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Review

Reviewed Work(s): Conventional Implicature. *Syntax and Semantics*, Volume 11, Presupposition by Lauri Karttunen, Stanley Peters, Choon-Kyu Oh and David A. Dinneen; A Solution to the Projection Problem by Gerald Gazdar; In Defense of the Truth Value Gap by Janet Dean Fodor; Presupposition, Opacity, and Ambiguity by Ruth M. Kempson; Truth-Value Gaps, Many Truth Values, and Possible Worlds by S. K. Thomason  
Review by: Tyler Burge

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## REVIEWS

Numerical cross references are to previous reviews in this JOURNAL, or to *A bibliography of symbolic logic* (this JOURNAL, vol. 1, pp. 121–218), or to *Additions and corrections* to the latter (this JOURNAL, vol. 3, pp. 178–212).

References beginning with a Roman numeral are by volume and page to the place at which a publication has previously been reviewed or listed. When necessary in connection with such references, a third number will be added in parentheses, to indicate position on the page. Such a reference is ordinarily to the publication itself, but when so indicated the reference may be to the review or to both the publication and its review. Thus “XLIII 148” will refer to the review beginning on page 148 of volume 43 of this JOURNAL, or to the publication which is there reviewed; “XLIII 154” will refer to one of the reviews or one of the publications reviewed or listed on page 154 of volume 43, with reliance on the context to show which one is meant; “XLI 701(6)” will refer to the sixth item listed on page 701 of volume 41, i.e., to Russell’s *On denoting*; and “XL 259(4)” will refer to the fourth item on page 259 of volume 40, i.e., to Feys’s *Logique*.

LAURI KARTTUNEN and STANLEY PETERS. *Conventional implicature. Syntax and semantics*, Volume 11, *Presupposition*, edited by Choon-Kyu Oh and David A. Dinneen, Academic Press, New York, San Francisco, and London, 1979, pp. 1–56.

GERALD GAZDAR. *A solution to the projection problem*. Ibid., pp. 57–89.

JANET DEAN FODOR. *In defense of the truth value gap*. Ibid., pp. 199–224.

RUTH M. KEMPSON. *Presupposition, opacity, and ambiguity*. Ibid., pp. 283–297.

S. K. THOMASON. *Truth-value gaps, many truth values, and possible worlds*. Ibid., pp. 357–369.

This book contains sixteen essays on presupposition, three quarters of which are by linguists. The reviewer will discuss only the essays likely to be of greatest interest to readers of this JOURNAL, but will also make some general comments on the history and present state of the subject.

The notion of presupposition goes back at least to Frege, who counted ordinary sentences containing non-denoting terms as expressing a thought but as lacking a truth-value. Neither a sentence nor its negation could, on his view, have a truth-value unless its singular expressions denoted. In this sense, both a sentence and its negation were said to presuppose the appropriate singular existential sentences or propositions.

Frege’s position was later taken up by Strawson as a means of opposing Russell’s theory of descriptions. A variety of formal theories incorporating truth-value gaps have subsequently been proposed. Since most formal models of presupposition have been motivated by considerations of denotation failure, the study of presupposition by logicians has been closely associated with free logic. The two subjects need not be allied, however. Many authors of free logics eschew truth-value gaps and ignore questions about presupposition, or hold that they are not best treated by a semantical theory of truth conditions.

About fifteen years ago the notion of presupposition became prominent in linguistics. Perhaps as a result, the term came to be applied to a far wider variety of linguistic phenomena than just cases involving denotation failure. For example, counterfactual conditionals have been held to presuppose the falsity of their antecedents. Sentences containing factive verbs, such as ‘know,’ ‘regret,’ ‘realize,’ and ‘forget,’ have been seen as presupposing the truth of *that*-clauses following the verbs. Expressions such as ‘even’ and ‘also’ have been claimed as a source of presuppositions: ‘Even Neville hates Adolf’ “presupposes” that others besides Neville hate Adolf and that Neville is relatively unlikely to hate Adolf. Words such as ‘continue,’ ‘fail,’ ‘manage to,’ and ‘stop’ have been said to carry a variety of presuppositions. (The association of the latter verb with alleged wife-beating is well attested.) Examples could be greatly multiplied.

The work of linguists during this period brought out an intuitive kinship among a wide range of linguistic phenomena. But theory was not well served. The notion of presupposition received conflicting explications and poorly motivated applications—roughly to anything that might at least be suggested, though not asserted, in the use of a sentence. “Presuppositions” came to include ordinary entailments, a variety of context-dependent suggestions (in Grice’s terminology, conversational implicatures), and conventional, or context-free, associations that nevertheless (at least arguably) do not affect the truth conditions of sentences. Thus the lack of clarity or agreement on what theoretical notions to apply to linguistic intuition—and on how to apply them—which has plagued the discussion of presupposition within logic and philosophy since the Strawson–Russell debate, has been exacerbated within theoretical linguistics. I think it fair to say that this unfortunate situation still prevails; but in the past five or six years some progress has been made in distinguishing different sorts of cases that had been grouped rather indiscriminately under the rubric of presupposition, and in proposing strategies to account for the cases.

In this volume the traditional Fregean notion of presupposition is utilized and developed in different ways by S. K. Thomason’s *Truth-value gaps, many truth values, and possible worlds* and by Janet Dean Fodor’s *In defense of the truth value gap*. Thomason presents a metalinguistic theory (or “model,” as he calls it) for presupposition that is closely related to an earlier one by van Fraassen. The underlying object language is somewhat richer, including for example relativized quantification; but the chief differences are that identity is existence-presupposing and that negation turns a sentence with no truth-value into a truth (instead of leaving it truth-valueless). For the purpose of indicating the difference between a meta-linguistic theory, in which a logical relation is defined, and an object language, in which properties of the relation are “displayed,” Thomason presents a second object language with a binary connective for “strict presupposition.” This language is a variant of propositional S5 that is obtained by admitting truth-value gaps.

Fodor’s paper presents no formal theory, but contains a wealth of interesting examples that bring out the complexity of the intuitive distinction between sentences that are false ordinarily so-called, and sentences that go wrong in ways that have tempted people into invoking truth-value gaps. For example, ‘The King of France is standing next to me’ is more naturally counted *simply* false than ‘The King of France is bald.’ Fodor connects this example and many others to cases from fiction in an interesting way. Within a possible-worlds framework, she hypothesizes that a truth-value is assigned if and only if there is some factual basis for assigning one relative to the world or worlds contextually in question. (This hypothesis could, I think, be reworked so as to avoid invoking possible worlds.) Despite its empirical interest, the paper does little to support the view that the distinction delineated should be represented by appeal to truth-value gaps in a formal theory of language. The acceptability of this view depends on the issues of what kinds of concepts (pragmatic, truth-conditional, or conventional but not truth-conditional) are most appropriate in accounting for the distinction, and what is its theoretical import. The paper hardly addresses these issues.

One of the most prominent lines taken in recent discussions has been an attack on applying the Fregean concept of presupposition (defined above) to any phenomenon in natural language. This view is represented in the present volume by several papers, but most fully by Ruth Kempson’s *Presupposition, opacity, and ambiguity*. It is claimed that a sentence such as (1) ‘The King of France is tall’ entails, but does not presuppose, that there is a King of France, and thus is false (or simply, not true) if there is no King of France. The logic underlying the language remains, on this view, two-valued. The sentence (2) ‘The King of France is not tall’ is claimed to be true under the same circumstance. Kempson proposes to account for intuitions not already captured by use of the notion of entailment by appealing to context-dependent, pragmatic principles, particularly variants of Grice’s notion of conversational implicature. Thus (1) is said to entail that there is a King of France, but (2) is said just to pragmatically implicate it. Pragmatic implicatures, unlike entailments, can be contextually canceled. According to the traditional Frege–Strawson account, both (1) and (2) are neither true nor false. The Frege–Strawson account, however, must recognize that sentences such as (3) ‘The King of France is not tall, since there has not been a King of France for two hundred years who even could be tall’ can be used in certain contexts to make true statements. The most plausible way to defend the Frege–Strawson view is to postulate an ambiguity (roughly

paralleling Russell's scope distinction) between internal (narrow scope) and external (wide scope) negation. (This move has been spelled out formally in work by van Fraassen.) On the latter reading, (2) is true; on the former, it is said to be truth-valueless.

Kempson invokes only external (wide scope) negation in her theory and attacks the postulation of ambiguity. The strongest point in her favor is that the postulation predicts numerous ambiguities in natural language for which there is no intuitive evidence. But she raises other objections. For example, she gives the following argument. The postulation fails a test for ambiguity already present in linguistic theory—a test concerning constancy of interpretation under verb-phrase pronomialization: The internal-negation reading entails the external-negation reading; and, as she notes following Zwicky and Sadock (*Syntax and semantics*, vol. 4, edited by John Kimball, Academic Press, 1975, pp. 1–36), any purported case of ambiguity, where one reading entails another, will fail this test. Moreover, she claims, there is no other means of testing for such ambiguities. This argument, though interesting, seems less than conclusive, since there are cases of mutually entailing sentences that are intuitively regarded as ambiguous. An example, which varies slightly one given by Lakoff and correctly criticized by Kempson, is the following: 'In seeing their cousins, they will be visiting relatives.' Other arguments she gives for insisting that the readings of an ambiguous sentence be logically independent seem equally unconvincing. Part of the interest of the view she represents, however, is that it shows that whether or not to treat 'not' as ambiguous and sentences containing non-denoting terms as having presuppositions (in the Fregean sense of incurring truth-value gaps) is a complex theoretical issue, not to be decided entirely by citing intuitive distinctions, however genuine.

*Conventional implicature* by Lauri Karttunen and Stanley Peters is a valuable paper that appears to be in broad agreement with Kempson's on the question of truth-value gaps, but advocates a notion of "presupposition," mentioned by the paper's title, which is neither pragmatic nor Fregean. The paper begins with cogent arguments to show that several phenomena that have been counted as involving presuppositions in Frege's sense are better explained, with the aid of Gricean pragmatic concepts, in such a way as not to affect the truth conditions of the relevant sentences. For example, the presumed falsity of the antecedents of counterfactuals and the truth of *that*-clauses following certain "factive" verbs, such as 'realize,' are shown to be contextually cancelable. The authors hold that, in contrast, sentences of the form "If *A* then *B*," in the indicative mood, *conventionally implicate* that for the speaker in the context of use it is epistemically possible that *A*, and that sentences of the same form in the subjunctive mood conventionally implicate that for the speaker in this context it is epistemically possible that not *A*. (The authors provide no thorough explication of their term 'conventional implicature.' They clearly intend, however, to apply the term to propositions or sentences that are not asserted or entailed by a given sentence, but to which the speaker is in some sense committed by using the sentence under its conventional meaning, regardless of the context of use.) The authors mention indirect proof as a possible counterexample to these claims about the conventional implicatures of conditionals, but reject the counterexample without providing any principle for doing so. The lack of precision in their chief theoretical term renders fruitful discussion of such counterexamples difficult.

Karttunen and Peters argue more convincingly that 'even' and a number of other expressions generate conventional implicatures. They set up a formal apparatus within Montague grammar for modeling the phenomena. (Their general approach does not appear to be essentially tied to Montague grammar, but it must rely on some system of intensional logic.) Their basic idea is to attach to each sentence a representation within intensional logic of its conventional implicatures that is separate from the representation of its truth conditions. The logic underlying both representations is two-valued. Both representations purport to model an aspect of the sentence's conventional meaning. The detailed discussion of various cases shows that carrying out this strategy systematically is a complex, interesting, and challenging task.

Much of the Karttunen–Peters paper is devoted to the following *projection problem* (with which, in fact, almost half the papers in the volume are concerned): to give a recursive procedure for determining the presuppositions of a complex sentence on the basis of the presuppositions of its sentential parts. The problem depends, of course, on the notion of presupposition that is involved (so that for Karttunen–Peters the problem concerns conventional implicatures), and discussions of

it inevitably inherit some of the disputes on how that notion is to be used. But such discussions need not be hamstrung by questions about truth-value gaps, and the problem seems to provide a promising area for the application of formal methods. What makes this problem both difficult and interesting is that the set of presuppositions of a complex sentence is not, in general, the union of the sets of presuppositions of the sentences it contains. Some expressions for producing complex sentences, such as 'regret,' do transmit all the presuppositions of the component sentences. (Karttunen calls such expressions "holes.") Others ("plugs"), such as 'say' and 'promise,' delete the presuppositions of the components. Still others ("filters"), such as 'and' or 'if . . . then,' permit the inheritance of the presuppositions of components only under certain conditions.

The technically interesting problems, of course, concern the filters. For example, 'John drinks too' (stress on 'John') "presupposes" that someone besides John drinks. But of (5) 'If the bottle is empty, then John drinks too,' and (6) 'If Bill is not a teetotaler, then John drinks too,' only (5) "presupposes" that someone besides John drinks. Karttunen and Peters's hypothesis is that presuppositions (or rather conventional implicatures) of a contained clause are filtered whenever certain conditions concerning context of use and entailments of the other clauses are met. Special problems are noted for negation. The hypothesis is too complicated to be summarized here.

Gerald Gazdar's *A solution to the projection problem* presents some plausible counterexamples to the Karttunen–Peters hypothesis, and provides a simpler solution that is *prima facie* promising: The context-dependent implicatures of a complex sentence filter out a presupposition of a contained sentence if and only if the latter is inconsistent with the former. Gazdar formalizes this hypothesis, and supports it with an impressive array of examples. The author nowhere clearly explains, however, what he means by 'presupposition'; and in a number of cases the admissibility of possible counterexamples to his hypothesis may depend on what precisely is meant by his key term. For example, his view seems to depend on claiming that (7) 'If he was crying, then he regrets killing his father' presupposes that the speaker knows that the "he" of (7) killed his father. It is easy to imagine (7) true in the absence of this "presupposition," and even to imagine the "presupposition" being canceled. One could add to (7), 'And if he was not crying, then he probably did not kill his father at all.'

The discussion of presupposition has undergone considerable broadening and deepening in the past few years. New areas for the application of formal methods have been opened. But the conceptual foundations of the subject are still in need of substantial strengthening. TYLER BURGE

KENNETH A. BOWEN. *Model theory for modal logic. Kripke models for modal predicate calculi.* Synthese library, vol. 127. D. Reidel Publishing Company, Dordrecht, Boston, and London, 1979, x + 127 pp.

This book is concerned to extend techniques and results from the model theory of standard first-order logic to modal predicate logics that have quantification over individual variables. An earlier paper of the author's (in *Journal of philosophical logic*, vol. 4 (1975), pp.97–131) had undertaken this project for logics that include the necessitation rule: *from A infer*  $\Box A$ . The monograph under review extends this to include systems having only the weaker rule: *from A*  $\rightarrow B$  *infer*  $\Box A \rightarrow \Box B$ . The logics studied do not include the Barcan formula  $\forall x \Box A \rightarrow \Box \forall x A$  as a theorem, but do include its converse.

Sections 1, 2, and 3 set out the basic Kripke-style semantics for an extensive list of logics that are defined by various axioms and rules. A *model* has a binary accessibility relation  $R$  on a set  $K$  of possible worlds, with each  $k \in K$  being assigned a classical first-order model-structure  $\mathcal{A}_k$ . The model also has an origin  $O \in K$  and a set  $N \subseteq K$  of normal worlds (those at which some necessary truths obtain), and is subject to the *inclusion requirement* (reviewer's terminology) that if  $kRk'$ , then the domain of  $\mathcal{A}_k$  is a subset of the domain of  $\mathcal{A}_{k'}$ . A significant feature is that the equality predicate is interpreted as an arbitrary congruence of  $\mathcal{A}_k$ , and not necessarily the identity relation (smallest congruence). This will be referred to below as the "weak treatment of equality." Notions of monomorphism and elementary embedding are defined which are more general than the classical analogues: in view of the weak treatment of equality it is not essential to require such functions to be injective in order to have them preserve satisfaction of the equality predicate.

Section 4 proves strong completeness and compactness theorems for a number of logics  $S$  with