18, 321–339.

Horn, L., 1969, "A Presuppositional Analysis of 'Only' and 'Even' ", papers from the fifth regional meeting of the Chicago Linguistic Society, University of Chicago Press.

Horn, L., 1989, *A Natural History of Negation*, University of Chicago Press.

Kempson, R., 1975, *Presupposition and the Delimitation of Semantics*, Cambridge University Press.

Kaplan, D., 1975, "What is Russell's Theory of Descriptions?" in Davidson and Harman (eds.), *The Logic of Grammar*, CA: Dickenson, 210–217.

Karttunen, L., 1971, "Implicative Verbs", *Language 47*, 340–58.

Karttunen, L., 1973, "Presuppositions of Compound sentences", *Linguistic Inquiry*, 4, 169–193.

Keenan, E., 1971, "Two Kinds of Presupposition in Natural Language", in Fillmore and Langendoen (eds.), *Studies in Linguistic Semantics*, New York.

Lakoff, G., 1972, "Linguistics and Natural Logic", in Davidson and Harman (eds.), *Semantics of Natural Language*.

Lehmann, S., 1994, "Strict Fregean Logic", *Journal of Philosophical Logic 23*, 307–336.

Lycan, W., 1984, *Logical Form in Nantural Language*, The MIT Press.

Lycan, W., 1987, "The Myth of the "Projection Problem for Presupposition, in *Philosophical Topics*, 15, 169–175.

Lycan, W., 1994, *Modality and Meaning* (chapter 7), Boston: Kluwer Academic.

Martin, J., 1979, "Some Misconceptions in the Critique of Semantic Presupposition", *Theoretical Linguistics* 6, 235–282.

Orenduff, J. M., 1979, "Why the Concept of Presuppositions is Otiose", *SW Phil Stud*, 4, 73–77.

Peters, S., 1979, "A Truth-conditional Formulation of Karttunen's Account of Presupposition", *Syntheses*, 40, 301–316.

Russell, B., 1905, "On Denoting", in A. Martinich (ed.), *The Philosophy of Language*, Oxford University Press, 1990.

Russell, B., 1919, "Description", in A. Martinich (ed.), *Tize Philosophy of Language*.

Russell, B., 1957, "Mr. Strawson on Referring", in Garfield and Kiteley (eds.), *Meaning and Truth*, Paragon House, 1991.

Sellars, W., 1954, "Presupposing", *Philosophical Review* 63.

Soames, S., 1989, "Presupposition", in Gabbay, D. (ed.), *Handbook of Philosophical Logic*, 553–616, Kluwer, 1989.

Stalnaker, R., 1972, "Pragmatics", in Davidson and Harman (eds.), *Semantics of Natural Language*, 1972.

Strawson, P., 1950, "On Referring", in A. Martinich (ed.), *The Philosophy of Language*, 1990.

Strawson, P., 1952, *Introduction to Logical Theory*, London.

Turner, K., 1992, "Defending Presupposition", J Prag, 18(4), 345–371.

Wilson, D., 1975, *Presupposition and Non-truth-conditional Semantics*, London: Academic.

Wilson, D, and Sperber, D., 1977, "A New Approach to Presuppositions", *Prag Micro 2*, B3.

Woodruff, P., 1970, "Logic and Truth Value Gaps", in K. Lambert (ed.), *Philosophical Problems in Logic*, Reidel, 1970.