Pragmatic filtering and presupposition projection

Jon Ander Mendia

Abstract The so-called satisfaction theories of presupposition propose weak presuppositions that are then pragmatically strengthened under to-be-determined conditions. The opposite view, pioneered by Gazdar (1979) and van der Sandt (1988), contends instead that presuppositions are semantically strong but can nevertheless be also canceled under to-be-determined conditions. This paper explores two ideas: (*i*) one such case of cancellation can be restated in terms of pragmatic weaking, in the sense that presuppositions do not project if, in doing so, the speaker would declare that they hold an inconsistent epistemic state; (*ii*) presuppositions that fail to be inherited wholesale by the sentence may nevertheless project conditionally—as suggested by satisfaction theories—provided certain contextual conditions are met.

Keywords presupposition · projection · proviso problem · pragmatics

J.A. Mendia, Universitat Autònoma de Barcelona, https://jamendia.github.io/

In Gabriela Bîlbîie, Berthold Crysmann & Gerhard Schaden (eds.), Empirical Issues in Syntax and Semantics 14, 189–218. Paris: CSSP. http://www.cssp.cnrs.fr/eiss14/

1 Introduction

Presuppositions project: they have the ability to "escape" unaffected from the scope of a variety of operators, including negation, modal verbs, conditionals, questions, etc.

(1) a. Kipchoge has not stopped running.
b. It is possible that / Perhaps Kipchoge has stopped running.
c. Sam believes/thinks that Kipchoge has stopped running.
d. If Kipchoge has stopped running, he must be really tired.
e. If Kipchoge is tired, he will stop running.
f. Has Kipchoge stopped running?
⇝ *Kipchoge was running.*

All the examples in (1) have in common that the sentence as a whole has somehow inherited the meaning that *Kipchoge was running*, "triggered" by the verb *stop*, an ability that *stop* shares with a rich variety of lexical expressions, such as some aspectual as well as factive verbs, definite and possessive

DPs, particles such as *too* and *again* among many others. Such pervasive behavior inspired the well-established conception of presuppositions as propositional content whose truth the speaker takes for granted for the purposes of the conversation (Stalnaker 1973; 1974).

The main complication to provide a general account of presupposition projection is that presuppositions of compound sentences do not follow a homogeneous projection pattern (Langendoen & Savin 1971). Most notably, presuppositions triggered in the consequent of a conditional or the second disjunct of a disjunction—among others—are varyingly inherited by the complex sentence: none of the sentences in (2) carry the presupposition that *Kigchoge was running* anymore, despite containing the same proposition that triggered it in (1):

(2) a. If Kipchoge is participating, he will stop running.
b. Either Kipchoge isn't running, or he has stopped running.
$\not\rightsquigarrow$ *Kipchoge was running.*

In such cases, instead of being inherited wholesale by the full sentence, the "failed" presupposition is assumed to adopt a weaker, "conditionalized" form: e.g. for a proposition of the form $A \rightarrow B_p$, where p is the presupposition carried by the consequent B, the perceived presupposition is not p itself but $A \rightarrow p$.

(3) If Kipchoge is participating, then he was running.

The challenge is, thus, "to predict the presuppositions of complex sentences in a compositional fashion from the presuppositions of their parts" (Heim 1983: 114). This challenge is yet to be fully met. The majority of theories—with the possible exception of DRT-based theories such as van der Sandt (1992) and 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 Fintel (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).

This paper presents an investigation of the idea that there are general, construction independent principles acting against presupposition projection. This is an essentially contextualist view on projection, supporting the notion, exposed at length below, that one cannot determine the presuppositions that project in a vacuum, out of context—in line with recent work on presupposition, and projection in general; see e.g. Simons et al. (2011) et seq. More concretely, the main goal is to explore the idea that existing general pragmatic pressures towards preserving the speaker's epistemic coherence act against presupposition projection in cases that, otherwise, would lead the speaker to declare that they hold an inconsistent epistemic state. This general principle, which we will refer to as *Epistemic Defensibility*, helps in turn define a particular set of "inadmissibility" conditions on presupposition projection.[1]

The plan for the rest of the paper is the following. Section 2 provides some background discussion, with a focus on the main pragmatic reactions to the projection problem, and introduces the main conceptual underpinnings of the paper. These are based on the Stalnakerian notion of assertion as update of the common ground and the Stalnaker/Karttunen treatment of presuppositions as constraints on the common ground.[2] Section 3 revisits and quickly comments on Karttunen (1974)'s observation that the presuppositions of compound sentences are not fixed, but instead depend on properties of the context in which they are uttered (a discussion that is based mostly on Francez 2018). Section 4 introduces Epistemic Defensibility as a general pragmatic principle sanctioning (at least some of) presupposition projection in a framework where, all else equal, presuppositions are expected to project by default. Section 5 discusses the fate of those presuppositions that failed to project and argue as well as discuss some seemingly problematic cases for

[1] In this sense, the paper fits naturally within the body of literature that has been trying to identify factors that regulate presupposition projection. Unlike much recent experimental work, however, the proposal presented here has nothing to say about the factors that modulate the "strength" of projection; see Tonhauser & Beaver & Degen (2018) for an overview of such factors. In this paper we limit the discussion to the contextual (local or global) conditions that allow projection in the first place, and to the factors leading to the weakening of global projection there where it is not found.

[2] What matters here is that Stalnaker and Karttunen both think of presuppositions as pre-conditions on input contexts. They do not share exactly the same view, but here and throughout the paper I will ignore such differences.

Epistemic Defensibility. Section 6 discusses outstanding empirical problems that remain and briefly concludes by assessing the resulting state of affairs.

2 When and how to project

2.1 Weakening vs. strengthening

Simplifying somewhat, there have been two general types of reactions to the issue of presupposition projection, taking opposing views on what the semantic "strength" of presuppositions is supposed to be, and then supplementing such semantic conceptions with additional pragmatic constraints on projection. For the sake of the argument, we may summarized them as follows:

(4) a. **Weakening**
Presuppositions project by default, may then be pragmatically weakened (or canceled).

b. **Strengthening**
Presuppositions do not project by default, then may be pragmatically strengthened.

A position like (4a) is endorsed most notably by Gazdar (1979) and van der Sandt (1988). According to this strand of theories, presuppositions project by default, unless they encounter some pragmatic principle acting against them and effectively blocking them from projecting wholesale. The assumption that presuppositions project by default is often referred to as the *Cumulative Hypothesis*. For instance, according to Gazdar (1979), the reason why neither sentence in (2) presupposes that Kipchoge was running has to do with the fact that such presuppositions are not compatible with general conversational assumptions necessary for the sentences to be felicitous utterances. And, in fact, it would be rather odd to utter e.g. (2a) in the eventuality that the speaker knew that Kipchoge was running.

These types of accounts are appealing because the cancellation of presuppositions is dictated by general conversational principles aiming at maintaining consistency and thus do not rely on idiosyncratic construction-specific properties of particular constructions, such as conditional statements in this case. Nevertheless, such approaches have been heavily criticized on the basis of data like the following (from Heim 1983):

(5) a. If John has children, then Mary will not like his twins.
b. If John has twins, then Mary will not like his children.

(6) a. If John used to smoke (heavily), then John stopped smoking.
b. Either John didn't use to smoke (heavily), or he stopped smoking.

A sentence like (5a) is a bit odd out of context. Intuitively, or so it has been claimed in the literature, at the source of this oddness lies a clash between two seemingly inconsistent implications: the speaker is both taking for granted (i.e presupposing) that John has twins while at the same time calling into question (through the ignorance implicature of the antecedent of the conditional), that John has children. A cancellation account of presupposition projection like Gazdar (1979)'s predicts therefore that (5a) presupposes nothing, since there is indeed a general conversational principle being violated. Similarly, (5b) is felt to presuppose nothing, but since the sentence is in violation of no general conversational principle, cancellation accounts such as (4a) predict that indeed (5b) presupposes that John has children.

Examples like those in (6) provide a second type of challenge for cancellation accounts (first noted by Soames 1982). The variants without the modifier *heavily* are not felt to presuppose that John used to smoke and this is correctly captured by these theories, since doing so would lead to the conclusion that the speaker is implicating and presupposing inconsistently. These inconsistencies are removed by the presence of the modifier *heavily*, and so these variants are expected to presuppose that John used to smoke. The presuppositions, however, do not suddenly reappear.

Partly because of issues such as these, the most prominent response to the projection problem aligns with the second option (4b), which takes the opposite view to that of cancellation theories: presuppositions are predicted to convey weak "conditionalized" presuppositions that, under certain circumstances, may be strengthened so as to be inherited wholesale by the full sentence. This strand of theories are typically referred to as (local) *satisfaction* theories (see discussions in Beaver 2001; von Fintel 2008). For instance, these theories explain why the presupposition of the consequent does not project in (2a): the presupposition that Kipchoge is running triggered by the factive verb *stop* in the consequent is *locally* entailed by the antecedent Kipchoge is participating, whereas this relation does not obtain in say (1e). For these theories, presuppositions must be satisfied in their local contexts:

(7) **Local satisfaction**
A presupposes whatever is required to ensure that *A*'s constituents have their presuppositions locally entailed in *C*.[3]

For satisfaction theories presuppositions do not project by default because they are semantically weak. For the sake of illustration, suppose we have a conditional statement of the form $A \rightarrow B_p$ where p is a presupposition carried by B. The global context of the whole statement is C, but the *local* context of the consequent B_p is indeed the result of adding the antecedent to C, $C \cup \{A\}$.[4] The requirement for a context to satisfy a presupposition is thus that $C \cup \{A\} \vDash p$. But since $C \cup \{A\} \vDash p \equiv C \vDash A \rightarrow p$, satisfaction theories effectively predict that *any* conditional statement, all else equal, will carry a conditional presupposition.

It is not rare however to find discrepancies between the presuppositions carried by some sentence and the conditional presuppositions predicted by satisfaction theories. This is the so-called *Proviso Problem*: "the satisfaction theory often predicts presuppositions of the form $A \rightarrow p$, where the intuitively perceived presupposition is simply p" (Geurts 1996: 260). For instance, in a context where the global context C does not entail that John has a sister, (8a) below is predicted to presuppose the conditional (8b), instead of the simple presupposition in (8c):

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

The proposed solution in these cases is again opposite to that of cancellation theories: a theory of pragmatic strengthening is invoked that, in addition to the conditionalized presupposition, permits the sentence to inherit the simple, unconditionalized presupposition. The main line of reasoning goes as follows: a conditional such as (8a) is strange in the sense that there seems to be little connection (either logical, causal, etc.) between antecedent

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

[4]This feature makes such theories dynamic and thus the meanings of the sentential connectives requires of some special non-classical treatment.

and consequent. It is then plausible, on general grounds based on world knowledge, that if a speaker is assuming (8a), it must be because they are also presupposing the truth of some stronger statement that entails it, like (8c) in the case of (8a). The exact justification for why such strengthening processes should appear varies from author to author, but they typically follow a similar schema: if the presupposed content p relates *in the relevant way* to the antecedent A, then the conditional presupposition $A \rightarrow p$ is left untouched and no strengthening is expected. If, on the contrary, A and p are not related in the relevant way, strengthening from $A \rightarrow p$ to p is both possible and expected. The critical relation that must hold between the antecedent A and the presupposed content p has been suggested to be one of likelihood (i.e. that A increases the likelihood of p), plausibility, relevance, etc.[5]

The two approaches we have sketched above share the core assumption that pragmatic processes must be invoked in order to fully capture projection patterns of presupposition; on their own neither the Cumulative Hypothesis nor satisfaction theory provide empirically correct semantic presuppositions. Nevertheless, they differ in the fundamental, default nature of presuppositional content and thus on the pragmatic processes involved in each case: while cancellation theories require pragmatic weakening, satisfaction theories require strengthening. These differences come with important conceptual distinctions as well. For one, the main idea behind cancellation theories is remarkably simple and does not require any additional assumptions, other than identifying the correct pragmatic agents sanctioning presupposition projection. On the other hand, satisfaction theories have been criticized for providing a treatment of sentential connectives that is not explanatory (see Soames 1982, Schlenker 2008); for instance, in the particular account of Heim (1983) the projection properties of connectives must be stipulated and hardwired for each binary connective on a case-by-case basis. Instead, cancellation theories use over-arching principles of well-formedness and felicity in conversation, as Gazdar (1979).

It is in the context of this state of affairs that the present contribution must be framed. It is not the mission of this paper to provide a theory of presupposition, nor is it the plan to attempt an all encompassing account for all

[5]For discussion see Beaver 2001, Singh 2007; 2009 Schlenker 2011, Lassiter 2012, a.o.

cases of projection, including a solution to the proviso problem. Instead, the focus here is on identifying and understanding the overarching factors—if any—that enter into consideration when a presupposition fails to project; i.e. to identify general construction- and trigger-independent constraints against presupposition projection. If we manage to identify such factors external to the theory of presupposition, we may help remove some explanatory onus from the theory of presupposition itself, leading to a more comprehensive understanding of the phenomenon. With this general research program in mind, the specific goal of this paper is to explore how pragmatic pressures, in particular the pragmatic pressure towards conserving the speaker's epistemic coherence, affect the projection of presuppositions carried by compound sentences.

2.2 Common ground, presupposition and context

Here is a very general and widespread characterization of the role of presuppositional content in discourse. Assume with Stalnaker (1973; 1974) that to presuppose something is to hold a propositional attitude with respect to the content that is being presupposed:

> "[a] proposition is presupposed if the speaker is disposed to act as if he assumes or believes that the proposition is true, and as if he assumes or believes that his audience assumes or believes that it is true as well." (Stalnaker 1978: 328)

This is a speaker oriented notion of presupposition. In presupposing a proposition ϕ, speakers act as though hearers believed ϕ, irrespective of whether ϕ was indeed part of the speaker's context set—the set of worlds where all propositions in the context are true according to the speaker. In this respect, we may say that the utterance of some proposition ϕ presupposes p if the felicity of such an utterance requires a context in which the mutual assumptions of the agents partaking in the conversation—i.e. the *common ground*—already include p. In other words, presuppositions are constraints on input contexts.

In this framework, the problem of presupposition projection involves figuring out what propositions must be present in the context that precedes the utterance of the proposition (or discursive exchange) carrying the pre-

supposition triggers under consideration. This amounts to the so-called *Stalnaker's bridge* (von Fintel 2008):

(9) **Stalnaker's bridge**
If A presupposes p in C, then A can only be felicitously asserted in C if C entails p.

If we factor in considerations of compositionality, finding a solution to the projection problem requires determining the conditions that compound sentences impose on the common ground as a function of the conditions that their parts do.

3 On satisfying presuppositions

Generally speaking, Karttunen (1974) agreed with the general view presented above in that he took presuppositions to impose some form of precondition on the interpretability of a sentence. But he did something else too: he connected this view that presuppositions impose preconditions on interpretability to the problem of projection by highlighting that what (at least some) compound sentences presuppose is not fixed, but depends instead on properties of the context in which they are uttered. His critical examples are the following:[6]

(10) a. If Dean told the truth, Nixon is guilty too.
$\rightsquigarrow$ *Someone other than Nixon is guilty*
b. If Haldeman is guilty, Nixon is guilty too.
$\not\rightsquigarrow$ *Someone other than Nixon is guilty*

(11) If Miss Woods destroyed the missing tapes, Nixon is guilty too.

(12) Someone other than Nixon is guilty…
a. $\rightsquigarrow$ *if* destroying tapes is a crime
b. $\not\rightsquigarrow$ *if* destroying tapes is **not** a crime

What is remarkable about this is that Karttunen (1974) managed to show how it is possible to determine when a context might satisfy the presuppositions of a conditional without actually committing to what exactly those

[6]The relevant context here lies in the details of the investigation concerning the Watergate scandal that lead to U.S. president Richard Nixon's resignation in 1974.

presuppositions are. This is an important observation, since it opens the door to the possibility of accounting for the empirical observations about projection without actually having to state a theory of projection, i.e. without having to commit ourselves to a theory where the presuppositions of a compound sentence can be predicted *only* on the basis of the presuppositions of its parts. The corollary is that one should not commit oneself to a theory of presuppositions that predicts what projects out of compound sentences independently of context. For instance, for conditional statements Karttunen summarized his insight in the following notion of satisfaction:

(13) **Satisfaction**
Context X satisfies-the-presuppositions-of $A \rightarrow B$ just in case (i) X satisfies the presuppositions of A, and (ii) $X \cup A$ satisfies-the-presuppositions-of B.

The burden is now shifted from predicting what some expression ϕ presupposes to predicting what it takes for a context to satisfy an expression ϕ carrying such-and-such presuppositions. In the case of the conditional above, a context C satisfies the presuppositions of conditional $A \rightarrow B_p$ in exactly the following kinds of contexts:

(14) a. $C \models p$
b. $C \not\models p$ but $C \cup A \models p$
c. $C \models A \rightarrow p$

These are the *miniminal conditions* for a context to satisfy the presuppositions in the consequent of a conditional statement; i.e. they are the *admisibility conditions* of $A \rightarrow B_p$. But it is important to note that saying that presuppositions are admissibility conditions does not merit the conclusion that e.g. $A \rightarrow p$ in (14c) *is the* presupposition of $A \rightarrow B_p$. What counts as the actual presupposition of a conditional is itself context dependent, as illustrated above in (10)/(11). The bottom line is that we should be able to state when presuppositions are satisfied without making any context independent predictions about what exact form those presuppositions take.

The question of when a conditional requires a context of type $C \models p$ or type $C \not\models p$ but $C \cup A \models p$ is a related but not identical question to the projection problem. It is the problem of accounting for the ways in which

the context, in its most wide conception, determines (at least partly) what an expression presupposes.[7] That is precisely what this paper attempts to do. Rather than asking what explains the lack of presupposition projection (e.g. in cases like (2)), in this paper we ask the following question: Are there "inadmissibility" conditions that we can identify that regulate presupposition projection from complex sentences?

The rest of the paper is devoted to show that there are reasons to believe that the answer is affirmative. In particular, we explore the idea that the result of the update process with respect to some context C must be *epistemically defensible*: if the speaker uttered some sentence ϕ, the presupposition p of ϕ may not project if in doing so the speaker would declare that they hold an inconsistent epistemic state.

4 Epistemic Defensibility

In this section we shall explore a view of the variable projection of presuppositions from compound sentences that takes the unconditional presupposition as basic. The conceptual underpinnings of such an approach have already been mentioned in Section 1 and Section 2. Refining a Gazdar (1979)-style Cumulative Hypothesis, we follow the intuition that presuppositions fail to project because of general, all purpose and presupposition-independent conversational principles: echoing Beaver & Geurts & Denlinger (2021)'s words, presuppositions project globally unless they "cause pragmatic embarrassment."

For the purposes of this paper we focus solely on one such case of pragmatic embarrassment: 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.[8]

[7] Accounts that have attempted to answer this question rely typically on pragmatic considerations related to e.g. the conditional independence of p relative to A (van Rooij 2007), plausibility (Beaver 2001), likelihood (Lassiter 2012), etc.

[8] Beyond Gazdar (1979) and other canceling accounts, the idea that ignorance attributed to the speaker may bleed global projection is also explicitly mentioned by Abusch (2010), who already noted that presuppositions in the consequent of a conditional may be cancelable by "a discourse context which explicitly expresses ignorance." (Abusch 2010: 39).

The only ancillary assumption required is that speakers may not declare themselves to hold inconsistent epistemic states (cf. Moore's paradox). We shall call such pragmatic condition *Epistemic Defensibility*:

(15) **Epistemic Defensibility**
A context cannot satisfy a presupposition if it leads to an inference that the speaker holds an inconsistent epistemic state.

I discuss here conditional statements, an environment where we can identify the effect of inconsistent epistemic states in presupposition projection.

In order to advance our understanding of the projection problem, a theory of presupposition 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. This section is concerned with the first of these questions, the second is addressed in Section 5. I begin first by introducing some background assumptions.

As was pointed out earlier, we may say that *semantic* presuppositions (i.e. conventionally associated to certain lexical items) are *pragmatically* constrained: 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 thus that Stalnaker's bridge in (9) 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 epistemic operator K (Hintikka 1962) to represent speakers' epistemic states: $\mathsf{K}_S[\phi]$ stands for *speaker S knows that* ϕ.[9] Thus, if $\mathsf{K}_S[p]$, then $p \in ES_S$—but whether $p \in CG$ is a mere contingency. A speaker is said to hold an inconsistent epistemic state if for some set of propositions $\{\phi_1, \ldots, \phi_n\}$, $\mathsf{K}_S[\phi_1 \wedge \ldots \wedge \phi_n]$ is inconsistent.

[9]The proposal is presented in terms of a speaker's epistemic rather than doxastic states, but nothing goes wrong by appealing to the latter.

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, $\neg \mathsf{K}_S[A]$, or ignorant of A, $\neg \mathsf{K}_S \neg [A] \wedge \neg \mathsf{K}_S[A]$. A proposition A is settled for S *iff* the epistemic state of S, ES_S, is such that it either entails A (and thus $\mathsf{K}_S[A]$) or $\neg A$ (and thus $\mathsf{K}_S \neg [A]$). Thus, by uttering $A \rightarrow B$ the speaker signals that both A and $\neg A$ are compatible with their epistemic state.

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 in terms of epistemically admissible states makes a good number of successful predictions.[10] Moreover, the most problematic cases we encounter, as discussed below in Section 6, turn out to be problematic also for theories of presupposition like (4b) above, relying on weak conditionalized presuppositions supplemented with pragmatic strengthening processes.

4.1 Case 1: $A \rightarrow B_p$ and $A \not\models\not\models p$

Before dealing with more interesting cases,[11] notice that the seemingly problematic cases for local satisfaction theories relying on pragmatic weakening follow naturally and without further assumptions from the approach defended here. We repeat from above:

(16) If John has free time this afternoon, he'll pick up his sister at the airport.

Here no epistemic clash exists between the antecedent in that *John has time this afternoon* and the presupposition in the consequent that *John has a sister*. This is to say that the set $\mathsf{K}_S(\{A, p\})$ for antecedent A and presupposition p is epistemically defensible given their logical independence. Thus, lacking a good pragmatic reason not to do so, such presuppositions invariably project globally.

[10] To be clear, these need not be either problematic or even necessarily pose an argument against satisfaction-style theories.

[11] The doublesided turnstile symbol '$\not\models\not\models$' expresses that neither A entails p nor p entails A.

4.2 Case 2: $A \rightarrow B_p$ and $p \vDash A$

Suppose that a speaker S uttered a sentence of the form $A \rightarrow B_p$ where p is a presupposition carried by B and $p \vDash A$. Since by assumption $p \in CG$ and $CG \subseteq ES_S$, it follows that $\mathsf{K}_S[p]$. Moreover, since $p \vDash A$, it follows that $\mathsf{K}_S[A]$. But $\mathsf{K}_S[A]$ contradicts the ignorance of A conveyed by S's uttering of $A \rightarrow B_p$: $\neg\mathsf{K}_S[A] \wedge \mathsf{K}_S[A] = \bot$. Thus, uttering $A \rightarrow B_p$ where $p \vDash A$ is epistemically indefensible, and so p must not project. We illustrate this the contrast between (1e) and (2a), repeated below:

(17) a. If Kipchoge is tired, he will stop running.
b. If Kipchoge is participating, he will stop running.

In the case of (17b) above, the speaker conveys that they lack knowledge about the truth of the antecedent, $\neg\mathsf{K}_S[\textit{Kipchoge is participating}]$, and the consequent presupposes that *Kipchoge is running*, $\mathsf{K}_S[\textit{Kipchoge is running}]$. Since $\mathsf{K}_S[\textit{Kipchoge is running}] \subseteq \mathsf{K}_S[\textit{Kipchoge is participating}]$ and moreover $\neg\mathsf{K}_S[\textit{Kipchoge is participating}] \wedge \mathsf{K}_S[\textit{Kipchoge is participating}] = \bot$, the prediction is that the presupposition should not project. In contrast, this is not a problem for (17a), 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 Section 5.)

Above we mentioned a problematic instance of this case for so-called cancellation theories, (5a) repeated below:

(5a) If John has children, then Mary will not like his twins.

The consensus seems to be that the oddness of (5a) results from the clash between the presupposition p that *John has twins* and the implication that the speakers does not know whether John has children. Clearly, this is *prima facie* problematic for Epistemic Defensibility which, all else equal, would predict that p should not project.[12] Where did Epistemic Defensibility go wrong?

[12] In fact, an anonymous reviewer suggests that the same is true of (17b), as long as they consider a context where Kipchoge may be biking instead of running.

In order to understand the issue posed by (5a) and rescue Epistemic Defensibility from failure we must consider first whether we are dealing with a context where (5a) is plain odd (as Heim (1983) suggested for out of the blue contexts) or whether instead it is taken to convey the conditionalized presupposition that *If John has children, then he has twins* (as argued by e.g. Abusch (2010)).[13] It is key to realize that the contexts where (5a) is odd are exactly those contexts where the unconditional presupposition itself is odd: In contexts where settling whether John has children entails that John has twins, (5a) is indeed felicitous, and the presupposition that *John has twins* is conditional on him having children. In the absence of such supporting contexts, i.e. in contexts where the conditionalized presupposition of the form $A \rightarrow p$ is itself odd out of the blue, there is no way of rescuing (5a) and oddness results—since the unconditional presupposition that p is independently ruled out by Epistemic Defensibility.

4.3 Case 3: $A \rightarrow B_p$ and $\mathsf{K}_s[A]$

By appealing to belief states we can make sense of certain contrasts. So far, sentences of the form $A \rightarrow B_p$ have been shown to not project p if its descriptive content is inconsistent with the epistemic 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 (17b) does not project 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, $\mathsf{K}_s[A]$ is the case, instead of $\neg\mathsf{K}_s[A] \wedge \neg\mathsf{K}_s\neg[A]$. For these cases, our approach correctly predicts that presuppositions in the consequent project globally:

(18) a. Kipchoge is finally participating!
b. Well, if Kipchoge is participating, he will stop running soon.
$\rightsquigarrow$ *Kipchoge is running*

[13] We explain below in Section 5 a way to achieve conditionalized presuppositions pragmatically without relinquishing neither default projection nor Epistemic Defensibility.

Note that this is precisely what we would expect if, as argued in Section 3, presuppositions are not the type of content that can be fixed in isolation from the rest of the contextually available information. What the contrast between (17b) and (18b) shows is that a sentence like (17b)/(18b) carries a presupposition trigger whose presupposed content, all else equal, shall be inherited wholesale by the full sentence; however, in (17b) not all else is equal.

4.4 Case 4: $A \rightarrow B_p$ 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 $\mathsf{K}_S[p]$, $\neg\mathsf{K}_S[A] \wedge \mathsf{K}_S[p] = \bot$. Thus, p is predicted not to project:

(19) If Kipchoge is running, he will stop running
↛ Kigpchoge is running.

4.5 Case 5: $A \rightarrow B_p$ and $A \vDash p$

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 out of the blue:

(20) If Liz is in Berlin, Bill will discover that she is visiting Europe.
⇝ Liz is visiting Europe

Echoing Gazdar (1979), we might say that this is the most commonly occurring configuration when it comes to presuppositonal content in the consequent of a conditional statement. Wholesale projection is thus the most expected behavior in these cases with no additional contextual information available. Nevertheless, as an anonymous reviewers points out, judgments may change quickly in contexts where the speaker is more ignorant about Liz's whereabouts than suggested by (20) alone (example by the same anonymous reviewer):

(21) I don't know whether Liz is visiting Europe. But if Liz is in Berlin, Bill will discover that she is visiting Europe.
↛ Liz is visiting Europe

The conditions that lead to such discovery by Bill may be contrived but are not implausible. The lack of projection is now correctly sanctioned by Epistemic Defensibility, too: the speaker cannot be taken to assume the p that *Liz is visiting Europe* given their earlier declaration of ignorance.

With this discussion in mind, we can return now to the problematic case in (5b), repeated below:

(5b) If John has twins, then Mary will not like his children.

The issue is clear: a proposition like *John has twins* in the antecedent asymmetrically entails the presupposition p in the consequent that *John has children* and so, all else equal, p is predicted to project globally, contra the general consensus that (5b) does not presuppose p. This prediction however is not expected by Epistemic Defensibility since, lacking any trouble from a consistency standpoint, it cannot rule out the global projection of p.

Our suggestion on this point is that the reason for the lack of projection in (5b) resides in the fact that, on its most natural interpretation out of the blue, (5b) is in fact a case where $A \equiv p$. In other words, the most natural out of the blue interpretation of (5b) can be paraphrased as in (22) below:

(22) If John has twins, then Mary will not like {them / his twins}.
$\not\rightsquigarrow$ *John has children*

For the same reasons laid out above in Section 4.4, (22) is not problematic for Epistemic Defensibility since the projection of p would clash with the ignorance about John's progeny conveyed by the antecedent of the conditional. Thus, under this interpretation, lack of projection in (5b) would also be accounted for by general consistency preserving principles.

Of course, (22) is not the only possible state of affairs regarding (5b); it is plausible that John has more children besides the twins, and thus $A \not\equiv p$. However, in our own assessment, interpretations where *his children* in (5b) may include children other than the twins are not easily accessible without any previous knowledge about John. We can access them by overtly stating what we know, but doing so does not reveal any surprising projection pattern.

(23) a. I don't know whether John has any children. But if he has twins, Mary will not like his children.
⇏ John has children

b. John had a daughter some years ago and we heard that he might have been a second-time dad. If he has twins, Mary will not like his children.
⇝ John has children

In sum, cases like (5b) behave exactly as expected by Epistemic Defensibility both in out of the blue contexts (due to the preferred interpretation of (5b) in terms of $A \equiv p$ instead of $A \rightarrow p$) and in cases where there is relevant and accessible knowledge, as in (23).

5 Presupposition conditionalization

5.1 The fate of presuppositions that do not project globally

We have focused so far on showing how a simple assumption about conversational felicity such as Epistemic Defensibility may help understand what presuppositions project. Moreover, this is done in accordance to Karttunen (1974)'s dictum that presuppositions shall not be regarded as fixed contents, but must instead be assessed always with respect to the contextual assumptions in place in each case. In this sense, Epistemic Defensibility contributes one (of the plausibly various) factors explaining the admisibility conditions on presuppositions.

A major question for accounts where presuppositions are taken to be default is: what happens to a presupposition p in cases where it is not felt to project globally? Satisfaction theory has an immediate answer to this question, as they take basic, default presuppositions to be 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 $A \rightarrow p$. This is, moreover, in accordance to intuitions in cases we have already seen; e.g. (17b) and the trivial case of (19). But such explanations are not readily available for approaches like the one pursued here. It is one thing to determine conditions that presuppositions must meet in order to project globally; it is another to explain the fate of presuppositions that were not admisible in context.

We already explained the lack of projection in e.g. (17b) in Section 4.2.

But this is not to say that p in (17b) plays no role in the presuppositional content of the statement as a whole. Intuitively at least, satisfaction theorists got this right: there is ample consensus that the felt presupposition in cases where they fail to project globally is one where p is conditionalized to the truth of the antecedent, hence is of the form $A \rightarrow p$. But what can a defender of presuppositions-as-default say about the processes responsible for this weakening effect from p to $A \rightarrow p$? We suggest that we can make sense of this weakening by recruiting an additional pragmatic process, one that provides results similar to the "perfected" interpretation of the conditionalized presupposition. We elaborate below by discussing an additional case, that of contextual entailment.

5.2 Case 6: $A \rightarrow B_p$ and $A \vDash_c p$

The current proposal makes the same predictions for cases where p is independent of A or A asymmetrically entails p: all else equal, p is expected to project in both cases. There is however an additional set of cases, not relying on logical entailment, where it is not just the antecedent A, but A together with some contextual premises that entail p. These are cases such as (24) below:

(24) If Tom doesn't exercise, he will regret getting a bypass.
$\not\rightsquigarrow$ *Tom will get a bypass*

In cases like this the listener could safely 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*. The issue for the pragmatic weakening account proposed here is that (i) since p entails neither A nor $\neg A$, no clash between $\mathsf{K}_S[p]$ and $\neg\mathsf{K}_S[A]$ (or $\neg\mathsf{K}_S\neg[A]$) arises, which in turn leads to a contingent epistemic state that should not preempt the projection of p (unlike what we saw in case 2 and 4); and (ii) A together with additional contextual premises entails p. If so, p is also expected to project. But this is not what we observe above.

That is only the first part of the problem however. Descriptively at least there is some reason why being unable to settle the truth of the antecedent A has the effect to take p as being contingent on the truth of A. Thus, the second part of the problem is that the felt presupposition of (24) is conditionalized to the antecedent:

(25) If Toms doesn't exercise, he will get a bypass.

This conditionalized presupposition corresponds to Karttunen (1974)'s minimal admissibility conditions that contexts require of presuppositional sentences ($C \vDash A \rightarrow p$). The task is to identify what makes this admissibility condition be weaker in (24).

As we mentioned earlier in Section 3, note that what we need to know in order to predict whether a context will satisfy p in $A \rightarrow B_p$ includes a number of semantic relations, namely (*i*) between C and p, (*ii*) between A and p and (*iii*) between the inferences invited by $A \rightarrow B_p$ in C and p. But, echoing Karttunen, we won't be able to tell what $A \rightarrow B_p$ *actually* presupposes in isolation. This is important because conditionals are prone to invite a family of different inferences—including $\neg \mathsf{K}_S \neg [A] \wedge \neg \mathsf{K}_S [A]$).

We suggest to look at the issue from this perspective by looking into whether other detectable inferences brought up by conditional statements may sanction the availability of conditionalized presuppositions. Here's a plausible explanation in this vein. Suppose that upon hearing (24), the hearer might conclude that the truth of p is contingent on A *and nothing else*; i.e. they infer that A is in fact both a necessary and sufficient condition for B (and hence p) to obtain. If nothing else than A is necessary to obtain p, then the fact that A constitutes the antecedent of a conditional statement, with its associated inferences relative to the context, it follows that the only condition required for p to be the case is indeed A, and p is taken to be contingent on A and nothing else.

It follows that, if we were to manipulate what counts as a sufficient condition by adding an additional condition X for p, p should be felt to be conditionalized to X as well.[14]

(26) If Tom doesn't exercise, he will regret getting a bypass. Unless he follows his strict diet; if so he may be OK.
⇝ If Tom doesn't exercise [and he doesn't follow his diet], he'll get a bypass

[14]Note that this is not specific to cases where $A \vDash_c p$, but applies instead generally also to cases where $A \vDash p$ and cases where A and p are logically independent. We use (24) simply as a means of illustration.

Now it is the whole mini-discourse in (26) that is felt to presuppose the conditional presupposition; in turn, the sufficient condition for Tom's bypass is no longer just *A*, but also *X*.

It is thus at least plausible to think that there is a connection between the lack of global projection and the subsequent weakening to a conditionalized presupposition on the one hand, and the interpretation of the antecedent *A* as providing all sufficient and necessary conditions for *p* to obtain. This is the same as to say that as a result of this connection there is an inferrable symmetric entailment between *A* and *p*. But of course, if so, if *p* entails *A*, *A* being the antecedent of a conditional, then Epistemic Defensibility preempts *p* from projecting globally, for reasons discussed above.

If this is on the right track, then the weaker conditionalized presupposition does not follow from world knowledge or contextual entailment between *A* and *p*; it follows instead from an additional inference that the antecedent is sufficient for *p* to obtain; in other words, it resembles the "perfected" interpretation of a conditional, the result of an inference that turns → into ↔ (Geis & Zwicky 1971).

(27) a. *Tom doesn't exercise → Tom will get a bypass*
b. *Tom exercises → Tom won't get a bypass*

By virtue of uttering (24) the speaker is conveying that they cannot settle the antecedent *A*. But if the speaker is in addition felt to convey that *A* is in fact the only reason why *p* may obtain, then *p* will be exclusively contingent on *A* and nothing else. In effect, this amounts to the listener taking the speaker to convey both (27a) and (27b) when they utter (24), and the whole statement is taken to convey that exercising is indeed a necessary and sufficient condition to avoid surgery. If so, Epistemic Defensibility prevents the presupposition *p* that *Tom will get a bypass* from projecting globally: if it did, it would follow that Tom did not exercise, contradicting *A* in (27b). In other words, the projection of *p* in (24) directly depends on the assumption that *A* is the only sufficient and necessary condition for *p* to obtain, a result that amounts to a strengthened—perfected—interpretation of the minimal admissibility conditions of any conditional statement (i.e. that $A \rightarrow p$; (27a) in this case).

The proposed solution might seem convoluted and one may argue that simply appealing to world knowledge would be enough to capture both

the lack of global projection and the weaker conditionalized presupposition in cases like (24). 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, like adding some further condition *X*, may provide enough conditions for global projection of the presupposition. The following is one such example, in contrast to the earlier (24):

(28) If Tom doesn't exercise, he will regret getting a bypass. But if his condition worsens significantly, he won't regret getting a bypass.
⇝*Tom will get a bypass*

The presupposition is now felt to project globally: getting a bypass does not depend on a single condition and, as a consequence, exercising is no longer considered a necessary condition. For us this means that A is no longer sufficient for p to obtain, and thus the admissibility conditions remain weak (i.e. "unperfected").

6 Discussion and problems

The main tenet explored in this paper holds that presuppositions do not project if they lead to an inference that the speaker is representing themself as holding an inconsistent epistemic state. The proposal is that only those presuppositions that preempt Epistemic Defensibility—the proposed pragmatic principle acting to conserve speaker's epistemic consistency—are argued not to project. We then suggested that, in certain contextual circumstances, assumptions about what counts as necessary conditions can be taken to be also sufficient, through a process akin to that delivering the perfected interpretation of conditionals, and in turn these necessary and sufficient conditions can explain what happens to those presupposition that failed to project for violating Epistemic Defensibility: just like predicted by satisfaction theories, they are conditionalized to the truth of the antecedent clause, from p to $A \rightarrow p$. This means that under the present account semantic presuppositions need not be "weak" and may be expected to project by default, whereas conditionalization of p is the result of an inferrable process.

The resulting account bears a great similarity to other cancellation-style approaches, but there are fundamental differences. We have adopted a view of presuppositions where they are taken to be contextually necessary, i.e.

admittance conditions in the Stalnaker/Karttunen tradition that must be true in all worlds of the context set. This is so because the very nature of presuppositions requires them to be entailed by the context, thereby requiring a certain speaker's attitude with respect to its content—making them also epistemically necessary. This is different from Gazdar (1979)'s notion of presupposition, for whom presupposed content must merely be consistent with the context (see Gazdar 1979: 107).[15]

Note also that, in comparison, Gazdar (1979) argues that *all* presuppositions that may be incompatible with *any* implicatures and entailments should be precluded from projecting. Instead, van der Sandt (1992) holds that cancelled presuppositions are those which when conjoined with the utterance are inconsistent with *any* (neo-Gricean in his case) conversational principle. The proposal presented here, while clearly in the same vein as these two works, is still more general in that maintaining epistemic consistency is not a pragmatic principle *per se*—although obviously pragmatic principles may act against expressing such epistemic states—but rather a general consideration sanctioning good/licit conversational practices.

The resulting state of affairs is one where it is possible to cover a surprising empirical ground with minimal assumptions about projection and following Karttunen (1974)'s spirit that projection can only be determined on a context-by-context basis. As mentioned earlier, the goal is not so much to provide an account of presuppositions, not even of presupposition projection, but to propose a plausible admissibility condition on projection, namely Epistemic Defensibility, which is fully general and completely independent from the theory of presupposition. I take it that this is not just a methodologically sound position, but one that, in our particular case, shows promise as it is supported by the empirical results obtained. The predictions of the account however are not perfect, and in the remainder of the paper I point out two cases where the predictions of Epistemic Defensibility do not fully line up with our intuitions.

[15]This is precisely at the root of the criticism in van der Sandt (1992) and Beaver (2001) against prefixing Gazdar's "potential presuppositions" with Hintikka (1962)'s K operator. Note also that the notion of "pre-supposition" utilized in Gazdar (1979) can be dispensed with in this proposal.

6.1 Variability in projection

We saw above that Epistemic Defensibility coupled with a theory of default projection of presuppositions makes the correct predictions for cases where the antecedent A entails a presupposition p in the consequent, but p entails neither A nor $\neg A$. In such situations, both $\neg A$ and A are epistemically accessible for the speaker, $\mathsf{P}_S[A] \wedge \mathsf{P}_S\neg[A]$. Here no conflict arises between $\mathsf{K}_S[p]$ and $\neg\mathsf{K}_S[A] \wedge \neg\mathsf{K}_S\neg[A]$, and thus p is expected to project. There are however cases where we find a fair amount of variability, in two respects: cases where our own intuitions are variable and cases where intuitions are relatively clear, but vary sharply with minimal changes on the trigger. We discuss the two in turn.

Some speakers have declared p in (29) below is not felt to project.[16]

(29) If Mary is a professional biker, her helmet must be expensive.
$\rightsquigarrow$ *If Mary is a professional biker, she has a helmet.*
$\overset{?}{\rightsquigarrow}$ *Mary has a helmet.*

Assume for the sake of the argument that this is so; how can we then make sense of this variability? On the approach suggested here, this should be a matter of how the conditional statement is interpreted as whole; i.e. whether further additional inferences are drawn from the conditional that can affect the conditions that relate antecedent and consequent. As elaborated above in Section 5, whether the presupposition projects wholesale depends on whether the antecedent is taken to be a necessary and sufficient condition for the consequent to obtain. Note that, without further assumptions, p cannot contextually settle whether A is the case, and thus Epistemic Defensibility alone does not preempt projecting p wholesale. However, the prediction goes, if a listener infers somehow that A is in fact both a necessary and sufficient condition for B and thus also for p to obtain, then that listener should only be able to feel a presupposition where p is conditionalized on A: p should not project globally because if it did, such a speaker would be able to settle whether A is the case and thus the utterance of the conditional would be infelicitous, which is effectively precluded by Epistemic Defensibility.

[16] These observations come from informal data querying native speakers of (American) English. Others do feel that p projects however, and thus the it is not so clear what the right presupposition pattern might be in (29).

Whether this strengthened interpretation of a conditional like (29) possible or even plausible is, of course, a different matter, and thus cases like these might at the end of the day result more problematic for accounts like ours.

We can also find cases minimally differing from each other where different triggers seem to give rise to different projection patterns.

(30) a. If Liz is in Berlin, Bill will discover that she is visiting Europe.
$\rightsquigarrow$ *Liz is visiting Europe*
b. If Liz is in Berlin, Bill will establish that she is visiting Europe.
$\not\rightsquigarrow$ *Liz is visiting Europe.*
c. If Liz is in Berlin, Bill will know that she is visiting Europe.
$\overset{?}{\rightsquigarrow}$ *Liz is visiting Europe.*

Given the position defended in this paper, the hope is that a closer examination on the contextual properties of such statements, with special attention to the types of inferences drawn from the fact that these are conditional statements, might shed some light on the perceived variable behavior. But for now the matter will have to wait until a future occasion.[17]

6.2 Unexpected strengthening

The second and perhaps more substantial empirical hurdle that a general account of projection like the one sketched here faces has to do with cases where a statement of mini-discourse is not epistemically defensible, and yet the weakening does not occur, leading to an infelicitous utterance. As an illustration, consider the following example with the two candidate presuppositions:

(31) If John has a stress fracture, he'll stop running cross-country.
a. If John has a stress fracture, he once ran cross country. $p1$
b. John once run cross-country. $p2$

Suppose that a speaker uttering (31) in an ordinary context C presupposes $p1$, which is what local satisfaction theories would predict. Following the narra-

[17] In this respect, a full assessment of the proposal in this paper would require a thorough examination of the empirical data available in resources such as the CommitmentBank (de Marneffe & Simons & Tonhauser 2019) and those with an emphasis on the variability of projection; see Simons et al. (2011); Tonhauser & Beaver & Degen (2018) among others.

tive of the satisfaction theorist, the speaker is nevertheless felt to presuppose something asymmetrically stronger than $p1$, namely $p2$. The strengthening process leading from $p1$ to $p2$ is based on general pragmatic grounds, and Mandelkern (2016) puts the prediction effectively to test: If we find a context where there are strong pragmatic reasons *against* strengthening $p1$ to $p2$, this type of theory predicts that no strengthening should be expected. For that we need a case where, if we took the speaker to presuppose $p2$ their assertion would, as a result, be pragmatically deviant in some way, but not if we were only assuming $p1$. The prediction, as Mandelkern shows, is incorrect:[18]

(32) John was limping earlier; I don't know why. Maybe he has a stress fracture. I don't know if he plays any sports, but #if he has a stress fracture, then he'll stop running cross-country now. (Mandelkern 2016: 396)

In the context of (32), (31) is odd. The reason, presumably, is because the speaker is declaring her ignorance with respect to John's sport practices, but goes on to utter a conditional statement where she seems to accept that John in fact runs cross-country. That the oddness of (32) is due to such clash is corroborated easily: deleting the offending clause where the speaker declares her ignorance restores the felicity of the mini-discourse—and the presupposition in inherited wholesale.

(33) John was limping earlier; I don't know why. Maybe he has a stress fracture. If he has a stress fracture, then he'll stop running cross-country now.

[18] Judgments about (32) are not crisp however, as one anonymous reviewer disagreed with the reported oddness. The following is adapted from (Grove 2022), who argues that in fact the statement does not imply that John runs cross-country:

(i) I saw John limping earlier. If he has a stress fracture, then I assume that he runs cross-country, but I actually don't know if he actually plays any sports. Indeed, if he has a stress fracture, then he'll stop running cross-country now.

What (i) seems to convey instead is the conditional presupposition that If John has a stress-fracture, John runs cross-country, which is compatible with the approach advocated here based on Epistemic Defensibility.

In other words, (32) is odd *because* the felt presupposition is $p2$, not $p1$. This is a case where pragmatic pressures go against strengthening and yet strengthening nevertheless happens.[19]

One might expect then that if a pragmatic process of strengthening yields the wrong results, the opposite will fare better. And yet, it does not: (31) is as problematic for satisfaction theorists as it is for us. Avoiding epistemic inconsistencies like the one leading to the oddness in (31) is the sole *raison d'ĕtre* of Epistemic Defensibility, if there is a context where the principle should kick in, it is this one.

One could, of course, assume that Epistemic Defensibility is more granular and that its scope of action is limited locally. But this would detract from the general methodological ethos with which we started the paper: to explore the extent to which general and independently motivated presupposition– and trigger-independent principles may help sanction the projection of presuppositions. What cases like (31) tell us, then, is that Epistemic Defensibility cannot be the whole story, a conclusion that is at any rate not entirely surprising. Whether there might be additional general principles correctly sanctioning (31) or whether these cases are indicative of the necessity for a theory of presupposition that incorporates some notion of locality is a question that I will leave open here.

Acknowledgments I am grateful to a number of people who have provided helpful feedback and discussion on this paper. The ideas presented in this paper were improved as a result of presenting them at the *Interdisciplinary Semantics Seminar* at Cornell University, the *Linguistics Colloquium* at the University of Rochester and the *14th Colloque de Syntaxe et Sémantique à Paris*. I also received valuable feedback at these and other occasions from Dorit Abusch, Ash Asudeh, Scott Grimm, Sarah Murray, Will Starr and Philippe Schlenker. This work was partially supported by the Secretary of Universities and Research at the Government of Catalonia and by the Horizon 2020 programme of research and innovation of the European Union (Marie Skłodowska-Curie grant, No 801370).

[19] Mandelkern (2016) provides a whole battery of examples reaching the general conclusion that a pragmatic response to the proviso problem faces serious challenges.

References

Abusch, Dorit. 2010. Presupposition triggering from alternatives. *Journal of Semantics* 27. 37–80.

Beaver, David I. 2001. *Presupposition and assertion in Dynamic Semantics*. Stanford University: CSLI Publications.

Beaver, David I. & Geurts, Bart & Denlinger, Kristie. 2021. Presupposition. In Zalta, Edward N. (ed.), *The Stanford encyclopedia of philosophy (Spring 2021 edition)*. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/spr2021/entries/presupposition.

Chemla, Emmanuel. 2008. An Epistemic Step for anti-presuppositions. *Journal of Semantics* 25. 141–173.

De Marneffe, Marie-Catherine & Simons, Mandy & Tonhauser, Judith. 2019. The CommitmentBank: Investigating projection in naturally ocurring discourse. In Espinal, M. Teresa & Castroviejo, Elena & Leonetti, Manuel & McNally, Louise & Real-Puigdollers, Cristina (eds.), *Proceedings of* Sinn und Bedeutung *23*, vol. 2, 107–124.

Fox, Danny. 2012. Presupposition projection from quantificational sentences: Trivalence, local accommodation, and presupposition strengthening. Manuscript. http://lingphil.mit.edu/papers/fox/Quantifier-Projection.pdf.

Francez, Itamar. 2018. How not to project the Satisfaction Theory of projection. In Condoravdi, Cleo (ed.), *Lauri Karttunen Festschrift*. CSLI Publications.

Gazdar, Gerald. 1979. *Pragmatics: Implicature, presupposition and logical form*. Academic Press.

Geis, Michael & Zwicky, Arnold. 1971. On invited inferences. *Linguistic Inquiry* 2(4). 561–566.

George, Benjamin Ross. 2008. *Presupposition repairs: A static, trivalent approach to predicting projection*. University of California Los Angeles MA thesis. http://www.semanticsarchive.net/Archive/2ZiYmEyN/brgeorge_ma.pdf.

Geurts, Bart. 1996. Local satisfaction guaranteed: A presupposition theory and its problems. *Linguistics and Philosophy* 19(3). 259–294. (20 September, 2019).

Grove, Julian. 2022. Presupposition projection as a scope phenomenon. Manuscript. https://ling.auf.net/lingbuzz/006801.

Heim, Irene. 1982. *The semantics of definite and indefinite Noun Phrases*. University of Massachusetts, Amherst dissertation.

Heim, Irene. 1983. On the projection problem for presuppositions. In Barlow, M. & Flickinger, D. & Wescoat, M. (eds.), *Proceedings of the West Coast Conference on Formal Linguistics 2*, 114–125. Stanford Linguistics Association.

Hintikka, Jaakko. 1962. *Knowledge and belief*. Cornell University Press.

Karttunen, Lauri. 1973. Presupposition of compound sentences. *Linguistic Inquiry* 4(3). 169–193.

Karttunen, Lauri. 1974. Presuppositions and linguistic context. *Theoretical Linguistics* 1(1–3). 181–194.

Karttunen, Lauri & Peters, Stanley. 1979. Conventional implicature. In Oh, Choon-Kyu & Dinneen, David (eds.), *Syntax and semantics: Presupposition*, vol. 11, 1–56. New York: Academic Press.

Krahmer, Emiel. 1996. Presuppositional Discourse Representation Theory. In Dekker, Paul & Stokhof, Martin (eds.), *Proceedings of the Amsterdam Colloquium 10*, 499–518.

Langendoen, D. & Savin, H. 1971. The projection problem for presuppositions. In Fillmore, Charles & Langendoen, D. T. (eds.), *Studies in linguistic semantics*, 373–388. New York: Holt, Reinhardt & Winston.

Lassiter, Daniel. 2012. Presuppositions, provisos, and probability. *Semantics & Pragmatics* 5. 1–37.

Mandelkern, Matthew. 2016. Dissatisfaction theory. In Moroney, Mary & Little, Carol-Rose & Collard, Jacob & Burgdorf, Dan (eds.), *Proceedings of Semantics and Linguistic Theory 26*, vol. 26, 391–416.

Rothschild, Daniel. 2015. Explaining presupposition projection with dynamic semantics. *Semantics and Pragmatics* 4(3). 1–43.

Schlenker, Philippe. 2008. Be articulate: A pragmatic theory of presupposition projection. *Theoretical Linguistics* 34(3). 157–212.

Schlenker, Philippe. 2009. Local contexts. *Semantics and Pragmatics* 2(3). 1–78.

Schlenker, Philippe. 2011. The proviso problem: A note. *Natural Language Semantics* 19(4). 395–422.

Simons, Mandy & Tonhauser, Judith & Beaver, David & Roberts, Craige. 2011. What projects and why. In Liand, N. & Lutz, D. (eds.), *Proceedings of* Semantics and Linguistic Theory *20*, 309–327. Ithaca, NY: CLC Publications.

Singh, Raj. 2007. Formal alternatives as a solution to the proviso problem. In Gibson, M. & Friedman, T. (eds.), *Proceedings of* Semantics and Linguistic Theory *17*, 264–228. Ithaca, NY: CLC Publications, Cornell University.

Singh, Raj. 2009. Symmetric and interacting alternatives for implicature and accommodation. In Klinedinst, N. & D. Rothschild, D. (eds.), *Proceedings of the ESSLLI 2009 workshop: New directions in the theory of presupposition.*

Soames, Scott. 1982. How presuppositions are inherited: A solution to the projection problem. *Linguistic Inquiry* 13(3). 483–545.

Stalnaker, Robert. 1973. Presuppositions. *Journal of Philosophical Logic* 2. 447–457.

Stalnaker, Robert. 1974. Pragmatic presuppositions. In Munitz, Milton & Unger, Peter (eds.), *Sematics and philosophy*, 197–213. New York University Press.

Stalnaker, Robert. 1978. Assertion. *Syntax and Semantics* 9. 315–332.

Tonhauser, Judith & Beaver, David & Degen, Judith. 2018. How projective is projective content? Gradiences in projectivity and at-issueness. *Journal of Semantics* 35. 495–542.

Van der Sandt, Robert. 1988. *Context and presupposition*. London: Croom Helm.

Van der Sandt, Robert. 1992. Presupposition projection as anaphora resolution. *Journal of Semantics* 9. 333–377.

Van Fraassen, Bas. 1969. Presuppositions, supervaluations and free logic. In Lambert, Kirk (ed.), *The logical way of doings things*, 67–92. New Haven: Yale University Press.

Van Rooij, Robert. 2007. Strengthening conditional presuppositions. *Journal of Semantics* 24. 289–304.

Von Fintel, Kai. 2008. What is presupposition accommodation, again? *Philosophical Perspectives* 22(1). 137–170.