

Addendum: Investigating properties of projective meaning

We are concerned with the properties of elements of meaning which, in our terminology, are projective i.e. are capable of projection. We first give a list of tests which have been proposed for projective meanings, organizing them under headings which we take to reflect the underlying properties being tested for. We then briefly discuss those properties and some of the tests listed. We have drawn these tests from the literature with which we are familiar. We would appreciate hearing about other tests, either existing or newly proposed. We apologize in advance for any misattribution or failure to attribute.

Most of these tests were initially developed to investigate presuppositions and presupposition triggers. In that literature, it is standard to talk about the presupposition p triggered by the use of the trigger in the utterance in question. Here we want to broaden our investigation, so we will talk instead about projective meaning triggers and the potential projective meanings (PPMs) they are said to yield. Throughout, we will reserve use of the variable m to talk about a particular PPM in question.

Again, in the literature it is common to talk about whether a given presupposition p is *satisfied* in a given context, which is most often (following Karttunen and Stalnaker) taken to mean that p is entailed by that context prior to interpretation of its trigger. Here we want to be neutral about whether felicitous use of a trigger requires prior satisfaction of its associated PPM m . So we will talk instead about whether the PPM displays a given effect in the context in question (global or local), or whether it is entailed in that context. This might mean that the PPM is (already) satisfied in the context, or, if accommodation or novelty are possible, that it is merely added to the context.

Part A: Tests for projective meaning

I. Projection behavior

I.A. Global projection

1. the **family of sentences** tests: To test whether m can project globally, we make the following modifications of a simple sentence S containing a trigger for m :

In *John has stopped smoking*, $m =$ 'John used to smoke'

- a. embed under negation
 John hasn't stopped smoking
- b. embed under interrogation
 Has John stopped smoking.
- c. embed under a modal
 John might stop smoking.
- d. embed in the antecedent of a conditional
 If John has stopped smoking, we don't have to provide ashtrays.

I.B. Local context effects

2. **local context effects** under intensional operators and other filters: In these tests, we embed the triggering clause in a sentence form in which, because it is under the scope of a filter, it serves to increment some non-global context. Then we ensure that this non-global context itself entails m . We also ensure that m is incompatible with the global context—by making it explicit that the speaker or her interlocutors do not hold m to be true. If the resulting utterance is felicitous, but does not commit the speaker to the truth of m , this shows that m can be true merely locally, not globally. Configurations in which this is accomplished include (Karttunen 1974, Heim 1992, Roberts 1996):

- a. in the consequent of a conditional

In *Patrick has taken his cello*, $m =$ 'Patrick has a cello'

A and B are house-sitting for the vacationing Patrick, whom A doesn't know:

If Patrick is a cellist, he must have taken his cello (because there's none here).

- b. in the second conjunct of a conjunction

same context:

Patrick is a cellist, but he's taken his cello with him.

- c. in modal subordination contexts

same context:

A: What does Patrick do for a living?

B: I'm not sure, but he might be a musician, perhaps a cellist.

A: Well, he must have taken his cello with him.

effect: A is taken to mean 'if Patrick is a cellist, he's taken his cello with him'

3. **behavior under propositional attitudes**: Heim 1992 notes that in some cases, when a projective meaning trigger occurs under the scope of a propositional attitude verb, the PPM is understood as a commitment of the holder of the attitude. In some cases, the speaker is also taken to be committed to the PPM, in other cases no such global commitment is incurred. We can control for the global projection, as in tests 2a-c, by making the global context incompatible with m :

Context: Patrick suffers from delusions about losing precious items which he imagines he owns.

Patrick believes his Stradivarius has been stolen.

effect: speaker is not committed to Patrick's owning a Stradivarius, but only to Patrick's believing that he owns a Stradivarius.

II. At-issueness

4. susceptible of **direct affirmation** or **denial**, e.g. when m arises in a yes/no question:

Have you stopped drinking beer for breakfast?

$m =$ 'You have been in the habit of drinking beer for breakfast.'

effect: Replying either *yes* or *no* commits one to having drunk beer for breakfast.

Compare **indirect rejection only**: *Hey! Wait a minute!*, *What d'ya mean?* etc.

III. Information status constraints and potential informativity

5. **Potential informativity** of *m* in a context (global or local)
6. Felicity after **direct prior denial that *m* is known to be true**¹

In *Only Lucy came to the party*, *m* = ‘Lucy came to the party’

A: Who came to the party?

B: I’m not entirely sure, because I don’t know what Lucy did. But I know the rest of the invitees were at the bar instead, so #I’m pretty sure that only Lucy came.

effect: Despite the fact that the proffered exclusive implication of *only* (‘no one other than Lucy came’) is compatible with the context and seems to be conveyed, utterance in a context where the speaker explicitly denies commitment to the truth of *m* yields a sense of contradiction.

IV. Cancelability and Suspendability

7. **(non)contradictory** following assertion, presupposition or implicature inconsistent with *m*: In the following, the PPM triggered by a possessive definite generally seems contradictory after its denial, as in (a).² But a merely conversationally triggered PPM, as in (b) (Kadmon 2001), does not:
 - a. In *Laura’s children*, *m* = ‘Laura has children’
Laura has no children. #Laura’s children are cute.
 - b. I need to pay my water bill—Let’s see if the post office is open. You can’t actually pay water bills at the post office, but I thought I’d see if my pension check has arrived yet.
effect: The embedded clause *the post office is open* might be initially taken (via relevance) to conversationally implicate *m*: ‘one can pay one’s water bill at the post office’, but it can be canceled explicitly, with no resulting infelicity.
8. **Beaver suspendable**: Can *m* be suspended because its truth has just been called into question? Compare *discover* in (a), where *m* is suspendable in the following yes/no question, with the *it*-cleft in (b), where *m* cannot be felicitously suspended:
 - a. In *Did Susan discover that Mary has a new car*, *m* = ‘Mary has a new car’
I’m not sure that Mary has a new car. Did Susan discover that Mary has a new car?
effect: The first utterance is incompatible with *m*, so that the speaker is not committed to Mary’s having a new car. Nonetheless, the *discover* clause is felicitous.
 - b. In the cleft *Was it Tim who ate the cake?*, *m* = ‘somebody ate the cake’
I’m not sure that somebody ate the cake. #Was it Tim who ate the cake?
effect: The first utterance is incompatible with *m*, yielding a sense of pragmatic contradiction.
9. **Horn suspendable**: General form, for an utterance of *q* which contains a trigger for *m*: *q and/but maybe not (even) m*. We follow up the utterance of *q* containing the trigger of *m* with the negation of *m* under the scope an epistemic modal. (Horn 1972; Atlas 1991, 1993)

¹ Note that it is important for this test to insure that the utterance triggering *m* is *not* under the scope of a filter, as in the tests in 2. This is because in such cases it is possible that *m* holds merely locally, hence not leading to contradiction with the global assertion, presupposition or implicature. See the discussion of the tests in IV just below for illustration of this important methodological point.

² unless embedded under negation, as in (i), where some might argue that this is Horn’s metalinguistic negation:

(i) Laura has no children. So it’s not the case that Laura’s children are cute.

In *he's almost 16*, *m* (the polar implication) = 'he's not 16'
 He's {barely/only/#almost 16, and maybe not even that old/if that.
 Effect: With *barely, only*, which do not carry *m*, subsequent suspension of *m* under *maybe not even* is felicitous. But after *almost*, this leads to a sense of contradiction.

10. **Cancellable locally** under the scope of a plug: Is it felicitous to conjoin (perhaps subordinately) both the trigger for *m* and something which entails $\neg m$ under the scope of the same operator? (Roberts, to appear)

With the PPM trigger *only* embedded under the scope of *possibly* or an attitude predicate *believe*, Horn suspension (#9 above) is possible, as shown in the (a) versions. But local cancellation leads to a sense of contradiction, as in (b) or (c):

- i. Who can pass the test?
 - a. It's possible that only Lucy can, and maybe not even Lucy.
 - b. #It's possible that while only Lucy can, (even) she can't.
- ii. a. Monty believes that only Lucy can pass the test, but maybe she can't
- b. #Monty believes that while only Lucy can pass the test, she can't pass the test.

11. **susceptibility to conditional weakening**: Can *m* be suspended by the antecedent of an epistemic conditional which calls into question the truth of *m*? (Abusch 2002)

- a. In *John has stopped smoking Luckies*, *m* = 'at one time John smoked Luckies'.
 If John ever smoked, then he has stopped smoking Luckies.
 Effect: Speaker is committed to the truth of ' If John ever smoked, then at one time he smoked Luckies.
- b. In *Mary, who's from Ithaca, loves gorges*, *m* = 'Mary's from Ithaca'
 If Mary is indeed an American, then Mary, who's from Ithaca, loves gorges.
 Effect: The speaker seems confused, first entertaining the possibility that Mary may not even be an American, then claiming that she's from Ithaca, which entails that she's American.

V. Effects of presupposition rejection: the Frege-Strawson property

12. **the Frege-Strawson property**: When the interpreter believes the PPM to be false, what are the effects on judgments of truth or falsity, or of whether the attempted speech act is accomplished? (Strawson 1964, von Stechow 2004, Bezuidenhout 2006). Compare:

- a. Bill doesn't realize that Sally is here.
 Effect of falsity of *m*: Assertion typically rejected if addressee does not believe that Sally is here.
- b. Someone should pick up that baby. He's crying.
 Effect of falsity of *m*: Assertion can be accepted even if addressee knows the baby in question is a girl.
- c. The director of the community garden, who lives on Hudson St., is coming to dinner.
 Effect of falsity of *m*: The proposition that the director is coming to dinner may be conveyed and taken as true even if the addressee knows that the director lives on Glen Mawr, not Hudson.

Part B: Discussion of the tests

I. Projection behavior

We understand projection in the following way: Projection is identifiable only in complex sentences containing entailment canceling operators, such as negation, disjunction and modals. To say that some element of content m projects is to say that in the interpretation of the target utterance, m is understood as falling outside of the scope of an entailment canceling operator within whose syntactic scope it occurs. In the case of *global* projection, m is understood as a commitment of the speaker. The basic question pertaining to projection is:

A. Given an expression E, can any component m of the content of E project?

(Note that the source expression E may be of any size, e.g. a word, a phrase (*the dog that is barking*), a clause, or a sentence.) We take an affirmative answer to question A. as a condition on further investigation of the expression type in this context. That is, if the answer to 1 is ‘yes’, then m is a PPM. All of the tests in I.A. and I.B. in the list test for projection, whether global or local.

Global projection

The basic family of sentences proposed by Chierchia and McConnell-Ginet (1990) test for global projection, as the constructions used contain no intermediate “landing sites” (contexts, understood in Heim’s context-change framework; sub-DRS’s, in DRT) for the PPM m in question. The tests involve making the following modifications of a simple sentence S containing a trigger for m , under the scope of one of Karttunen’s *holes* for projection:

- a. under negation
- b. under interrogation
- c. under a modal
- d. in the antecedent of a conditional

In these basic tests, we simply consider (or present an informant with) the relevant sentence form, and ask whether the particular PPM we are investigating is understood as a commitment of the speaker. This form of the test is applicable for sentence types which give rise to projective content conventionally or routinely. It requires modification for cases where projective meaning arises via contextual inference. (See Levinson 1983, Kadmon 2000, Simons 2004, 2006.) Consider, for example:

- (1) A: Are we going to eat outside?
B1: It’s raining.
B2: It might be raining.
B3: Is it raining?
B4: If it’s raining, we could eat on the porch.
B5: It’s not raining.

Utterances of any of B1-B5 in the context of A's question give rise to the implication that rain is an obstacle to eating outside. But this is clearly not an implication of any of these sentence types in isolation. This illustrates that to identify inferentially based projective meaning, the test sentences must be considered in a context in which we control for such factors. Note further that cases such as these require that we do not construe "content" in question A. above as conventional or encoded content, but allow it to be inferentially communicated content.

Local context effects

Once it has been observed that some element of meaning *can* project, we should then proceed to ask whether it *must* project, and if so, whether it must project globally. In order for a PPM to fail to project globally, one of two things must happen. Either it may be canceled or suspended; or it may be locally "satisfied" or "bound."³ As noted in the introduction to the appendix, we try to maintain theory neutrality by talking, not about a PPM being satisfied/bound in a local context, but rather about the relevant content being entailed in a local context, or being understood as holding in a local context.⁴ In this section, we focus on the effects of the PPM on local and intermediate contexts. We delay discussion of cancelation and suspension to section IV.

Constraints on Contexts in which *m* holds

Observations in the literature suggest that different triggers may impose subtly different requirements as to the contexts in which the resulting PPMs are understood as holding. For example, Potts 2005 argues that the content of appositives must project to the global context, and has no impact on any non-global context. As discussed in section 3 of the main paper, there are also argued to be cases where a PPM can project globally but nonetheless must also be entailed in its local context; cf. the discussion of *realize*. In other cases, as with *too*, global entailment alone may suffice.

We should thus consider the following questions. Given an observed PPM *m*:

B. Must *m* project?⁵

³ Several notes are in order here. First, there is significant doubt as to whether conventionally triggered projective meanings can ever truly be canceled; however, the term is frequently used in the literature, so we introduce it here. See further discussion in section IV below. Second, there are theorists for whom cancelation and suspension are subcases of local satisfaction. We introduce the distinction here not as a theoretical claim, but as a reflection of an intuitive distinction between the types of configurations involved. Third, note that unless otherwise indicated we use the term *local context* to refer to any non-global context i.e. as including intermediate contexts.

⁴ In some cases, a PPM may be non-propositional, in which case we cannot, strictly speaking, talk about it being entailed in a context. We set this aside to ease exposition here.

⁵ We are not aware of any claims in the literature that a particular PPM must project, but need not project globally. In general, where it has been claimed that a PPM must project, the claim is that it must project globally i.e. that the speaker is always committed to the PPM, regardless of embedding of its triggering construction.

- C. Must m project globally i.e. must m be understood as a commitment of the speaker?

And if m occurs embedded under a filter, we can ask:

- D. May m be entailed in its local context, or must it be globally entailed with no local effects?
E. If m may be locally entailed, may m be locally entailed alone, or must it also be globally entailed?
F. If m may be locally entailed, is it *required* to be locally entailed, or is it sufficient for it to be entailed only in the global context?

Although these are phrased as yes/no questions, it is likely that some answers are a matter of degree e.g. that some cases of PPM are easily locally bound, while others require special contexts or configurations.

These patterns of projection and local entailment are investigated using the well-known Karttunen filtering configurations and modifications and refinements of these. See tests 2 and 3 in the list above.

When global satisfaction is blocked, as the tests require, and local context cannot be made to suffice for felicity, this is evidence that the PPM in question displays the property we call **uniquely global truth**. Compare the illustrative examples given in test 2—those where local context effects are felicitous when global projection is blocked—with the following cases:

- (2) Appositive:
In *Clara, a midwesterner, would love subways*, $m =$ ‘Clara is a midwesterner’:
If she were from DeMoines instead of NYC, Clara, a midwesterner, would love subways.
- (3) Honorific:
In *je te donnerai mon livre*, $m \approx$ ‘the interlocutors are socially intimate or else the speaker is older than the addressee’:
To an elderly stranger who has asked to see the young speaker’s book: Si vous etiez mon ami, #je te donnerai mon livre.
‘If you (formal) were my friend, #I would give you (familiar) my book.

As argued by several authors (most recently, Harris & Potts at this workshop), appositives and honorifics can only be globally bound—say, reflecting the speaker’s perspective. Since the context here is incompatible with m , the result is a sense of contradiction, even though the local context would seem to be compatible with the required truth of m .

Similarly, gender seems to resist merely local compatibility, as we see in the following disjunctive examples, contrasting the definite description, which does admit of merely

local truth, with the gender of a pronoun, which is odd in a context where the child in question is visible but its gender is unknown:

- (4) Either there's no King of France, or the King of France is bald.
- (5) ??Either that child is a girl, or he's cute.

The tests for cancelability and suspension also reflect constraints on the context(s) in which *m* must hold. Tests #7-9 (cancellation, Beaver suspension and Horn suspension) can be used as adjunct tests for whether global truth is required. Local cancellation, #10, bears on whether *m* must be locally satisfied. And #11, susceptibility to conditional weakening, illustrates another way of calling the global truth of *m* into question, hence testing for whether *m* obligatorily has global effects.

II. At-issueness

One standard way of distinguishing between projective and proffered content is in terms of the susceptibility of that content to direct denial. This raises the following questions:

- G. To what degree does the potentially projective content *m* of E allow for direct affirmation or denial?
- H. What strategies for denial or questioning *m* (*Hey, wait a minute!, What d'ya mean?*) are available?

III. Information-status constraints and potential informativity

It is quite standard to classify projective meanings on the basis of requirements that their content be previously assumed or believed to be part of the common ground of the conversation, and on the basis of observations about the effects of using an expression when such a constraint is not satisfied. The questions thus raised are:

- I. What requirements, if any, are there on the information status (given/new) of the PPM *m* of E?⁶
- J. To what extent can E be used felicitously to introduce the PPM *m* into the context of utterance (either global or local)?

To investigate question I., one might test various possibilities:

- a. Can E be used to introduce its PPM *m* when *m* is brand new information in discourse? It's well known that e.g. definites and factives can be so used

⁶ This question raises the further question of what it means to say that a piece of information is given. The standard approach in the literature on presupposition is to equate givenness with common ground status, but it is worth investigating the relevance of other notions of givenness. See e.g. Prince 1978, who differentiates the presuppositional component of it-clefts and wh-clefts on the basis of distinct givenness constraints of their contents [Ellen Prince 1978, A comparison of wh-clefts and it-clefts in discourse]

(subject to certain constraints), but an utterance with *too* is said to be infelicitous without prior salience of the relevant proposition.

- b. Can E be used after a prior assertion/indication that the PPM *m* is not in the common ground status? E.g., can a speaker use expression E with PPM *m* after denial that *m* holds, or after saying: “Perhaps we don’t all agree that *m*, but...”, or in response to a question whether *m*? (See discussion in Horn 1996 of this property with relation to the prejacent of *only*.)

We address question J. using what we call the Potential Informativity Test. Potential informativity correlates with the theoretical notion of accommodability. In this test, we check whether use of an expression E felicitously results in introduction of its associated information into the context. (The alternative is that the trigger would be allowable only if the associated information were already part of the context, so this test is a counterpart to those suggested for Question J.) There are two sub-cases for the test: potential informativity at the global level and at the local level. We test at the global level simply by considering whether use of the trigger in an unembedded environment can suffice to add the associated meaning element to the global context. At the current stage of development, this is again tested simply by investigating our intuitions about the commitments of the speaker given a certain utterance.

At the local level, the potential informativity test is somewhat more complex: the idea is to see whether use of the trigger adds *m* to a subordinate context, under the scope of an operator. We test this using contexts (like those for other local context effects), where global accommodation of *m* would lead to a contradiction or other infelicity, and thus is not possible. For example, (6) illustrates the test using a conditional.

- (6) Jane never smoked. If she had stopped smoking, she would have nicotine stains on her teeth.
In *Jane stopped smoking*, *m* = ‘Jane once smoked’.
Effect: The conditional is interpreted as meaning ‘if Jane had once smoked and had stopped smoking, she would have nicotine stains on her teeth’.

The idea here is that we must interpret the antecedent as indicated in the gloss in order for the conditional as a whole to make sense; this provides evidence that *stop* has introduced its PPM into the antecedent.

IV. Cancelability and suspension

- K. Given expression E with usual projective content *m*, can E be used without introducing *m* into any context, global, intermediate or local? In what configurations is this possible?

We consider a variety of tests for cancelability and suspension:

7. Prior / following assertion, presupposition or implicature inconsistent with *m*.
8. Beaver suspension environment

9. Horn suspension environment
10. Local cancelation: embed both the trigger for m and something which entails $\neg m$ in the most local context under the scope of an operator
11. Conditional weakening

In tests #8, 9 and 11, embedding m under an epistemic modal or an interrogative or in the antecedent of a conditional leads to a sense that the truth of m is still an open question in the global context, so that m cannot be felicitously held to be true globally.

To address the question of whether m can be canceled or suspended altogether in using tests #7-9, note that it is crucial to control for the possibility that m is only globally canceled/suspended, but still has effects restricted to the most local context (see discussion of **constraints on contexts in which m holds**, above). I.e., when m is triggered under the scope of a filter like *possibly* or *believe*, or under a plug like *say*, felicity may still require that it be locally true. To test whether this is the case, in a context where global truth is precluded, conjoin E with the negation of m under the scope of the plug (as in test #11, local cancelation). If the result leads to a sense of local contradiction, then m does require at least local effects and cannot be altogether canceled. Conditional weakening (test #11, originally discussed by Abusch 2002) can also be used in this way, so that with PPMs which can be merely locally entailed there is a conditional effect, as illustrated for *stop*, while for those which must be global only, as with the non-restrictive relative, the result is a sense of contradiction.

V. Effects of presupposition rejection: the Frege/Strawson property

- L. What effect does falsity or rejection of the PPM have on the success of the attempted speech act? E.g., can an assertion be taken to be true despite rejection of the PPM m ? Again, there are already known to be differences between different PPMs, as we see in the examples given.

This question should be investigated with respect to different constructions in which the trigger can occur and different configurations involving the trigger (Cf. claims that failure of the existence implication of a definite has different effects depending on role of the definite in the information structure of the sentence in which it occurs (Strawson 1964, von Stechow 2004, Bezuidenhout 2006)).