
Towards a pragmatic solution of the proviso problem

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1 The proviso problem

Presuppositions of compound sentences do not follow a homogeneous projection pattern. Notably, presuppositions triggered in the consequent of a conditional or the second disjunct of a disjunction are varyingly inherited by the complex sentence: either it is inherited wholesale, or a weaker “conditionalized” inference is generated.

- (1) a. If Kipchoge is tired, he will stop running soon. \xrightarrow{p} *K is running*
b. If Kipchoge is participating, he will stop running soon. $\not\xrightarrow{p}$ *K is running*

The majority of theories—with the possible exception of DRT-based theories such as van der Sandt (1992); Krahmer (1996)—make the wrong predictions when dealing with this lack of homogeneity in presupposition projection patterns. These include so-called satisfaction theories like (Stalnaker, 1973, 1974; Karttunen, 1974; Heim, 1982, 1983; Beaver, 2001; von Stechow, 2008), plugs, holes and filters (Karttunen, 1973), multivalent theories (van Fraassen, 1969; Karttunen & Peters, 1979; George, 2008; Fox, 2012), cancellation theories (Gazdar, 1979; Soames, 1982; van der Sandt, 1988) and others (Schlenker, 2008; Chemla, 2008). Perhaps the most prominent response to this problem—the so called “proviso problem” after Geurts (1996)—is to assume that in addition to a basic “weak” conditional presupposition, there is a pragmatic strengthening mechanism that allows for unconditional inferences; see discussions in Beaver (2001); von Stechow (2008). This strand of theories, known broadly as local satisfaction theories, explain why the presupposition of the consequent in (1a) cannot project in (1b): because in (1b) the presupposition that *Kipchoge is running* triggered by the factive verb *stop* in the consequent is entailed—in fact, *locally* entailed—by the antecedent *Kipchoge is participating*, whereas this relation does not obtain in (1a). For concreteness, let’s assume that such theories rely on two basic assumptions:

- (2) a. Stalnaker’s bridge: If A presupposes p in C , then A can only be felicitously asserted in C if C entails p .
b. Local satisfaction: A presupposes whatever is required to ensure that A ’s constituents have their presuppositions locally entailed in C .¹

Broadly speaking theories relying in some notion of local satisfaction also predict correctly that (3a) but not (3b) presupposes that John believes Sue used to smoke.

- (3) a. John believes that Sue stopped smoking \xrightarrow{p} *John believes that Sue used to smoke*
b. If John believes that Sue used to smoke, then he believes that she stopped.
 $\not\xrightarrow{p}$ *John believes that Sue used to smoke*

Such approaches have however been criticized as under-predicting unconditional presuppositions. Recently, Mandelkern (2016a,b) has convincingly shown that all the theories mentioned above, and more generally theories relying on local satisfaction, make some problematic

¹For discussion of what counts as local entailment, see Schlenker (2009), Rothschild (2015) a.o.

predictions with respect to the proviso problem. Consider for instance the case of a speaker asserting (4a). In an ordinary context C , such a speaker is presenting herself as taking for granted that John has a sister. Local satisfaction, however, only requires (4a) to presuppose whatever is required in C to ensure that the *local* context of the consequent in (4a) entails that John has a sister, which amounts to the material conditional in (4b).

- (4) a. If John has free time this afternoon, he'll pick up his sister at the airport.
b. If John has free time then John has a sister

Similarly, theories relying on local satisfaction predict that the strongest presupposition of statements such as (3a) is (3b), and while correct, they fail to predict the additional presupposition that *Sue used to smoke*. (The full paper discusses these predictions extended to compound clauses beyond conditionals and attitude predicates beyond *believe*.)

2 Pragmatic weakening

This paper proposes an analysis of variable projection from complex sentences that takes the unconditional presupposition as basic. Refining a Gazdar (1979)-style Cumulative Hypothesis, I suggest that presuppositions fail to project because of general conversational principles: presuppositions project globally unless they “cause pragmatic embarrassment” (Beaver & Geurts, 2011). I submit that one such case of pragmatic embarrassment is that where speakers, by virtue of admitting that a certain presupposition is known, declare that their epistemic state is inconsistent. The gist of the idea is the following: if speaker S is ignorant about proposition ϕ , a complex sentence will not presuppose ϕ , since, if it did, the speaker would have to be assumed to hold an inconsistent epistemic state. The only ancillary assumption required is that speakers may not declare themselves to hold inconsistent epistemic states (cf. Moore’s paradox). I discuss here conditional statements, an environment where we can identify the effect of inconsistent epistemic states in presupposition projection, although the paper also discusses the case of disjunction, conjunction and attitude predicates.

In order to achieve some advance in our understanding of the proviso problem, a theory of presuppositions projection relying on default global projection patterns that may nevertheless be pragmatically weakened must propose at least two things: (i) when exactly presuppositions fail to project globally, and (ii) what happens to those presuppositions that fail to project. I discuss each proposal in turn, after introducing some background assumptions.

2.1 Background assumptions

Presuppositions are constraints on input contexts, in particular *semantic* presuppositions are *pragmatically* constrained, in the Stalnakerian sense: a conversational context C is understood as the set of possible worlds compatible with the common ground CG , the set of propositions presumed to be known among all participants in a conversation. Assume that Stalnaker’s bridge in (2a) holds. Failing to obey this principle by *overtly* presupposing a proposition p not entailed by C threatens to make the context defective in the sense that the speaker presupposes something that others do not—assuming we are dealing with an informative statement by a cooperative speaker, etc. Given the make-up of CG it is only natural to assume that the set of worlds compatible with the knowledge (or beliefs) of any one speaker S in the conversation, ES_S , is strictly greater than CG , and thus $p \in C \wedge p \notin ES_S$ is inconsistent. I use the knowledge operator K (Hintikka, 1962)—although B could do as well—to represent speakers epistemic states: $K_S[\phi]$ stands for *speaker S knows that ϕ* . Thus, if $K_S[p]$, then $p \in ES_S$ —but whether

$p \in C$ is a mere contingency. A speaker is said to hold an inconsistent epistemic state if for some set of propositions $\{\phi_1, \dots, \phi_n\}$, $K_S[\phi_1 \text{ and } \phi_2 \text{ and } \dots \phi_n]$ is inconsistent.

Speakers uttering (non-counterfactual) conditionals $A \rightarrow B$ often convey that A is a mere *supposition*, and thus they signal that they cannot settle whether A is the case: either because they are uncertain, $\neg K_S[A]$, or ignorant of A , $\neg K_S\neg[A] \wedge \neg K_S[A]$. A proposition A is settled for S iff the epistemic state of S , ES_S , is such that it either entails A (and thus $K_S[A]$) or $\neg A$ (and thus $K_S\neg[A]$). Thus, by uttering $A \rightarrow B$ the speaker signals that both A and $\neg A$ are compatible with all she knows.

2.2 Case studies: global projection

In what follows I consider systematically a number of case studies with different relations between the antecedent and a presupposition in the consequent of conditional statements. I show that the account defended here makes successful predictions.

Before continuing, however, notice that the problematic cases for local satisfaction theories relying on pragmatic weakening—i.e. the failure to predict strong, global presupposition projection in (3a) and (4a)—follow naturally and without further assumptions from the approach defended here: no epistemic clash exists between the antecedent in (4a) that *John has time this afternoon* and the presupposition in the consequent that *John has a sister*. Lacking a good reason not to do so, such presuppositions invariably project globally.

Case #1: $A \rightarrow B_p$ and $p \subseteq A$ Suppose that a speaker S uttered a sentence of the form $A \rightarrow B_p$ where p is a presupposition carried by B and $P \subseteq A$. Since by assumption $p \in CG$ and $CG \subseteq ES_S$, it follows that $K_S[p]$. Moreover, since $p \subseteq A$, it follows that $K_S[A]$. But $K_S[A]$ contradicts the uncertainty (or ignorance) of A conveyed by S 's uttering of $A \rightarrow B_p$: $\neg K_S[A] \wedge K_S[A] = \perp$. Thus, uttering $A \rightarrow B_p$ where $p \subseteq A$ is epistemically indefensible, and so p must not project. In the case of (1b) above, the speaker conveys that they lack knowledge about the truth of the antecedent, $\neg K_S[\textit{Kipchoge is participating}]$, and the consequent presupposes that *Kipchoge is running*, $K_S[\textit{Kipchoge is running}]$. Since $K_S[\textit{Kipchoge is running}] \subseteq K_S[\textit{Kipchoge is participating}]$ and $\neg K_S[\textit{Kipchoge is participating}] \wedge K_S[\textit{Kipchoge is participating}] = \perp$, the prediction is that the presupposition should not project. This is not a problem for (1a), where the descriptive content of the presupposition is merely contingent with the speaker's epistemic state. In other words, the urge to preserve the speaker's epistemic state consistent trumps the possibility of taking the speaker to presuppose p in the context. Presuppositions do not fail to project because they are entailed in their local context, but because they lead to indefensible epistemic states. (I discuss what happens to p in §2.3.)

Case #2: $A \rightarrow B_p$ and $K_s[A]$ By appealing to belief states we can make sense of certain contrasts. So far, sentences of the form $A \rightarrow B_p$ have shown to not project p if its descriptive content is inconsistent with the belief state of the speaker. This allows us to readily capture otherwise difficult cases for local satisfaction. We saw above that the presupposition *Kipchoge is running* of (1a) does not project in (1b) because that would render the speaker's epistemic state inconsistent. Crucial to obtain this result was the speaker's ignorance with respect to the truth of the antecedent, a property of conditional statements that we took to be the general case. Nevertheless, some occurrences of indicative conditionals are such that their antecedent is known to the speaker, and thus, for an antecedent A , $K_s[A]$ is the case, instead of $\neg K_s[A] \wedge \neg K_s\neg[A]$. For these cases, our approach correctly predicts that presuppositions in the consequent project globally:

- (5) a. Kipchoge is finally participating!
 b. Well, if Kipchoge is participating, he will stop running soon. \xrightarrow{p} *Kipchoge is running*

Case #3: $A \rightarrow B_p$ and $A \equiv p$ If A and p are logically equivalent, the fact that the speaker's epistemic state must be compatible with both A and $\neg A$ is in conflict with $K_S[p]$, $\neg K_S[A] \wedge K_S[p] = \perp$. Thus, p is predicted not to project: *If Kipchoge is running, he will stop running* $\not\xrightarrow{p}$ *Kipchoge is running*.

Case #4: $A \rightarrow B_p$ and $A \subseteq p$ In this case p does not entail neither A nor $\neg A$, and thus p projects by default. For instance, assuming the speaker knows that Berlin is in Europe, this is a case where A logically entails p ; this is not in conflict with the speaker's epistemic state, and thus p is predicted to project.

- (6) If Liz is in Berlin, Bill will discover that she is visiting Europe \xrightarrow{p} *Liz is visiting Europe*

2.3 Case studies: conditionalized projection

What happens to a presupposition p like *Kipchoge is running* in cases where it is not felt to project globally? In accordance with most current theories, the attested presupposition is conditionalized: if the truth of the antecedent A cannot be settled, the truth of p is interpreted as being contingent on the truth of A , and thus the expected presupposition is of the form $A \rightarrow p$. But what is responsible for this weakening effect from p to $A \rightarrow p$? I suggest that this step involves recruiting an additional pragmatic process: the “perfected” interpretation of the whole conditional statement. I elaborate below.

Case #5: $A \rightarrow B_p$ and $A \subseteq_c p$ Cases like (7) have been proven problematic for accounts of local satisfaction that rely on logical entailment. These are cases where it is not just the antecedent A , but A together with some contextual premises that entail p . The issue for the pragmatic weakening account defended here is that (i) p entails neither A nor $\neg A$ and thus no clash between $K_S[p]$ and $\neg K_S[A]$ (or $\neg K_S\neg[A]$) arises, which in turn leads to a contingent epistemic state that should not preempt the projection of p (unlike what we saw in Case #1); and (ii) A together with additional contextual premises entails p . Consider:

- (7) If Tom doesn't exercise, he will regret getting a bypass. $\not\xrightarrow{p}$ *Tom will get a bypass*

The problem is that in this case the listener could safely be taken to assume that, given some fairly common-sense contextual premises—e.g. that exercising would significantly improve Tom's heart condition so as to avoid getting a bypass—the antecedent does indeed contextually entail the presupposition p that *Tom will get a bypass*. If so, p is also expected to project (as we saw in Case #2). But this is not what we observe above. As advanced above, I suggest that the reason for the lack of global projection in (7) is the perfected interpretation of (7): B is not interpreted merely as contingent on the truth of A , as suggested by the form of ordinary conditionals, but biconditionally.

- (8) a. $[(7)] = \text{Tom doesn't exercise} \leftrightarrow \text{Tom gets a bypass}$
 b. If Tom gets a bypass, he did not exercise $\rightarrow S$ can't settle whether A

By virtue of uttering (7) and strengthening via conditional perfection as in (8a), S is conveying they cannot settle antecedent A in (8b), and so the p *Tom will get a bypass* doesn't project:

it would contradict the uncertainty of whether *A* is the case in (8b). In other words, the projection of *p* in (7) directly depends on the strengthened—perfected—interpretation of the whole conditional statement (8a). This makes a clear prediction: if we find a conditional statement where (i) none of the conditions in Cases #1 through #4 are met and (ii) the statement does *not* allow a perfected interpretation, we should expect a presupposition in the consequent to project globally.

It might seem that world knowledge is responsible for the conditionalization in these cases. However, notice that oftentimes (i) the hearer may not be in possession of the relevant piece of knowledge, and, in addition, (ii) further contextual manipulations may provide sufficient conditions for global projection of the presupposition. The following is one such example, in contrast to the earlier (7):

- (9) If Tom doesn't exercise, he will regret getting a bypass. But if his condition worsens significantly, he won't regret getting a bypass. \xrightarrow{p} *Tom will get a bypass*

3 Conclusion

Presuppositions do not project if they lead to an inference that the speaker holds an inconsistent epistemic state, since only those presuppositions that preempt epistemic defensibility are argued not to project. In comparison, other cancellation-style approaches such as Gazdar's (1979) argue that *all* presuppositions that maybe be incompatible with *any* implicatures and entailments should not project; instead, van der Sandt (1992) holds that cancelled presuppositions are those which when conjoined with the utterance are inconsistent with *any* (neo-Gricean) conversational principle. This proposal is more general than e.g. Gazdar (1979) or van der Sandt (1992), since maintaining epistemic is not a pragmatic principle *per se*—although pragmatic principles may act against expressing such epistemic states—but rather a general consideration about good/licit conversational practices. The full paper shows that this explanation is able to capture all the cases discussed in Mandelkern (2016a,b) that are problematic for those theories taking conditionalized presuppositions as basic, and also discusses disjunctive statements and some potential complications stemming from conjunctive statements.

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