Presupposition Projection: Two Theories of Local Contexts

Part I*

Philippe Schlenker

(Institut Jean-Nicod, CNRS; New York University)

Accepted for publication in *Language and Linguistics Compass*

Abstract: How do complex sentences inherit the presuppositions of their parts? This is the problem of *presupposition projection*. An old idea is that the presupposition of an elementary expression must be entailed by the context in which it is evaluated; the relevant notion of context is, as a first approximation, what is 'common ground' between the speech act participants. We survey two theories of presupposition projection which are crucially based on the idea that there are more contexts than meets the eye. In addition to the 'global context', both theories posit that an expression has a 'local context' which aggregates information provided by earlier parts of the discourse together with the global context. The key idea is that the presupposition of an elementary expression must be entailed by its *local context*. But how are local contexts computed? Heim's dynamic semantics departs from the standard view of meaning as truth conditions, and takes the very meaning of words to be instructions to change the context (Heim 1983). This framework makes it possible to define empirically adequate lexical entries for a variety of operators, but it has often been considered to be insufficiently explanatory. An alternative is to stick to the standard view of meaning as truth conditions, and to reconstruct local contexts on the basis of a classical (bivalent, non-dynamic) semantics (Schlenker 2009, 2010). We discuss conceptual and empirical issues that might distinguish between the two frameworks, as well as some data that are problematic for both. A final section offers a comparison between approaches based on local contexts, and an influential alternative, DRT (van der Sandt 1992, Geurts 1999).
(The article is divided into two parts: Part I introduces the problem of presupposition projection and presents Heim's theory. Part II lays out the non-dynamic reconstruction of local contexts, and sketches a comparison with DRT.)

1 Introduction

As a *first approximation*, a sentence *S* has a presupposition *P* if *S* cannot be uttered felicitously unless the speech act participants take *P* for granted. Thus *S* can be deemed 'neither true nor false' unless it is common belief among the speech act participants that *P* is true. It is usually thought that presuppositions are triggered by some words ('presupposition triggers') such as *the*, *know*, *regret*, *stop*, or the 'cleft' construction *it is X who*…, as is illustrated in (1).

(1) Some Presupposition Triggers
a. The king of Moldova is powerful.
Presupposition: Moldova has a king.
b. John knows that it is raining.
Presupposition: It is raining
c. John regrets that he is incompetent.
Presupposition: John is incompetent.
d. John has stopped smoking.
Presupposition: John used to smoke.

* I wish to thank the following for helpful comments: Emmanuel Chemla, Maribel Romero, Arnim von Stechow as well as two referees for *Language and Linguistics Compass*. Some of the research reported here was supported by a grant from the National Science Foundation (BCS 0902671) and by a Euryi grant from the European Science Foundation ("Presupposition: a formal pragmatic approach"). Neither foundation is responsible for the claims made here.

e. It is John who left.
Presupposition: Someone left.

This is only a preliminary definition, however. First, there are many other problems that may make a sentence less than felicitous (the speaker may say something irrelevant, or be overly familiar, etc.), and they need not form a natural class. Second, there are many cases in which a sentence is felicitous despite the fact that its presupposition is not initially believed by the addressee. For instance, if I have never heard of Moldova and someone utters (1)a, I will in many cases silently add to my initial beliefs the assumption that Moldova is a monarchy and has a king, thus ensuring that the sentence is felicitous after all. This process has been called *(global) accommodation* because the addressee somehow *accommodates* the speaker's presupposition to ensure that communication proceeds smoothly (Lewis 1979).

As a *second approximation*, then, presuppositions are better characterized by their 'projection' behavior. Clauses that include a presupposition trigger give rise to inferences such as those illustrated in (1). But presuppositions differ from other inferences in how they are 'inherited' by complex sentences. If the presupposition of an elementary part is inherited by the sentence it occurs in, it is said to 'project'; more generally, the problem of computing the presuppositions of complex sentences from the meaning of their parts has been called the 'projection problem'. The presuppositions of elementary clauses typically project out of questions, negations, and the antecedents of indicative conditionals, as is illustrated in (2)b, c, d; and they give rise to universal inferences when they are embedded under the negative quantifier *none of* …, as is illustrated in (2)e.

(2)	a. Bill knows that he is incompetent.	=> Bill is incompetent.
	b. Does Bill know that he is incompetent?	=> Bill is incompetent.
	c. Bill doesn't know that he is incompetent.	=> Bill is incompetent.
	d. If Bill knows that he is incompetent, he will resign.	=> Bill is incompetent.
	e. None of my students knows that he is incompetent.	=> Each of my students is incompetent.

Although presuppositions yield inferences that could be mistaken for entailments in unembedded environments such as (2)a, with respect to the embeddings illustrated in (2) they systematically differ from entailments. Thus *Bill is in Paris* entails (given standard world knowledge) that *Bill is in France*, but as shown in (3) all our other tests show that this inference is *not* presuppositional.

(3)	a. Bill is in Paris	=> Bill is in France
	b. Is Bill in Paris?	≠> Bill is in France
	c. Bill isn't in Paris.	≠> Bill is in France
	d. If Bill is in Paris, he is staying near the Louvre.	≠> Bill is in France.
	e. None of my students is in Paris	≠> Each of my students is in France.

(It can also be shown that when all these tests are taken together, they distinguish presuppositions from scalar implicatures, which display a different 'projection behavior'; see in particular Chemla 2009 for discussion).

In effect, projection tests are based on *global accommodation*: in the absence of sufficient information about the context, subjects will assume that it is one in which the presupposition holds. Importantly, there are cases in which *even* these tests fail because the presupposition is somehow turned into a part of the assertive component. Take the verb *stop*. In many contexts, *Has John stopped smoking?* gives rise to an inference that John used to smoke, and the other tests in (2) would also suggest that this inference is a presupposition. But in some contexts the expected projection behavior fails: Simons 2001, citing Geurts 1994, observes that one may without special presupposition ask a nervous stranger: *Have you recently stopped smoking?* In this case, the presupposition seems to become part of the

assertive component. In technical terminology, it is 'locally accommodated'; we will come back to this phenomenon below.

We used the examples in (2) as *tests* for determining whether an inference is presuppositional or not; but they also illustrate results that should be *derived* from a general theory of presupposition projection. Let us turn to two such theories, which crucially involve a notion of *local contexts*.

2 Dynamic Semantics

2.1 Local Contexts

2.1.1 The Basic Account

A very simple account naturally presents itself to account for the data in (2)a-d; we will call it the 'Basic Account'. Let us a say that a possibly complex sentence *S* containing a clause *S'* that triggers the presupposition *P* results in a semantic failure – and thus is neither true nor false – unless *P* is taken for granted by the speech act participants. In effect, we take *P* to be a condition that must be satisfied for *S'* to be meaningful; and the entire sentence *S* can't be meaningful unless each of its components – including *S'* – is meaningful. This immediately explains why in simple cases the presuppositions of elementary clauses are 'inherited' by the complex sentences they appear in.[1]

Unfortunately, the Basic Account fails in more complex examples. On its own, the clause *John knows that he is incompetent* presupposes that John is incompetent. So the Basic Account predicts that all three sentences in (4) should presuppose this is as well. But this is not so: (4)a asserts rather than presupposes that John is incompetent; and (4)b-c neither assert nor presuppose it.

(4) a. John is incompetent and he knows that he is.
b. If John is incompetent, he knows that he is.
c. John is not incompetent, or else he knows that he is.

In the case of (4)a, there might be a way out. We could posit that the second conjunct is not evaluated in the initial (or 'global') context, but rather in that context *as modified by the assertion of the first conjunct*. The relevant notion of context is what Stalnaker calls the 'context set', which represents what the speech act participants take for granted at a certain point in a conversation.[2] If the addressee is willing to grant the first conjunct after he has heard it, the relevant context for the evaluation of *he knows that he is (incompetent)* will be the initial context updated with the assumption that John is incompetent. We will call this the 'local context' of the second conjunct. By construction, it does entail its presupposition. So if we ask what the entire sentence imposes on the *initial* ('global') context for this presupposition to be (locally) entailed, the answer is: 'nothing' - no matter what the initial context is, the local context of the second conjunct will always satisfy its presupposition. By developing an account of context change, we have been able to save the Basic Account – at least in this case. In addition, we have obtained an elegant account of an unexpected asymmetry:

[1] This logic (presupposition failure as meaninglessness) could be formalized with the 'Weak Kleene' trivalent logic.

[2] In the literature on indexicals, the term 'context' refers to an object that determines the speaker, time and world of the utterance; the indexical notion should be clearly distinguished from the presuppositional one. A context set can sometimes be equated to a *set* of contexts in the indexical sense.

(5) a. John is incompetent, and he knows that he is.
b. # John knows that he is incompetent, and he is.
a'. John used to smoke, and he has stopped smoking.
b'. #John has stopped smoking, and he used to smoke.

In each case, one much prefers the 'canonical order' in which what justifies the presupposition comes first, and the presupposition trigger comes second, as in (5)a-a'. The 'inverse order' is degraded, as in (5)b-b'. For Stalnaker, the reason is simple: context update follows the order in which the words are pronounced, and the local context of an expression incorporates information that comes before but not after it.

This, in a nutshell, is the justification for the strategy based on 'context change' developed by Stalnaker 1974 and Karttunen 1974. Stalnaker's analysis was pragmatic: he assumed that general considerations of communicative rationality were enough to develop rules of context update. We already discussed the case of conjunction. Stalnaker further thought that (4)b could be analyzed by observing that a conditional involves the hypothetical addition of the antecedent to the original context set; it then contributes the claim that the consequent follows from this modified context. Here too, the local context of the second clause is one which, by construction, entails that John is incompetent; so no matter what the initial context is, the presupposition of the consequent will be satisfied – which means that the sentence as a whole presupposes nothing. (A similar analysis could be extended to (4)c by taking *else* to mean something like *if not*, and reducing this case to (4)b[3]). Karttunen's analysis, by contrast, was semantic: he stated lexical rules that determined how each connective transmitted the presuppositions of its arguments; this presuppositional component had to be stipulated *in addition* to the truth-conditional behavior of the connectives (we will see shortly that in Heim's system, by contrast, the two are handled together).

The difficulty is that in its current form, based on the speech act participants' beliefs, the logic of context change does not easily extend to quantified cases. Consider the presuppositional predicate *stopped smoking* in *None of my students has stopped smoking*. We would like the prediction to be that its local context entails *used to smoke*. There is no formal difficulty in defining a generalized notion of entailment among predicates – and the correct result can be obtained if the local context of *stopped smoking* is the property of *being a student* (relative to the initial context C). But a property is not the right kind of object to be believed, which makes a pragmatic analysis difficult to pursue in this case (further difficulties are discussed in Schlenker 2009).

2.2 Heim's Dynamic Semantics

Heim 1983 extended Stalnaker's theory by taking the very meaning of words to be instructions to update the context set (or 'Context Change Potentials'); the 'context set' became a technical notion, with no claim that the speech act participants literally believe local contexts (i.e. local context sets). In simple cases, Heim followed Stalnaker in taking the context to be a set of possible worlds; in particular, the global context is supposed to be the set of worlds compatible with what the speech act participants take for granted. In the final version of her system, which we will not review here, Heim took contexts to be sets of *pairs* of the form <world, assignment function>; the addition of assignment functions proved crucial to handle quantificational case statements.

In simple cases, we just obtain a semanticized version of Stalnaker's pragmatic analysis. Let us assume for the moment that the context is a set of possible worlds. Now consider the clause *John stopped smoking*, which we will represent as *pp'*, with the

[3] This suggestion is explicitly made in Stalnaker 2010.

convention that the underlined part is the presupposition and the non-underlined part is the assertive component (here: *p = John used to smoke*, and *p' = John doesn't smoke*). When *pp'* is uttered in a context set C, two things may happen:

• If C does not entail *p*, the update fails, which we will encode as: C[pp'] = # ('C updated with *pp'* yields a failure').

• If C does entail *p*, the update proceeds by only keeping those worlds of C (or those 'C-worlds', as we will say) which satisfy *p'*: C[pp'] = {w ∈ C: p' is true in w}.

These results are summarized in (6).

(6) C[pp'] = # unless C ≠ # and for each w ∈ C, *p* is true in w. If C[pp'] ≠ #, C[pp'] = {w ∈ C: p' is true in w}

The key step is to provide rules of context update for connectives and quantifiers. For the first case, Heim posits the rules in (7) for any clauses *F, G*.

(7) a. C[F and G] = # unless C[F] ≠ # and C[F][G] ≠ #. If C[F and G] ≠ #, C[F and G] = C[F][G][4]
b. C[not F] = # unless C[F] ≠ #. If C[not F] ≠ #, C[not F] = C – C[F]
c. C[if F, G] = # unless C[F][G] ≠ #. If C[if F, G] ≠ #, C[if F, G] = C – C[F][not G]

These rules can be justified as follows.

-(7)a simply captures the intuition, inherited from Stalnaker, that the update of C with *F and G* is the successive update of C with *F*, and then with *G* (note that C[F][G] is the same thing as (C[F])[G]: first we update C with *F*, and then with *G*); a failure arises if any step of the update process yields one.

-(7)b tells us that we obtain the update of C with *not F* by 'throwing out' of C those worlds that survive the update of C with F (C – C[F] is C *minus* the update of C with *F*). But for this operation to be defined, C[F] should be defined in the first place. So we derive in this way the result that *not F* has the same presupposition as *F*: in both cases, the condition on C is that C[F] ≠ #.

-(7)c defines a dynamic version of conditionals viewed as material implications. Recall that in classical logic a conditional *if F, G* is false just in case *F* is true and *not G* is true; in all other cases, the conditional is true. The rule in (7)c says that we obtain the update of C with *if F, G* by 'throwing out' of C those worlds that survive the update of C with *F* and then with *not G*. Intuitively, we throw out those worlds that make the material implication false. But for this operation to be defined, *C[F][not G]* should be defined in the first place. And by the rule in (7)b, this holds just in case *C[F][G]* is well-defined (since *(C[F])[not F]* is defined just in case *(C[F])[G]* is).

We can see in this way that *F and G* and *if F, G* are predicted to give rise to the same presupposition: in both cases the requirement is that *C[F][G]* should be defined. But of course conjunctions and conditionals have different dynamic effects: they update C in different ways. Two examples are given in (8)-(9). We write *p* for *John is 60 years old*, *q* for *John can't be hired,* and *q'* for *John believes he can't be hired*. In both cases, we derive a conditional presupposition that *if John is 60 years old, he can't be hired*, but the worlds that 'survive' the update when this condition is met are not the same in the two cases.

(8) a. John is 64 years old and he knows that he can't be hired.
a'. (p and qq')
b. C[(a')] = # unless C[p][qq'] ≠ #, i.e. unless each world w in C[p] is such that *q* is true in w; this holds just in case each world w in C which makes *p* true also makes *q* true. In the case of (a), this means: each world in C in which John is 64 years old is one in which he can't be hired.
If C[(a')] ≠ #, C[(a)] = C[p][qq'] = ({w ∈ C: p is true in w})[qq'] = {w ∈ C: p is true in w and q' is true in

[4]We could write this rule in (7)a more succinctly as: C[F and G] = C[F][G] (the right failure conditions automatically follow from the definition of basic updates).

w}. In the case of (a), the result of the update is the set of C-worlds in which John is 64 years old and he believes/knows he can't be hired.

(9) a. If John is 64 years old, he knows that he can't be hired.
a'. (if p, q̲q')
b. C[(a')] = # unless C[p][q̲q'] ≠ #, i.e. unless each world w in C[p] is such that *q* is true in w; this holds just in case each world w in C which makes *p* true also makes *q* true. In the case of (a), this means: each world in C in which John is 64 years old is one in which he can't be hired.
If C[(a)] ≠ #, C[(a)] = C – C[p][not q̲q'] = C – (C[p] – C[p][q̲q']) = C – ({w ∈ C: p is true in w} – {w ∈ C: p is true in C and q' is true in w} = C – {w ∈ C: p is true in w and q' is not true in w} = {w ∈ C: p is false in w or q' is true in w}. In the case of (a), the result of the update is the set of C-worlds in which if John is 64 years old, he believes/knows he can't be hired.

In dynamic semantics, presupposition and truth are handled 'in tandem', whereas they were treated by different rules in Karttunen's system. But we can still recover from Heim's system a definition of 'presuppositional acceptability' and of 'truth'. A sentence *S* will be presuppositionally acceptable relative to a context set C just in case the update of C with *S* does not yield a failure; and the compositional system is set up in such a way that this happens just in case any presupposition triggered by an expression is entailed by its local context. As for truth, the definition is simply that a sentence *S* is true in a world w of C just in case w 'survives' the update with *S*. Both definitions are given (10)

(10) Let a sentence *S* be uttered relative to a context set C.

a. Presuppositional Acceptability
S is presuppositionally acceptable relative to C if and only if C[S] ≠ #.

b. Truth
If w ∈ C and if *S* is presuppositionaly acceptable in C, *S* is true in w relative to the context set C if and only if w ∈ C[S].

In the quantificational case, which we do not review here, Heim's system derives *universal presuppositions* when a trigger appears in the verbal argument of a generalized quantifier, as in *every student stopped smoking*, *no student stopped smoking*, *exactly four students stopped smoking*: each of those is taken to presuppose that *every student used to smoke*. Heim also predicts universal presuppositions when a trigger appears in the nominal argument of a quantifier: *every student who stopped smoking is nervous, no student who stopped smoking is nervous*, etc are predicted to yield an inference that *every student used to smoke*. We come back to these predictions in Part II. (One could easily 'tweak' Heim's system to obtain different predictions; thus Beaver 1994 argues for existential presuppositions instead of the universal ones. But as we discuss below, the ease with which the predictions can be changed is a symptom of another problem).

2.3 Assessment

Two main criticisms have been addressed at Heim's system. First, it was argued by several researchers – notably van der Sandt 1992 and Geurts 1999 – that Heim's predictions are too weak: she often derives conditional presuppositions where subjects obtain stronger, unconditional inferences (this has been dubbed the 'Proviso Problem'). Second, several other researchers – including Soames 1989 and Heim 1990 – noted that the account was insufficiently explanatory and 'overgenerated', i.e. made it possible to define too many dynamic lexical entries. (More subtle empirical issues are examined in Part II; they concern quantified statements and the nature of the left-right bias found in presupposition projection.)

2.3.1 The Proviso Problem

Van der Sandt 1992 and Geurts 1999 argue that in many cases Heim's predictions are too weak (the following are modifications of examples discussed in Geurts's Chapter 3):

(11) a. The problem was easy / difficult and it is not John who solved it.
b. If the problem was easy / difficult, then it isn't John who solved it.
c. Peter knows that if the problem was easy / difficult, someone solved it.

In all three cases, Heim predicts a presupposition that *if the problem was easy, someone solved it*. But Geurts convincingly argues that there is a clear empirical difference between (11)a-b on the one hand and (11)c on the other: the expected presupposition is found in the latter case, but in (11)a-b one typically infers that someone did in fact solve the problem. Van der Sandt and Geurts argue that better predictions can be achieved if an alternative account of presupposition projection is given within the framework of Discourse Representation Theory (DRT), which unlike dynamic semantics is essentially representational. Other researchers have tried to argue that pragmatic mechanisms can in some cases strengthen conditional presuppositions into unconditional ones (see Beaver 2001, Heim 2006, Pérez Caballo 2009, Singh 2007, 2009 and van Rooij 2007). Arguably, conditional presuppositions are in fact obtained in some examples such as those in (8)-(9), though experimental evidence would be needed to adjudicate the debate. We will come back to DRT in Part II of this paper, and will sketch a comparison – and a possible unification – between satisfaction theories and DRT.

2.3.2 The Explanatory Problem

Soames 1989 and Heim 1990 noted that the dynamic account lacks explanatory depth. On the basis of simple sentences involving no presupposition triggers, we could certainly posit the lexical entry for *and* defined in (7)a, and copied in (12)a; but we could just as well posit one of the 'deviant' entries in (12)b-c:

(12) a. C[F and G] = C[F][G]
b. C[F and* G] = C[G][F] (i.e. C[F and* G] = C[G and F])
c. C[F and** G] = # unless C[F] ≠ # and C[G] ≠ #. If C[F and** G] ≠ #, C[F and** G] = C[F] ∩ C[G]

When *F* and *G* are non-presuppositional, all three lexical entries yield the same result: the update rule outputs the set of C-worlds that satisfy both *F* and *G*. But in presuppositional cases the three entries make entirely different predictions: *and** predicts that the presuppositions of the first conjunct can be satisfied by the second conjunct, but not the other way round; while *and*** predicts that the conjunction should inherit the presuppositions of each conjunct. It turns out that *and* is correct while *and** as well as *and*** are not; and most researchers' impression is that this conclusion holds in all known languages. But nothing in the theory explains why this is so.

To make the point more concrete, consider three dynamic lexical entries that one could entertain for disjunction - which is not discussed in Heim 1983. We follow standard semantic practice in treating *or* as being inclusive (*F or G* is true just in case *F* or *G* or both are true), and consider three possible dynamic extensions of this meaning.

(13) a. C[F or G] = # unless C[F] ≠ # and C[not F][G] ≠ #. If C[F or G] ≠ #, C[F or G] = C[F] ∪ C[not F][G]
b. C[F or* G] = C[G or F]
c. C[F or** G] = # unless C[F] ≠ # and C[G] ≠ #. If C[F or** G] ≠ #, C[F or** G] = C[F] ∪ C[G]

When *F* and *G* are non-presuppositional, all three entries yield the same update: we end up with those C-worlds that satisfy *F* or *G* or both; and it can be checked by applying the truth definition in (10)b. Note that in propositional logic *F or G* is equivalent to *F or ((not F) and G)*, which is why the *not F* that appears in (13)a does not 'hurt' the truth conditions.[5] Entries (13)a and (13)c have in fact been proposed in the literature (by Beaver 2001 and Geurts 1999 respectively). But there are no general principles to *predict* that one entry or the other should be found in the world's languages (we come back to some of the *data* obtained with disjunctions in Part II; as we will see, they are complex - all we wanted to show in the present discussion was that dynamic semantics fails to make any strong predictions in this case).

At this point, then, we have seen that the move from meanings as truth conditions to meanings as Context Change Potentials allowed Heim to encode the presupposition projection behavior of operators in their lexical entries. Descriptively, this was an important progress over earlier theories. However the very power of the system raised a question of explanatory adequacy: Heim's dynamic analysis failed to *predict* the projection behavior of operators from their standard (non-presuppositional) logical properties. In Part II, we will offer a reconstruction of 'local contexts' that avoids this difficulty; and we will compare analyses of presupposition based on local contexts with a prominent alternative, Discourse Representation Theory.

References

Beaver, David: 1994, When Variables Don't Vary Enough. In M. Harvey and L. Santelmann (eds.), *Semantics and Linguistic Theory 4*, CLC Publications, Cornell.

Beaver, David: 2001, *Presupposition and Assertion in Dynamic Semantics*. CSLI, Stanford.

Chemla, Emmanuel: 2009, Presuppositions of quantified sentences: Experimental Data. *Natural Language Semantics*.

Geurts, Bart: 1996, Local satisfaction guaranteed. *Linguistics and Philosophy* 19: 259-294.

Geurts, Bart: 1999, *Presupposition and Pronouns*. Elsevier.

Heim, Irene: 1983, On the Projection Problem for Presuppositions. In D. Flickinger et al. (eds), *Proceedings of the Second West Coast Conference on Formal Linguistics*, 114-125.

Heim, Irene: 1990, Presupposition Projection. In R. van der Sandt (ed.), *Reader for the Nijmegen Workshop on Presupposition, Lexical Meaning, and Discourse Processes*. University of Nijmegen.

Heim, Irene: 2006, A Note on the Proviso Problem. Handout from Milan Meeting,. Gargnano.

Karttunen, Lauri: 1974, Presupposition and Linguistic Context. *Theoretical Linguistics* 1: 181-194. Reprinted in Davis 1991.

Lewis, David: 1979 Score keeping in a language game. *Journal of Philosophical Logic*, 8: 339–359

Pérez Carballo, Alejandro: 2009, Toward a dissolution of the proviso problem. In *Presuppositions and Implicatures: Proceedings of the MIT-Paris Workshop,* ed. Paul Egré and Giorgio Magri,volume 60 .Cambridge, MA: MITPWL.

Schlenker, Philippe: 2009, Local Contexts. *Semantics & Pragmatics,* Volume 2, Article 3: 1-78, doi: 10.3765/sp.2.3Soames, Scott: 1989, Presupposition. In D. Gabbay and F. Guenthner (eds), *Handbook of Philosophical Logic IV*, 553-616.

[5] By contrast, *((not G) and F) or ((not F) and G)* would yield incorrect truth conditions, namely those of exclusive rather than inclusive disjunction

Schlenker, Philippe: 2010, Presuppositions and Local Contexts. *Mind* 119, Issue 474: 377-391.

Simons, Mandy: 2001, 'On the conversational basis of some presuppositions', in. R. Hasting, B. Jackson and Z. Zvolensky (eds.), *Proceedings of Semantics and Linguistic Theory 11*, CLC

Publications, Cornell University, Ithaca, NY, 431-448.

Singh, Raj: 2007, Formal Alternatives as a Solution to the Proviso Problem. *Proceedings of Semantics and Linguistic Theory 2007*.

Singh, Raj: 2009, Symmetric and interacting alternatives for implicature and accommodation. Paper written for the workshop *New Directions in the Theory of Presupposition,* ESSLLI 2009. Paper available at http://esslipresupposition2009.blogspot.com/

Soames, Scott: 1989, Presupposition. In D. Gabbay and F. Guenthner (eds), *Handbook of Philosophical Logic IV*, 553-616.

Stalnaker, Robert: 1974, Pragmatic Presuppositions. In Munitz, M. and Unger, P. (eds.) *Semantics and Philosophy*. New York: New York University Press.

van der Sandt, Rob: 1992, Presupposition Projection as Anaphora Resolution. *Journal of Semantics* 9(4): 333-377. DOI 10.1093/jos/9.4.333

van Rooij, Robert: 2007, Strengthening Conditional Presuppositions. *Journal of Semantics,* 2007, 24: 289-304. DOI 10.1093/jos/ffm007