Transparency Theory and its Dynamic Alternatives: Commentary on "Be Articulate"

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"Be Articulate: A Pragmatic Theory of Presupposition Projection" is a remarkable paper in at least two respects:

First, it is the only broadly Gricean treatment of presuppositions that generates precise and accurate predictions about the pattern of presupposition projection. Schlenker proposes that presuppositions arise as a result of a pragmatic prohibition against using one short construction to express two independent meanings. This basic idea is quite an old one.[1] But no one has ever elaborated this pragmatic story in a way that yields a systematic theory of presupposition projection. Indeed, for many, the fact that pragmatic approaches to presupposition did not easily account for a wide range of projection behavior (most previous accounts contented themselves by treating projection out of negation) was a reason to be skeptical of such pragmatic approaches. Schlenker's work puts this worry about Gricean accounts to rest.

Second, Schlenker has shown how one can give an account of presupposition projection without stipulating properties of the logical connectives that not do not follow from their truth-conditional meaning along with other *general* features of the account. As far as I know, no previous, empirically adequate theory accomplished this.

In this short commentary I will argue for two main points:

The first point relates to the second aspect of Schlenker's theory that I mentioned. Schlenker argues that Transparency Theory has an explanatory advantage over dynamic semantics because of its non-stipulative treatment of the different logical connectives. However, I argue that dynamic semantics can, in a very natural way, be modified to yield an explanatory theory that stipulates nothing about each binary connective besides its truth-conditions. So Transparency Theory does not stand alone in being able to make accurate predictions about presupposition projection without connective-specific stipulations.[2] I am not all confident that dynamic approaches to presupposition projection are correct, but I am sure that they need not be stipulative in the way in which the theory of Heim (1983) is.[3]

Second, I will argue that Schlenker is right to give both symmetric and asymmetric theories of presupposition projection. However, I will point out that Schlenker's symmetric theory of pre-

[1] See, for instance, Stalnaker (1974) and Grice (1981).

[2] In fact, since Schlenker's work was first made publicly available at least two other theories that can predict the basic pattern of presupposition projection without connective-specific stipulations have emerged: Chemla (2008) treats presuppositions as a form of scalar implicature, while George (2008) revives the strong Kleene truth-tables to predict the basic pattern of presupposition projection.

[3] To my knowledge, Schlenker is right in suggesting that all subsequent work in the dynamic tradition has also imported stipulations akin to Heim's to predict the pattern of presupposition projection.

supposition projection suffers from what is likely to be a significant empirical flaw that dynamic semantics does not have.

1 Non-Stipulative Dynamic Semantics

The central idea of dynamic semantics is that sentences are associated with instructions to alter the context that are only defined in some contexts (where contexts are common grounds in Stalnaker's sense). If we took the context in which each presuppositional expression occurs just to be the context in which the sentence containing it is uttered, we would have a theory that predicts a perfectly uniform pattern of presupposition projection: all presuppositions of any part of any sentence would be inherited by the whole. Since this is not what we find empirically we need, rather, to assume a notion of *local context* that varies within a single sentence. The local context of the consequent of a conditional, for instance, will need to be a context that already incorporates the antecedent.

Schlenker criticizes this program by setting up a dilemma: either we try to motivate the notion of local context by appeal to pragmatic principles governing belief updates in the course of processing utterances or we capture it using some sort of non-standard semantics. I think Schlenker is right in his claim that the first path is hopeless: while it is somewhat plausible to thinking that people update beliefs sequentially when they encounter an unembedded conjunction, there is no obvious algorithm of belief update mid-sentence for compound constructions generally.

This leaves us with having to give a semantic account of local context. On the semantic view of local context there is a compositional semantics that has as its basic operations context updates. Formally, instead of characterizing the truth-conditions of sentences, we characterize their effect on common grounds. So for any formula A we are no longer interested in which worlds A is true in, but rather what the effect of A is on different common grounds (following Schlenker's nomenclature we can represent the effect of A on the common ground C as $C[A]$). Atomic sentences, thus, are context change potentials (CCPs) that are only defined over some contexts, and binary operators take two CCPs and yield a new one. Heim gives a semantics for this sort of language in such a way that the basic facts about presupposition projection neatly fall out. Nonetheless, Schlenker—following Soames (1989), and Heim (1990) herself—criticizes her account for requiring stipulations specific to each connective that are not predictable from their truth-conditional meaning. For example: Heim posits that the meaning of $C[A \wedge B]$ is $C[B][A]$ (in words: updating the common ground, C, with $A \wedge B$ is equivalent to first updating C with A and then updating the resulting common ground with B). Her account accurately predicts that a presupposition in the second conjunct will not project out, if it is satisfied by the first conjunct. But another update procedure for conjunction: $C[B][A]$ would capture truth-conditional conjunction equally well without making this prediction about presupposition projection.[4] Of course, it is open to the proponent of dynamic semantics to accept that it is a fact of human psychology that the connectives are as they are in Heim's semantics, but, all else equal, an account without stipulations that go beyond the truth-conditions for each connective would be simpler (and until we know the facts about human psychology we should strive for simplicity).

[4] Note that while Heim's rule might seem more intuitive for conjunction, the necessary rules to cover the basic facts about disjunction are much less intuitive. Also, an update procedure for conjunction doesn't have to be "backwards" not to make the right predictions: consider $C[A] \wedge C[B]$.

We could try to remove the stipulations specific to each connective by adding general syntactic constraints on how the update procedures for connectives are formulated.[5] However, such constraints would need to be motivated. A preferable alternative, I suggest, is to liberalize Heim's theory. Rather than stipulating update procedures or templates for complex CCPs, we allow any update procedure that is defined in a given context to be used. To realize this idea we need a language with two things: a syntactic specification of what counts as an update procedure generally (which we will try to make as loose as possible) and a definition of when a given update procedure is acceptable for a given connective.

I assume that corresponding to every proposition (i.e. set of possible worlds) there is an atomic sentence, X, in a language, L, such that X is true only in the worlds contained in the proposition. Common grounds, then, can be represented as sentences in L. We also include a class of complex CCPs in L. Syntactically a CCP attaches to a sentence to form a new sentence: if C is a sentence and A is a CCP then $C[A]$ is a sentence in L. Semantically we assume, for atomic CCPs, that $C[A]$ is only defined if C entails some sentence $\underline{A}$. We also assume that there is some sentence A' such that, if $C[A]$ is defined, then $C[A]$ is true in w iff $C \wedge A'$ is true in w.[6] Now we give a general syntactic notion of an update procedure:

Syntactic Form of Update Procedure A sentence in L is an update procedure for sentence C, and CCPs A and B iff it is an update procedure according to these recursive rules:

1. C is an update procedure for A, B, and C
2. if X and Y are update procedures for A, B, and, C, then so are $X \wedge Y$, $X \vee Y$, and, $\neg X$
3. if X is an update procedure for A, B, and C, then so are $X[A]$ and $X[B]$

An update procedure for A, B, and C, is defined if and only if every the instance of $[A]$ or $[B]$ in it is defined. We now need to specify which update procedures can work for which connectives:

Connectives and Update Procedures An update procedure, U, for A, B and C, is *acceptable* for a connective $*$ (where $*$ is any truth-functional connective) iff U is such that for all sentences and A', B', and C', if every instance of $X[A]$ (where X is any sentence) in U is replaced by $(X \wedge A')$ and every instance of $X[B]$ in U by $(X \wedge B')$ and every instance of C by C' the resulting sentence is equivalent to $C' \wedge (A' * B')$.

Instead of Heim's single update procedure for each binary formula $A * B$, we now have an infinite set of acceptable update procedures which are equivalent, in the bivalent case, to conjoining the common ground with $A * B$. We will say that $C[A * B]$ is defined iff there is some update procedure for A, B, and C, acceptable for $*$ that is defined. If defined, $C[A * B]$ is true in w iff any defined update procedure for A, B, and C that is acceptable for $*$ is true in w. This gives us a recursive semantics for complex CCPs. More picturesquely, we are assuming a dynamic system in which the hearer can *choose* which update procedure for a connective to use from among all those which are defined in the context.

This system yields specific predictions about how complex expressions inherit the presuppositions of their parts. Here are the inheritance rules yielded:

[5] Schlenker suggests this move.

[6] This constraint captures the idea CCPS are like assertions in the way they change the common ground.

- $C[\neg A]$ is defined iff $C[A]$ is defined.
- $C[A \wedge B]$ is defined iff $C[A][B]$ or $C[B][A]$ is defined.
- $C[A \vee B]$ is defined iff $(C \wedge \neg C[A])[B]$ or $(C \wedge \neg C[B])[A]$ is defined.[7]

This system, of course, does not yet predict Heim's fully asymmetric rules for presupposition projection. In other words, this system pays no attention to order with symmetric operators such as $\vee$ and $\wedge$, whereas Heim's system gives rules that differ for $A \wedge B$ and $B \wedge A$. Luckily, if you want to derive Heim's exact, asymmetric CCPs, one more feature can be added to this liberalized dynamic system that will do this. It is possible to give an *incremental* version of the kind of dynamic semantics sketched above (akin to Incremental Transparency Theory). To do this we simply say that any complex CCP S is incrementally acceptable in C iff for any for any starting string of S, α, and and any string β such that a) the only atomic CCPs in β are such that they are always defined and b) $\alpha\beta$, the concatenation of α and β, is a well-formed complex CCP, $C[\alpha\beta]$ is defined. This incremental rule will turn the symmetric rules above into asymmetric ones equivalent to standard dynamic semantics (as described in "Be Articulate").[8]

The upshot is that Schlenker's semantic horn is not fatal for dynamic semantics; rather Heim's basic proposal just needs to be made a bit more flexible and asymmetries need to be treated in a uniform fashion, rather than stipulated for each connective.[9]

2 Capturing Symmetries in Presupposition Projection

Despite a decided preference in the literature for asymmetric theories of presupposition projection, there are many cases which can only be handled by a symmetric theory. Usually the cases are slightly more complex than the very standard cases, but I think the judgments are relatively clear.[10] Here are two examples of sentences that do not seem to trigger any presupposition (more examples are in "Be Articulate," section 3):

(1) If John doesn't know it's raining and it is raining, then John will be surprised when he walks outside.

(2) It's unlikely that John still smokes, but he used to smoke heavily.

[7] Rothschild (2008) proves this result.

[8] Rothschild (2008) gives a proof of this claim.

[9] I have not treated quantification here, but I believe the system can be adapted to handle quantified presuppositions in a manner similar to Heim (1983).

[10] The reason why we need to look at complex cases is there may be be independent pragmatic principles interfering with our judgments in many simple cases. For example, the reason $A \wedge \underline{a}$ is unacceptable may be that there is a prohibition on saying $A \wedge B$ if A entails B (but not vice versa). So, as Schlenker notes, the following sort of sentence is odd:

(a) John is a practicing, accredited doctor and he has a medical degree.

Whereas the reverse order is more normal:

(b) John has a medical degree and he is a practicing, accredited doctor.

Of course, Schlenker thinks such pragmatic facts are themselves what explain presupposition projection. But the existence of symmetric presupposition phenomenon casts some doubt on this claim. Nonetheless, Schlenker argues that there are persistent asymmetries in presupposition projection that cannot be explained by simple constraints on entailing conjuncts and the like.

Both of these cases require a symmetric account of presupposition projection (or, at least, the standard asymmetric theories like Heim's make the wrong predictions). Given the existence of examples like (1) and (2), we should be interested in the properties of different symmetric systems for handling presupposition projection.

Schlenker himself can and does give a version of Transparency Theory that captures the symmetric aspect of presupposition projection. This is his non-incremental, symmetric version of Transparency Theory (described in section 3 of "Be Articulate"). In this symmetric version, the transparency of a presupposition is checked not with respect to every continuation (as in the incremental version) but with respect to the actual continuation of the sentence. This theory accounts for the apparent symmetric cancellation in (1) and (2). On the liberalized dynamic semantics these readings are accounted for with the non-incremental version.

There is one simple respect in which the non-incremental version of dynamic semantics seems preferable to Schlenker's Symmetric Transparency Theory. Symmetric Transparency Theory allows two of the same presuppositions to cancel each other in various instances, but no version of dynamic semantics does.[11] Thus, on Symmetric Transparency Theory the following sentence should have no presuppositions:

(3) Either John doesn't still smoke or his doctor doesn't know that he used to smoke.

The presupposition of either clause (that John used to smoke) is transparent in its clause in Symmetric Transparency Theory and so the entire sentence has no presupposition. But on the dynamic theory I have sketched this sentence is defined in a context c only if c entails that John used to smoke. I assume that the judgments for this sort of case favor the dynamic theory. So, to the extent that we need something like a symmetric theory to handle a range of judgments, there is at least one advantage to the non-incremental version of the dynamic account outlined here.[12] I assume Schlenker's symmetric account can be modified to handle these cases, but I do not know exactly how the modification will go or what the overall effect on the theoretical appeal of the theory will be.

In any case, there can be no doubt about the importance of Schlenker's work or the extent to which it has galvanized the theory of presupposition projection.[13]

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[11] Schlenker (2008, footnote 13 and appendix no. 39) notes the more general feature of Transparency Theory that this is an instance of.

[12] This advantage is shared by some trivalent accounts such as the Strong Kleene account, discussed by, e.g., by Beaver (1997) and George (2008).

[13] Many thanks to Be Birchall, Emmanuel Chemla, Haim Gaifman, Nathan Klinedinst and Philippe Schlenker for discussion.

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