Preconditions, Presupposition and Projection

Craige Roberts[1][*] and Mandy Simons[2]
[1] The Ohio State University & Barnard College
[2] Carnegie Mellon University
roberts.21@osu.edu, mandysimons@cmu.edu

Abstract

We provide an account of the projection behavior of a subclass of projective contents which includes the projective contents of factives and of change of state clauses. We characterize these projective contents as ontological preconditions of events, and explain both why they tend to project, and under what circumstances they do not.

1 Introduction

This paper deals with a class of projective contents which we call *background contents*, focusing on three subclasses. Two are familiar from the presupposition literature: the veridical implications of factive clauses, and the pre-state implications of change of state (CoS) predicates. We extend our account to the less discussed implications arising from selectional restrictions of predicates.

Following prior literature (Simons et al. 2010; De Marneffe, Simons & Tonhauser 2019; Degen & Tonhauser 2022), we say that an implication *projects* when the implication is understood *as a commitment of the speaker* despite being associated with material which is in the syntactic scope of an entailment canceling operator. We describe an implication arising from utterances of a given clause as *projective* if that implication regularly (but not always) tends to project.

The motivation for the current proposal is provided by two types of observation from the prior literature. The first observation is that background contents, unlike projective implications with clearly anaphoric triggers, do not require a contextually provided antecedent. The observation that factive implications are easily accommodated goes back at least to Karttunen (1974). Spenader (2003) provides a corpus analysis which supports this claim; Tonhauser et. al (2013) provide support from fieldwork in Guarani on analogous examples. That paper concludes that background implications lack a *strong contextual felicity* constraint (-SCF): from an empirical standpoint, there is no evidence that background implications must have an antecedent in, or be entailed by, the context to be updated by their trigger.

The second kind of motivating observation pertains to the language-internal and cross-linguistic regularities concerning which implications of a given trigger project (Simons 2001; Schlenker 2021). Truth conditionally equivalent expressions across languages show the same projection behavior, as do classes of predicates within and across languages. These regularities strongly suggest that the projectivity of a given content is not an arbitrary lexical fact. Further support for

this comes from evidence (Tieu et al. 2019; Schlenker 2021) of non-linguistically triggered projective implications.

Given these observations, a predictive theory of the projection of background implications requires the following:

i. An account or characterization of those implications which potentially project, allowing that projective inferences may be heterogeneous

ii. An explanation of what it is for these to project and why they do

iii. An account of patterns of projection and non-projection, crucially not one that relies on the presumption of anaphoric constraints.

Our goal is to provide an account where these three components are fully integrated with one another; that is, where the account of what projection *is* is concordant with the nature of the projective implications, and where the account of patterns of projection/non-projection is concordant with the underlying explanation of projection. Recognizing the potential heterogeneity of projective background contents, we focus here on the three classes of implications noted above, which we believe all fall under a single analysis. Specifically, we propose that:

i. The projective contents of factives and CoS preds, as well as the implication that selectional restrictions of verbs are satisfied, are *ontological preconditions* of the associated events.

ii. Projection constitutes attribution to the relevant doxastic agent, typically the speaker, of the assumption that these preconditions hold. Call this attribution global accommodation.

iii. Non-projection, including in standard filtering environments, arises when the hearer has reason *not* to take the speaker to intend global accommodation, and when an alternative interpretation is available.

2 Projective Implications and Event Preconditions

We borrow from the literature on ontological dependence (see e.g. Tahko & Lowe, 2020) the notion of an *ontological precondition*: An ontological precondition of a specific eventuality E is an object or eventuality on whose existence the existence of E is dependent. Within the broad class of ontological preconditions of an eventuality, we can distinguish preconditions with different sources. Consider for example the event of Julius Caesar dying. One precondition of this event is that Julius Caesar was previously alive: for any a, a precondition on the event of a dying is that a was alive. In addition, the specific event of Julius Caesar dying requires that the specific individual Julius Caesar existed; this, by at least some accounts, has as an ontological precondition that the parents of Julius Caesar existed.[†] This precondition has its source not in the fact that the event is a dying event, but in the fact that the event involved Julius Caesar. Other dying events lack this precondition, while other events involving JC (such as JC eating) share it. The projective implications of predicates are ontological preconditions of the *event type* characterized by that predicate. To say that events of type E are ontologically dependent on events of type F is to say that any event of type E can exist only if some appropriately situated event of type F exists. A speaker who evokes an eventuality e of type E is taken to be committed to the existence of instances of any eventuality types $F_1...F_n$ which are ontological preconditions of events of type E.

Knowledge of the ontological preconditions of eventuality types is an element of world knowledge, not linguistic knowledge. But this knowledge has linguistic consequences. If S1 describes an eventuality e, and S2 describes a precondition of e, then S1 entails S2; however, not

---

[†] Thanks to W. Starr (p.c.) for this observation.

all entailments of a sentence describe preconditions. We propose here two diagnostics which enable us to distinguish between entailments which characterize preconditions, and those which do not.

- *Diagnostic 1: which partly allows/allowed for*

<u>Diagnostic frame</u>, with target clause φ and target implication ψ: **ψ, which partly allows/allowed for φ**

<u>Test</u>**:** If ψ is an ontological precondition of φ, the sentence is judged true; if ψ is implied by φ but is not a precondition of it, the sentence is judged false.

   Illustrations:

  (1) With factive predicate *know*: target implication (the denotation of the complement of *knows*) *'Strasbourg is in France'*; control implication (non-projective entailment of *knows*) 'Yasmin believes that Strasbourg is in France':

      (a) Strasbourg is in France, which partly allowed for Yasmin to know that Strasbourg is in France. (T)

      (b) Yasmin believed that Strasbourg is in France, which partly allowed for Yasmin to know that Strasbourg is in France. (F)

  (2) With change of state predicate *fall off*, target implication (pre-state '[agent] was on the ladder'), control implication (non-projective post-state, '[agent] was off the ladder'):

      (a) Jane was on the ladder, which partly allowed for Jane to fall off the ladder. (T)

      (b) Jane was off the ladder, which partly allowed for Jane to fall off the ladder. (F)

- *Diagnostic 2: counterfactual*

<u>Diagnostic frame</u>, with target predicate (with its complement) ___, target implication ψ:

  a.   where predicate is telic:

  If not-$\psi_{subjunc}$, it would not have been possible for [agent] to ___

  b.   where predicate is atelic:

  if not-$\psi_{subjunc}$, it would not have been possible for [agent] to come to ___

Addition of *come to* ___ shifts to a telic interpretation of the predicate. Where both clauses contain atelics, the eventualities are understood as co-temporal (Partee 1984; Dowty 1986), forcing a "definitional" reading and undermining the test.

<u>Test</u>**:** If ψ is an ontological precondition of the target sentence, the counterfactual is judged true; if ψ is implied by φ but is not a precondition of it, the counterfactual is judged false

   Illustrations:

  (3) With change of state predicate *fall off the ladder*, target implication ψ_1 '[agent] was on the ladder', control implication ψ_2 '[agent] was off the ladder':

      (a) If Jane had not been on the ladder, it would not have been possible for Jane to fall off the ladder. (T)

      (b) If Jane had not been off the ladder, it would not have been possible for Jane to fall off the ladder. (F)

  (4) Illustration with atelic factive predicate *knows*, complement *that Strasbourg is in France*, target implication ψ_1 'that Strasbourg is in France', control implication ψ_2 'that [agent] believed that Strasbourg is in France':

(a) if Strasbourg were not in France, it would not have been possible for Yasmin to come to know that Strasbourg is in France (T)

(b) If Yasmin did not believe that Strasbourg is in France, it would not have been possible for Yasmin to come to know that Strasbourg is in France. (F)

Space restrictions preclude a more detailed discussion of these diagnostics. What is crucial to observe here is that the diagnostics distinguish between different subtypes of entailment, and that those entailments which are diagnosed as preconditions are exactly those which are projective.

3 Projection and non-projection

We now turn to the question of projection, parts ii. and iii. of our account as laid out in the introduction. We address the following questions:

Q1: What does it mean for preconditions to project, and why do they do so?

Q2: Why do they sometimes not project?

The leading intuition underlying our proposal is articulated by Stalnaker (1974: 55): "The propositions that P and that Q may be related to each other, and to common beliefs and intentions, in such a way that it is hard to think of a reason that anyone would raise the question whether P, or care about its answer, unless he already believed that Q." We propose that one such relation is precisely the relation of ontological precondition: in the default case, where Q is an ontological precondition of P, a hearer who observes that the speaker has (typically implicitly) raised the question whether P will attribute to the speaker the assumption that Q holds, for in the default case, the question whether P is a pragmatically uninteresting one in the absence of that assumption. A more detailed discussion of the notion of a pragmatically "good" question is offered in Warstadt (2022). (We assume for current purposes a notion of question-raising drawn from Searle (1969: 124–126), according to which to predicate P of a subject a is to raise the question whether $P(a)$, a notion distinct from the focus-driven sense of question-raising adopted in Roberts (1996) and much subsequent work.)

An important consequence of our view of projection in these cases is that we explain the frequently-observed generalization that accommodation is by default *global* (Gazdar 1979; Heim 1983). In our view, accommodation is a move made by an agent – here, the addressee – to support the goals of another – the speaker – the goal being to contribute appropriately to a discourse. Accommodation is not, in general, the repair of a faulty context of utterance (Thomason 1990; Roberts 2015). In the cases under consideration, the default accommodation strategy is to take the speaker to be assuming preconditions to hold. Consequently, the effect is that of global accommodation.

Nonetheless, there are cases in which it is pragmatically *implausible* that the speaker is assuming the preconditions to hold. It is precisely in such cases that the sentences in question are given non-projective readings – but again, only where those non-projective readings are themselves pragmatically plausible. There are three classes of cases where projective readings are dispreferred: (a) where the precondition is evidently taken by (some of) the interlocutors to be false or controversial, (b) where there is other evidence that the speaker is unlikely to take the precondition to be true and (c) where the precondition is at-issue. We briefly illustrate these three cases in turn.

- *Precondition understood to be false/controversial*

(5) [Context: A & B are American siblings with opposed political views. It is common knowledge between them that B believes that Trump lied about the election being stolen, and that A believes Trump. The two generally avoid discussing politics, but now they are

discussing the fact that B watched all of the public hearings of the January 6th committee, while A watched none.]
A: If Trump testifies live, I'll watch THAT hearing.
B: If the committee discovers that there is documentary evidence that Trump knowingly lied to the public, will you change your vote?

If A were to take B to presume that there is documentary evidence that Trump lied, and to intend A to so interpret the utterance, then B would be attempting a linguistic move that B knows that A would reject. An alternative interpretation is available, where the existence of the evidence is merely locally entailed (in the antecedent), and not presumed. Given A & B's history of trying not to antagonize each other, it is most plausible that B intends to be so interpreted.

   Note that on this account, there is no need for "local accommodation," as there is no contextual constraint to satisfy. There is merely local entailment, due to the lexical meaning of *discover*.

- *Evidence of speaker non-commitment*

  (6) A: I heard that John got drunk last night.
      B: I strongly doubt that. Mary would divorce him if she discovered he was drinking.

The speaker cannot consistently simultaneously *doubt* that John got drunk and *assume* that John got drunk. So A does not take B to be making that assumption; the implication of John drinking is only held locally true. Cases characterized by Simons (2001) as *explicit ignorance cases* are similar:

  (7) [Context: interlocutors are observing a stranger who is acting irritably and chewing on a pencil. They are speculating about her behavior.]
      A: Maybe she just stopped smoking. That's how I acted when I quit.

Importantly, the standard filtering environments also turn out to be subcases of this effect.

  (8) If Sam was in her office today, she left.
  (9) Either Sam was never in her office today, or she left.

   Modulo other contextual information, felicitous use of a conditional antecedent or of a disjunction signals lack of speaker commitment to the truth of the clause (cf. Gazdar 1979). In each case the non-projective reading, where the preconditions are merely locally entailed, is preferred.

- *Precondition is at-issue*

Multiple publications (Simons et al. 2010; Beaver et al. 2017; Simons et al. 2017) have argued that the projective contents of factives and change of state verbs fail to project when they are at-issue; experimental evidence for this claim is provided by (Amaral & Cummins 2015; Tonhauser, Beaver & Degen 2018). The observation is unsurprising given the view of projection we develop here: a speaker cannot reasonably assume something true when the question of its truth is currently under discussion in the discourse. For example:

  (10) [Context: The interlocutors know that B is one of Jane's closest colleagues, with whom she shares details about her professional life.]
       A: Is there a decision yet on Jane's tenure case?
       B: I was just talking to Jane, and she isn't aware that there's been a decision.

   The complement of *aware* would constitute an answer to A's question. As B has not given a direct answer, she signals that she is unable to do so. But if she is unable to do so, she also cannot

coherently presume the answer to the question; hence the hearer must attribute a non-projective reading.

In the examples above, given the non-plausibility of a projective reading, the hearer treats the relevant content as merely locally true. In other cases, where the semantics of a sentence provide an *intermediate* context to which a precondition could be accommodated, we predict that this accommodation will occur when it supports the plausibility of an interpretation. This requires more detailed discussion, but we limit ourselves here to a single example:

(11) [Context: A/B know that Yasmin's partner Phil is a US citizen]
       A: Is Yasmin a US citizen?
       B: I'm not sure. But if she marries Phil, then she could easily become a US citizen.

Global accommodation is ruled out here by evidence of speaker non-commitment. Accommodation into the *if*-clause provides a plausible interpretation.

4 Conclusion

The orthodox approach to presupposition and projection due to Heim (1983) and van der Sandt (1992) proposes a unified approach covering both anaphoric presuppositions and those of interest here, using lexical presupposition triggering and an algorithm for projection and filtering. All presupposition triggers are treated as anaphoric, said to impose a felicity constraint on prior context. This approach works well for the anaphoric triggers including pronouns and *too*. But there are several features of the background implications of the class of triggers of interest here which are problematic for the unified anaphoric approach, problems avoided with the preconditional account we offer above:

- The anaphoric approach predicts that all presupposition triggers always impose a strong contextual felicity constraint on prior context, hence cannot account for the fact that background content is quite generally felicitous when informative. Our account does not.
- The unified approach incorrectly predicts that embedded background content will project unless entailed by an intermediate context.
  - As a corollary, in complex sentences like conditionals, the standard projection algorithm predicts unattested presuppositions for non-anaphoric triggers, giving rise to the so-called *proviso problem* (Geurts 1996). On the present approach, there is no proviso problem because there is no projection algorithm predicting conditional presuppositions. Recent work (Silk 2022) argues that this is the correct prediction.
- The unified approach, with its semantically driven projection algorithm, cannot satisfactorily explain when and why a background implication *fails to project*. In contrast, because here projection is pragmatic, not semantic, we predict that it occurs only as long as the result is felicitous. The determination of whether content is accommodated, and if so at what level, is based on independently motivated features of the context of utterance and independently supported pragmatic constraints on discourse coherence.
- Nor can the orthodox approach explain why we would expect to find the same projective content in near-translation equivalents across languages. We expect this because these projective contents are preconditions on the respective associated event-types, hence triggered by the pragmatics of the shared meanings, not linguistic triggers *per se*.
- Because selectional restrictions are clearly non-anaphoric, their projectivity cannot be addressed by the unified approach, despite the fact that it is well-attested and strikes us as clearly parallel to that of the factives and CoS predicates.

One nice feature of the Heim/van der Sandt approach is that their projection algorithm correctly predicts parallel configurations for local anaphora resolution and for non-global accommodation of background implications. But this can be attributed to general features of dynamic local context update, as independently attested for anaphora, for Conventional Implicatures anchored under quantification (Amaral, Roberts & Smith 2007) and for intrusive implicature (Kadmon 2001). Nothing special needs to be stipulated to explain this parallel, a point we intend to elaborate on in future work.

Several other questions remain for future work. One is to address the issue of variance in projectivity demonstrated by Tonhauser et al. (2018) and Degen & Tonhauser (2022). Another is to explore how the pragmatic approach to projection can be extended to explain the attested projectivity of non-veridical clause embedding predicates such as *believe* (see Simons et al. (2017) for a preliminary account). And finally, we are exploring how to extend the precondition account beyond ontological preconditions to include, for example, preconditions on felicity, which would allow us to extend the account to the projectivity of Searlean preparatory conditions on felicity observed by Kadmon (2001).

References

Amaral, Patrícia & Chris Cummins. 2015. A Cross-Linguistic Study on Information Backgrounding and Presupposition Projection. In Florian Schwarz (ed.), *Experimental Perspectives on Presuppositions* (Studies in Theoretical Psycholinguistics), 157–172. Cham: Springer International Publishing. doi:10.1007/978-3-319-07980-6_7. https://doi.org/10.1007/978-3-319-07980-6_7 (25 November, 2022).

Amaral, Patricia, Craige Roberts & E. Allyn Smith. 2007. Review of The Logic of Conventional Implicatures by Chris Potts. *Linguistics and Philosophy* 30(6), 707–749. doi:10.1007/s10988-008-9025-2.

Beaver, David I., Craige Roberts, Mandy Simons & Judith Tonhauser. 2017. Questions under discussion: Where information structure meets projective content. *Annual Review of Linguistics* 3. Annual Reviews, 265–284.

De Marneffe, Marie-Catherine, Mandy Simons & Judith Tonhauser. 2019. The commitmentbank: Investigating projection in naturally occurring discourse. *proceedings of Sinn und Bedeutung*, vol. 23, 107–124.

Degen, Judith & Judith Tonhauser. 2022. Are there factive predicates? An empirical investigation. *Language* 98(3). Linguistic Society of America, 552–591. doi:10.1353/lan.0.0271.

Dowty, David R. 1986. The effects of aspectual class on the temporal structure of discourse: semantics or pragmatics? *Linguistics and Philosophy* 9(1), 37–61. doi:10.1007/BF00627434.

Gazdar, Gerald. 1979. *Pragmatics: Implicature, Presupposition and Logical Form*. Academic Press.

Geurts, Bart. 1996. Local Satisfaction Guaranteed: A Presupposition Theory and Its Problems. *Linguistics and Philosophy* 19(3). Springer, 259–294.

Heim, Irene. 1983. On the Projection Problem for Presuppositions. *West Coast Conference on Formal Linguistics*, 249–260.

Kadmon, Nirit. 2001. *Formal Pragmatics: Semantics, Pragmatics, Presupposition, and Focus*. 1st edition. Malden: Wiley-Blackwell.

Karttunen, Lauri. 1974. Presuppositions and Linguistic Context. *Theoretical Linguistics* 1, 181–194.

Partee, Barbara H. 1984. Nominal and Temporal Anaphora. *Linguistics and Philosophy* 7(3). Springer, 243–286.

Roberts, Craige. 1996. Information Structure: Towards an integrated theory of formal pragmatics. (Ed.) Yoon & Kathol. *OSU Working Papers in Linguistics* 48, 91–136.

Roberts, Craige. 2015. Accommodation in a Language Game. In Barry Loewer & Jonathan Schaffer (eds.), *A Companion to David Lewis*, 345–366. Hoboken, NJ: Wiley.

Schlenker, Philippe. 2021. Triggering Presuppositions. *Glossa: a journal of general linguistics* 6(1). Open Library of Humanities. doi:10.5334/gjgl.1352. https://www.glossa-journal.org/article/id/5415/ (16 August, 2022).

Searle, John R. 1969. *Speech Acts: An Essay in the Philosophy of Language*. Cambridge: Cambridge University Press. doi:10.1017/CBO9781139173438. https://www.cambridge.org/core/books/speech-acts/D2D7B03E472C8A390ED60B86E08640E7 (29 November, 2022).

Silk, Alex. 2022. Challenges for independence-driven and context-repair responses to the proviso problem. *Natural Language Semantics* 30(3), 363–377. doi:10.1007/s11050-022-09194-6.

Simons, Mandy. 2001. On the Conversational Basis of Some Presuppositions. *Semantics and Linguistic Theory* 11(0), 431–448. doi:10.3765/salt.v11i0.3099.

Simons, Mandy, David Beaver, Craige Roberts & Judith Tonhauser. 2017. The best question: Explaining the projection behavior of factives. *Discourse processes* 54(3). Taylor & Francis, 187–206.

Simons, Mandy, Judith Tonhauser, David Beaver & Craige Roberts. 2010. What projects and why. *Semantics and linguistic theory*, vol. 20, 309–327.

Spenader, Jennifer. 2003. Factive presuppositions, accommodation and information structure. *Journal of Logic, Language and Information* 12(3). Springer, 351–368.

Stalnaker, Robert. 1974. Pragmatic Presuppositions. In Robert Stalnaker (ed.), *Context and Content*, 47–62. Oxford University Press.

Tahko, Tuomas E. & E. Jonathan Lowe. 2020. Ontological Dependence. In Edward N. Zalta (ed.), *The Stanford Encyclopedia of Philosophy*. Fall 2020. Metaphysics Research Lab, Stanford University. https://plato.stanford.edu/archives/fall2020/entries/dependence-ontological/ (25 November, 2022).

Thomason, Richmond. 1990. Accommodation, Meaning, and Implicature. In Philip R. Cohen, Jerry Morgan & Martha E. Pollack (eds.), *Intentions in Communication*. MIT Press.

Tieu, Lyn, Philippe Schlenker & Emmanuel Chemla. 2019. Linguistic inferences without words. *Proceedings of the National Academy of Sciences* 116(20). Proceedings of the National Academy of Sciences, 9796–9801. doi:10.1073/pnas.1821018116.

Tonhauser, Judith, David I Beaver & Judith Degen. 2018. How Projective is Projective Content? Gradience in Projectivity and At-issueness. *Journal of Semantics* 35(3), 495–542. doi:10.1093/jos/ffy007.

Tonhauser, Judith, David Beaver, Craige Roberts & Mandy Simons. 2013. Toward a taxonomy of projective content. *Language* 89. JSTOR, 66–109.

Van der Sandt, Rob A. 1992. Presupposition Projection as Anaphora Resolution. *Journal of Semantics* 9(4), 333–377. doi:10.1093/jos/9.4.333.

Warstadt, Alex. 2022. Presuppositions, Context and Information Theory. Paper presented at the Amsterdam Colloquium.