Roberts.LSA.lecture3
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INTRODUCTION TO PRAGMATICS
Lecture 3: Presupposition and Projection

Last time we talked about FOCUS and characterized it, following Rooth (1992) as triggering an anaphoric presupposition: a well-formed discourse with this utterance with this prosody requires that a particular kind of alternative set be salient and relevant. We also noted that QUD congruence is also required, even if there's a more "narrow" congruent set.

This is arguably a pragmatic matter, as we saw, though it plays out in the truth conditional semantics of some utterances, illustrated by the way that the felicity requirement triggered by prosodic FOCUS that there be a congruent set of alternatives in turn constrains the contextually available interpretation of elements like *only* which are sensitive to the salient alternatives in a context of utterance. The salient alternatives act as the domain over which *only* ranges, yielding a contextually intended exclusive implication, with truth conditional effects.

Now we turn to consider a broader range of expressions that are said to trigger presuppositions:

Anaphoric triggers:
(1) He is happy.

Besides the exhaustives like *only*, many other kinds of expression are said to presuppose some type of antecedent: pronouns as in (1), ellipses, even tense (Partee 1984). (1) cannot be interpreted—we cannot determine what a speaker means in uttering (1)—unless there's exactly one maximally salient and plausible masculine entity, the intended antecedent of *he*. Any competent speaker knows the conventional content of (1); but that does not yield a proposition without resolution of the anaphoric presupposition.

Aspectual verbs:
(2) Marylyn has stopped smoking.

In any utterance, (2) cannot be true unless Marylyn used to smoke. And this isn't about Marylyn or smoking: substitute any other NP for *Marylyn* and gerundive predicate for *smoking* and you'll get a parallel result. It's a presupposition that arises from what it is to *stop* some activity.

Emotive factives:
(3) John resents Mary smoking.

Considered out of the blue, (3) seems to implicate that Mary used to smoke. But unlike *stop* in (2), *resent* doesn't presuppose the truth of its complement:

(4) [Context: John smelled smoke on Mary's hair and now incorrectly assumes she is a smoker, the person who's been sneaking cigarettes in the teacher's break room.] John resents Mary smoking.

But still (3) and its counterpart in (4) carry a presupposition: An agent cannot resent something that he doesn't believe to be true. The set-up in (4) makes it clear that John does believe that Mary smokes, even though it's a false assumption on his part. (5) shows that, whether or not the complement is true, without assuming that John takes it to be true, an utterance of (3) is infelicitous:

(5) John incorrectly thinks Mary hasn't smoked for years. #He resents her smoking.

Note that the presuppositions just noted seem to arise in somewhat different ways. Somehow the presuppositions associated with *stop* and *resent* arise from what it *is* to stop doing something or to resent something. Those notions themselves—standing in a stopping relation to some activity or resenting something—carry presuppositions, and that just carries over to the verbs that denote them. This is not the case with the anaphoric presupposition triggered by a pronoun: somehow, carrying such a presupposition just *is* part of what it is to be a pronoun. Similar ly, one might argue that the background/foreground distinction associated with prosodic FOCUS and cleft structures just is their *raison d'être*, and accordingly, the presuppositions they trigger arise from their function, as in the case of the pronouns.

But however they arise, presuppositions are pervasive in discourse, and have effects on utterance meaning that have brought them under the microscope in truth conditional semantics for over forty years. One reason is that presupposed content tends to behave differently from other types of implications: it tends to **project**. Here are a couple of examples:

(6) Does John resent Mary smoking?

(7) John doesn't bake bread.
L+H* L-H%

Unlike (3), (6) doesn't implicate that John bears any resentment toward Mary. But it still implies that she smokes (out of the blue, or at least that he *thinks* she smokes, as we saw in (4)). In (7), the speaker isn't committed to truth of the proposition under the scope of negation: that John bakes bread. But still, the prosody clearly implicates that there's a salient set of alternatives of the form *John bakes x*, of which the main clause under the scope of negation *John bakes bread*, is one element. Thereby, and partly because of the low rise at the end (implicating that there's more to be said), a speaker in uttering (7) may be taken to suggest that some other element of that set is true, i.e. that John bakes something else.

Presupposition **projection** occurs when the presupposition trigger occurs in the syntactic scope of an operator which normally cancels entailments of the content in its scope. Then the triggered presupposition projects in case it persists as part of the meaning of the whole utterance. In (6), the proffered content, John's resentment, is "cancelled" by the interrogation, and in (7) the truth

of John's baking bread is targeted by the negation. But the presuppositions triggered by lexical items (*resent*) or prosodic FOCUS (contrastive on *bread*) persist, so we say that they project.

As we will see, the intuitive difference between the anaphoric presuppositions triggered by pronouns and FOCUS (*inter alia*), and those triggered as a function of notional, lexical content is reflected in a measurable difference in behavior in another respect: the anaphoric presuppositions project come what may, unless the anaphora is locally resolved; while other lexically triggered **notional** presuppositions only project as a function of other contextual factors, arguably including the QUD. This distinction is not predicted by purely semantic accounts of presupposition projection, wherein it arises solely through the conventional content of the relevant presupposition trigger. Arguably, this is where we need to seek a (partially) pragmatic explanation for this difference, one that will permit us to predict under what contextual conditions projection arises in the less robust types of examples.

1. Presupposition projection

One of the hallmarks of a presupposition is its tendency to project. We see the projection just illustrated in (6) and (7), from under negation or in a question, with a wide variety of different types of trigger. These operators normally cancel truth conditional entailments. Hence, though the speaker of (8a) is committed to it being true that Marcia sold a bicycle, the speaker of (8b) or (8c) is not:

(8) a) Marcia sold a bicycle.
b) Marcia didn't sell a bicycle./It's not the case that Marcia sold a bicycle.
c) Did Marcia sell a bicycle?

But now consider (9):

(9) a) She sold a bicycle.
b) She didn't sell a bicycle./It's not the case that she sold a bicycle.
c) Did she sell a bicycle?

Unlike its positive counterpart (9a), (9b) does not entail that the subject sold a bicycle. Nor does the question in (9c). But because of the pronoun, with its anaphoric presupposition, both of these still implicate that there is some contextually salient female individual which the speaker intends the addressee to be the referent of *she*.

Here are a few other kinds of triggers which trigger persistence of one or more implication even when so embedded:

Possessives:

(10) a) Marcia sold her bicycle.
speaker implicates:
Marcia has a bicycle = *p*
Marcia sold her bicycle = *q*

b) Marcia didn't sell her bicycle.
speaker implicates: *p*
it's not the case that *q*
c) Did Marcia sell her bicycle?
speaker implicates: *p*

only:

(11) a) Marcia only bought a BICYCLE.
speaker implicates:
Prejacent implication: Marcia bought a bicycle = *p*
Exclusive implication: Marcia bought nothing other than a bicycle = *q*
b) Marcia didn't only buy a BICYCLE.
speaker implicates: *p*
it's not the case that *q*
c) Did Marcia only buy a BICYCLE?
speaker(usually) implicates: *p*

forgot:

(12) a) Marcia forgot that she bought a bicycle.
speaker implicates:
Marcia bought a bicycle = *p*
Marcia forgot buying a bicycle = *q*
b) Marcia didn't forget that she bought a bicycle
speaker implicates: *p*
it's not the case that *q*
c) Did Marcia buy a bicycle?
speaker implicates: *p*

It seems that the implication in (10a) that Marcia has/had a bicycle is due to the possessive *her bicycle*—replace *her* with *a* and the implication that it was her bicycle that she sold goes away. The implication triggered by *her bicycle* in (10a) persists under negation (10b) and interrogation (10c), though the implication that she sold it does not. Something similar goes on with *only* in (11)—the exclusive implication in (11a) disappears if we drop *only*—and with the complement of *forgot* in (12). To see that the persistence in (12) is due to *forgot*, compare (12) with (13), where the complement of *deny* does not persist under negation (13b) or interrogation (13c):

(13) a) Marcia denies that she bought a bicycle.
b) Marcia doesn't deny buying a bicycle
c) Does Marcia deny buying a bicycle?

In the classical literature on presupposition,[1] it is said that possessives, *only* and *forgot* are **presupposition triggers**, and that one of the central symptoms of presupposition is that it leads to projection. Projection is the persistence of content when embedded under operators which

[1] See Beaver & Geurts (2014) for an overview and references, Beaver (1997) for an excellent, detailed review of technical issues in that literature.

usually block entailment, as we observed with negation and interrogation above. There are two other kinds of contexts in which projection canonically occurs, illustrated in (14) and (15):

(14) a) If Marcia sold her bicycle, then she'll have to walk.
b) If Marcia forgot buying a bicycle, maybe you should remind her.
(15) a) Marcia may have sold her bicycle.
b) Marcia may have forgotten buying a bicycle.

In (14), we see that presuppositions project out of the antecedent of a conditional: (14a) implies that Marcia had a bicycle, while (14b) implies that she (believes that) she bought a bicycle. But the main content of the antecedent does not project—(14a) doesn't imply that Marcia *did* sell her bicycle, nor (14b) that she forgot selling it. In (15) the same presuppositions project from under the scope of the modal auxiliary *may*, which similarly blocks the other implications, so that (15b) does not entail that Marcia has forgotten anything.

The four variants of a target sentence like those displayed in (8) – (10) and (14) – (15)—under negation, interrogation, in the antecedent of a conditional, and under a modal auxiliary—are sometimes said to constitute the **family of sentences test for projection** (e.g. by Chierchia & McConnell-Ginet 1990). They test whether a given implication projects.

Among many other triggers for projection in English are:

- *too, again* and various other iterative modifiers (*another, re-*), as exemplified in (16)-(19).

(16) MARCIA has a bicycle, **too**.

- a range of other verbs which, like *forget*, presuppose the truth of their sentential complements. These include *know* (cf. *believe*), *realize, learn, discover, remember, be sorry that, be proud that, be sad that, be indifferent that.…* These are called the **factive verbs**. Some, like *regret* in (3), are emotive factives, while others, like *know*, are cognitive factives.

- a class of verbs called the **implicative verbs**: *manage, forget,…*

(17) Mohammed managed to finish his homework.
(18) Mohammed forgot to finish his homework.

- **Aspectual (or change of state) verbs** like *stop, finish, carry on, continue, …*

(19) Joan has **stopped** drinking wine for breakfast.

- various temporal/aspectual modifiers and conjunctions: *after, while, when, ….*

(20) Clara finished breakfast **while** Alan did the dishes.

- clefts: sentences of the form *it was X that VPed*:

(21) It was her bicycle that Marcia sold.

- pseudo-clefts: sentences of the form *what S\X is X*, where *S\X* is a sentence missing a constituent of category *X*

(22) What Marcia sold was her bicycle.

- sortally restricted predicates:

(23) Yvan **dreamed** he was able to fly.
Implicated: Yvan is animate.

- prosodic focus (see example (7) above)

The reader is encouraged to practice using the family of sentences test to convince herself that these implications tend to project. See a long list of other purported presupposition triggers, all at least some of the time giving rise to projection, in Beaver & Geurts (2014:4-5).

2. Felicity Conditions

Besides projection, presuppositions (in keeping with their name) are said to impose conditions on when an utterance in which one is triggered is felicitous in a given context. Consider

> Suppose an utterance carries a presupposition *p* triggered by an expression *t*.
> If *p* is an anaphoric presupposition, it is **satisfied** in the context of utterance just in case the context of utterance contains a suitable antecedent for *t*.
> More generally,[2] *p* is **satisfied** in the context of utterance just in case the interlocutors agree on the truth of *p* at the time of utterance.

If the interlocutors in a conversation fail to already agree on the truth of a presupposition associated with an utterance, then in some cases, as with the examples with pronouns like (1) and (9), failure of the context to satisfy the presupposition would be "catastrophic" in the sense that we simply couldn't say what proposition the speaker might have intended to express. We see this in utterances in which such examples encountered out of the blue. We say that such an utterance is **infelicitous** due to presupposition failure.

Contextual infelicity is marked with the cross-hatch judgment diacritic: '#'. It presupposes a particular type of context, and means 'this expression is infelicitous if uttered in the given context'. One cannot correctly indicate infelicity without giving context. Hence, the following is an incorrect judgment indication:

(9a) #She sold a bicycle

Properly, one must give some context as here:

(9a) [encountered out of the blue:] #She sold a bicycle

[2] Some authors (van der Sandt 1992, Geurts 1999) take all presuppositions to be anaphoric, though, as we'll see below, this fails to account for the differences between the presuppositions triggered by pronouns and expressions like *too* on the one hand, and those of other triggers. But if we assume that an anaphoric presupposition is a presupposition that the context of utterance entails the existence of a suitably salient referent for the trigger (the *weak familiarity* of Roberts 2003), then the satisfaction of anaphoric presuppositions can be subsumed under this second case of the definition.

Other types of projective triggers are sometimes more forgiving than the pronominals; e.g. the factives. Suppose I utter one of the strings in (12a) or (14b) or (15b) in a context where you, the addressee didn't already know that Marcia bought or had a bicycle. You can readily recover my assumption that she *did*, and accommodate what I have presumed to be true, because the trigger—the possessive *her bicycle* or the complement of *forget*—itself tells us what is presupposed:

(12a) Marcia forgot that she bought a bicycle.
(14b) If Marcia sold her bicycle, then she'll have to walk.
(15b) Marcia may regret buying a bicycle.

Nonetheless, in the seminal work on presupposition of Karttunen (1973) and Karttunen & Peters (1979), as well as in subsequent influential work by Heim (1983) and van der Sandt (1992), it is assumed that projection is always correlated with the kind of felicity condition on context observed for pronominals. Generally, in this work it is assumed that:

> **Strong contextual felicity condition on presupposition**:
> An utterance with presupposition *p* is *felicitous* in context *c* iff *c* entails *p*, i.e. if *p* is satisfied in *c*.

Of course, this means that the propositional information in the context must be incompatible with the falsity of *p*.

Strong contextual felicity does seem to be required for some types of triggers. As we noted, examples like (1) simply fail to yield truth conditions without the resolution of the pronominally triggered anaphoric presupposition. Similarly, if one utters (7b) after (7a), it's infelicitous because the presupposition of a set of FOCAL alternatives of the form *John likes x*, triggered by the prosodic alignment, fails after (7a), yielding a puzzling irrelevance. Uttering (16) (with narrow FOCUS on the subject crudely indicated by CAPS) in a conversation where the interlocutors don't have in their common ground the salient information that someone besides Marcia has a bicycle, triggered by the association with FOCUS of *too*, will sound distinctly odd. And if the interlocutors haven't been discussing what Marcia (perhaps among others) sold, then the pseudo-cleft in (22) will seem infelicitous, since this construction triggers a presupposition about the QUD (Rooth 1992, Roberts 1996/2012).

(1) He is happy.
(7) a) Michael bakes bread.
b) #John bakes bread. cf.: c) √John bakes bread.
L+H* L-H% L+H* L-H%
(16) MARCIA has a bicycle, too.
(22) What Marcia sold was her BICYCLE.

Note that the presupposition *p* itself needn't have been directly asserted in prior conversation in order for the utterance presupposing *p* to be felicitous. It suffices that *p* be entailed by information in the interlocutors' common ground, as is demonstrated by the following type of example, uttered by a single speaker:

(24) All Dutch people own bicycles. (a)
Marcia is Dutch. (b)
She rides her bicycle to work. (c)

(24c) contains the Noun Phrase *her bicycle*, with *her* anaphoric to *Marcia*, and hence presupposes that Marcia has a bicycle. This presupposition is satisfied in the context suggested, where (24a) and (24b) together (though neither alone) entail that Marcia owns a bicycle.

What about those cases where presupposition failure doesn't lead to infelicity, as in the factive case noted above. Sometimes a cooperative addressee will be willing to accommodate the speaker by assuming the truth of the presupposed proposition after the fact, as if it had been true all along (Lewis 1979; Heim 1983; Thomason 1990). In such a case, we say that the addressee has *accommodated* the failed presupposition, saving the conversation from infelicity. This is not uncommon with factive verbs, such as *regret* in (16), and in fact gossips often use factives as a way of reporting juicy news while pretending it was already common knowledge. But there's more to say about accommodation, as we'll see below.

3. Karttunen's account of projection: Plugs, holes and filters

The linguistic and philosophical literature on presupposition since the early 1970s has largely focused on the so-called *projection problem for presuppositions*: how to predict the presuppositions which a possibly complex sentence will inherit from the presuppositions of its parts, the words and phrases which constitute it. Langendoen & Savin (1971) introduced the term and proposed a very simple theory: The presuppositions of a sentence S are those in the union of the presuppositions of the (iterated) sub-formulae of S. But others soon noticed that this was too simple. For example, uttered out of the blue, (25) seems to presuppose that Marcia bought a bicycle, a presupposition notionally triggered by *regret*. That is, in (25) *regret* seems to be factive. However, this presupposition is not implicated by (26a), when the same clause occurs as the consequent of a conditional; but it is implicated again in (26b), with a different conditional antecedent. And in (27), even though (25) occurs unembedded, it still does not implicate that Marcia bought a bicycle. Instead, because the context makes it clear that Marcia has a false belief about her purchases, we see that, as with *resent* in (3) above, the presupposition of (25) is weaker, that Marcia *believes* she bought a bicycle.

(25) Marcia regrets that she bought a bicycle.
(26) a) If she bought a bicycle, then Marcia regrets buying a bicycle.
b) If her budget is too tight this month, then Marcia regrets buying a bicycle.
(27) Marcia is delusional. Last week, she imagined that she had acquired a bicycle and a motor scooter. Now, Marcia regrets that she bought a bicycle.

This illustrates how what is presupposed in an utterance may be partly a function of the rest of the utterance in which it occurs ((26a) vs. (26b)) and of the context of utterance ((25) vs. (27)). We can say that the presupposition of *regret p* is the weaker *believes that p*, explaining (27), but then we have to explain both the projection of the presupposition triggered by *regret* in (26b) *and*

its failure in (26a). Plus we need to explain why the presupposition in (25) and that which projects in (26b) are stronger than the presupposition which is implicated in (27).

Karttunen (1973) called constructions like the conditional, and others below, **presupposition filters** because they sometimes let a presupposition in the main clause project, other times do not. He offered rules to account for when they lead to projection and when the presupposition that appears when a clause is unembedded fail to project. We'll consider those rules here because they offer a clear description of when filtering arises, and support an intuition about why it occurs.

Filters include a number of syntactic constructions, as well as embedding predicates and other operators. This is in contrast to so-called **holes to presupposition**, which include *factive* predicates like *know* or *forget*, whose more consistent projective behavior we saw above in (12), and the operators in the family of sentence test—negation, the interrogative, the antecedent of a conditional (as opposed to the filtered main clause just we just saw in (26a)), and modal auxiliaries. Predicates like *say* are said to be **presupposition plugs**, not passing along any of the presuppositions of a complement; replacing *regrets* with *says* in (25) gets rid of the implication that Marcia sold her bicycle.

The plugs and filters suggest other regularities in the projection behavior of presuppositions, regularities that we want to capture in characterizing what it is to *be* a presupposition. The rules in a theory of presupposition projection, like that of Karttunen (1973), are intended to capture these regularities.

Karttunen's (1973) formulation of presupposition projection rules**:**

Karttunen's rules calculate the presuppositions of complex sentences on the basis of the presuppositions of their parts. Here's the basic idea: When a presupposition occurs embedded under a hole to presupposition, it can project. When it occurs under a filter, it projects in certain cases, but not in others; the rules are supposed to capture when a presupposition could be expected to project from under a filter. These rules are actually rule-schemas, containing variables *A*, *B*, and *C* over clauses (*A* and *B*) and propositions (*C*). To test whether a given implication of a string *A* projects in a particular sentential context, embed *A* in the context (*X*) and see whether the implication projects as the appropriately instantiated rule schema would predict.

In all of these rule schemas, >> is formal shorthand for 'presupposes', and |= means 'entails'. Also, Karttunen assumes this constraint on the set *X* of assumed facts in these schemas: *X* may not entail not-*A* (so that contradiction does not arise in adding *A*) or *C* (the contextual assumptions in *X* do not themselves entail the presupposition of interest *C*).

Here's the rule for conjunction:

(28) Let S stand for any sentence of the form "A and B".
   a. If A presupposes C, then S presupposes C.

Formally: If A >> C, then S >> C.

b. If B presupposes C, then S presupposes C unless there is some (possibly null) set of assumed facts X such that adding A to X entails C.

   If B >> C, then S >> C unless $X \cup \{A\} \models C$.

(28a) tells us that whenever *A* occurs as the first conjunct of a conjunction (*S*), its presuppositions (*C*) will be presupposed by the entire conjunction. So the first conjunct is a hole to presupposition. But the second conjunct is a filter: Let's say that conjunct ***A* contextually entails *C*** in case the result of adding *A* to the context *X* entails *C*. If a string *B* occurs in the second conjunct (28b), its presupposition *C* will project only if the first conjunct does not contextually entail *C*.

Here are two candidates for *S*:

(29) Mary regrets buying a pop music album, and she'll return it for a refund.
(30) Mary bought a Sheryl Crow cd,[3] and she regrets buying a pop music album.

In the first conjunct of (29), *regret* is factive, presupposing its complement. So in instantiating the rule schema (28) we have:

$A_{(29)}$ = *Mary regrets buying a pop music album*
$C_{(29)}$ (the presupposition of A) = *Mary bought a pop music album*

And the prediction of (28a) so instantiated is that (29) presupposes that Mary bought a pop music album. This seems to be correct.

(30) is more complicated:

$A_{(30)}$ = *Mary bought a Sheryl Crow cd*
$B_{(30)} = A_{(29)}$ = *Mary regrets buying a pop music album*
$C_{(30)} = C_{(29)}$ = *Mary bought a pop music album*
assumed facts $X_{(30)}$ = {*Sheryl Crow is a pop singer, Sheryl Crow's cd is a pop album*}

Note that $X_{(30)} \cup \{A_{(30)}\}$ entails $C_{(30)}$. That is, the first conjunct of (30) contextually entails the presupposition of the second conjunct. Hence, the prediction of (28b) so instantiated is that (30) as a whole does not presuppose $C_{(30)}$. Using the terminology we introduce in §2, we can say that because $X_{(30)} \cup \{A_{(30)}\}$ entails $C_{(30)}$, $X_{(30)} \cup \{A_{(30)}\}$ satisfies the presupposition $C_{(30)}$ triggered by *regret* in $B_{(30)}$.

Let's introduce some more useful terminology: We want to distinguish between the **global context** and the **local context** for interpretation of a clause. The global context is the context prior to utterance, X in the above. But the local context may or may not equal the global context. As we see in (29), the local context for the interpretation of the first conjunct of a conjunction A does equal the global context X. But (30) illustrates how the local context for the interpretation

[3] A cd is a compact disc, a now near-archaic technology for mass-producing music albums. Looks like a small frisbee.

of the second conjunct B is distinct from the global context: In fact the local context is the global context plus the content of the first conjunct: $X_{(30)} \cup \{A_{(30)}\}$. This is the respect in which the first conjunct of a conjunction is a filter for presuppositions: Even though the global context $X_{(30)}$ doesn't entail the presupposed content $C_{(30)}$, a presupposition triggered by the second conjunct $B_{(30)}$ may be satisfied in the local context *resulting from utterance of the first conjunct* and thus fail to project. In contributing to the satisfaction of $C_{(30)}$, $A_{(30)}$ has helped to "filter" it out, so that it doesn't project.

Interestingly, conditionals have exactly the same projection behavior as conjuncts, as we see reflected in Karttunen's rule (31):

(31) Let S stand for any sentence of the form "If A then B".
   a. If A presupposes C, then S presupposes C.
      If A >> C, then S >> C.
   b. If B presupposes C, then S presupposes C unless there is some (possibly null) set of assumed facts X such that adding A to X entails C.
      If B >> C, then S >> C unless $X \cup \{A\} \models C$.

And we will get the same results with respect to presupposition projection for the examples in (32) and (33) as for (29) and (30), even though the proffered content of a conditional is quite different from that of a conjunction with the same clauses:

(32) If Mary regrets buying a pop music album, then she'll return it for a refund.
(33) If Mary bought a Sheryl Crow cd, then she regrets buying a pop music album.
      where $X_{(33)}$ = {*Sheryl Crow is a pop singer*, *Sheryl Crow's cd is a pop album*}

Again, this illustrates the difference between the global context and local context for interpretation of a particular clause. As with the first conjunct of a conjunction, the global context is the local context for the *if*-clause of a conditional sentence. This is, in fact, what it means for the *if*-clause and the first conjunct to be holes to presupposition: Since the global context is the local context, if the presupposition is to be satisfied locally, it has to be satisfied globally, and that amounts to projection. But the local context for the consequent of the conditional isn't the global context, but is instead the global context plus the content of the *if*-clause. This is why the first conjunct and the *if*-clause are filters: they can (help to) satisfy the presupposition and hence "cancel" its projection.

The difference is more vivid in anaphoric examples, where failure to satisfy is catastrophic:

(34) Marcos bought <u>it</u>, and Marcia approved.
(35) Marcos bought a Sheryl Crow cd, and Maria liked <u>it</u>.

(36) If Marcos bought <u>it</u>, Marcia approved.
(37) If Marcos bought a Sheryl Crow cd, Maria liked <u>it</u>.

(34) and (36) both presuppose that there's something Marcos bought, that entity salient in the discourse. But in (35) and (37), the trigger is in the second conjunct or conditional consequent,

and the anaphoric presupposition is satisfied by *a Sheryl Crow cd* in the first conjunct or *if*-clause, respectively.

By the way, in these examples we see an important difference between the conjunction and conditional. Though we could follow up (36) with *Georgia was surprised Marcos got it*, that would be infelicitous after (37). This is because the antecedent of a conditional merely suggests a hypothetical scenario for our consideration. But the suggested follow-up seems to talk about a real scenario, requiring a real antecedent. This shows how in the conditional the merely local satisfaction of the anaphoric presupposition fails to have a lasting global effect, while it does in the conjunction. We'll see more of this when we discuss contextual effects on anaphora and reference, in a later lecture.

Completing our consideration of Karttunen's rules, here is the rule schema for disjunction:

(34) Let S stand for any sentence of the form "A or B".
  a. If A presupposes C, then S presupposes C.
    If A >> C, then S >> C.
  b. If B presupposes C, then S presupposes C unless there is some (possibly null) set of assumed facts X such that adding not-A to X entails C.
    For X some possibly null set of assumed facts,
      if B >> C then S >> C unless $X \cup \{\neg A\} \models C$.

(35) Either Mary regrets buying a pop music album, or she changed her mind about it.
(36) Either Mary didn't buy a Sheryl Crow cd, or she returned the pop album for a refund.
  $X_{(36)}$ = {*Sheryl Crow is a pop singer*, *Sheryl Crow's cd is a pop album*}
  $B_{(36)}$ = *Mary returned the pop album for a refund*
  $B_{(36)}$ >> {*Mary previously purchased a pop album*} = $C_{(36)}$
  (36) >> $C_{(36)}$ unless $X_{(36)} \cup \{\neg A_{(36)}\} \models C_{(36)}$.
    Here, the exceptive clause holds true:
      $\neg A_{(36)}$ = *Mary bought a Sheryl Crow cd*
      so $X_{(36)} \cup \neg A_{(36)} \models C_{(36)}$

We can add to Karttunen's rules the following, illustrating how negation is a hole to presuppositions, i.e. lets them all project right through:

(37) Let S stand for any sentence of the form "not A".
  If A presupposes C, then S presupposes C.
    If A >> C, then S >> C.

(38) Mary didn't regret buying a pop album.
  $A_{(38)}$: Mary regretted buying a pop album.
  Prediction: (38) >> Mary bought a pop album.

Note that in the three filtering constructions considered here—occurrence in the second conjunct of a conjunction (28b), in the consequent of a conditional (31b), or in the second disjunct of a disjunction (34b), we add A (the first conjunct, the conditional antecedent, or the negation of the

first disjunct, respectively) to the global context X to determine whether the result entails the presupposition *C* triggered by B. Only if that fails—i.e. if *C* isn't satisfied by the local context X $\cup$ {A}, does the whole utterance of *S* presuppose *C*. Negation is interesting because the rule suggests that to interpret a negated sentence, we first consider what the context would be like *if it were updated with the negated content*, taking the global context as the local context for the update; and then we reject the resulting proposition. The case of disjunction is more complex still, but here's one intuitive characterization of what it does: Recall that any speech act must be RELEVANT to the QUD in order to be felicitous. Accordingly, utterance of a sentential disjunction typically offers two alternative possible answers to the QUD. We consider the first disjunct in the global context, but then consider the second disjunct in the local context that would result *should the answer contextually entailed by the first disjunct prove incorrect*, a procedure which involves first adding the first disjunct A to the global context, then rejecting that result to yield a local context X $\cup$ {$\neg$A}for the interpretation of the second disjunct B.

One might take this correlation between filtering effects and the way that local contexts of interpretation evolve to suggest that **what Karttunen's rules capture is something about the way that context is (sometimes temporarily) updated in the course of interpretation**, with consequences for the satisfaction of presuppositions. We'll return to this idea in subsequent lectures because it has been the foundation of a rich body of subsequent literature on **dynamic interpretation**—presenting theories in which context evolves in the course of interpretation, with truth conditional effects.

While useful, the family of sentences tests as encoded in rules like Karttunen's do not offer a full account of how and when presuppositions project. For example, they do not explain the behavior of lexical filters like *believe*. Consider (39) and (40):

(39) Marcia believes that she sold her bicycle.
(40) Marcia is delusional. Last week, she imagined that she had acquired a bicycle and a motor scooter. Now, she believes that she sold her bicycle.

In (39), the presupposition triggered by *her bicycle* in the complement of *believe* tends to project: we are likely to take the speaker to implicate that Marcia has a bicycle. However, we see in (40) that in a different context the presupposition that results is that Marcia *believes* that she has a bicycle. We might say that the weaker presupposition evident in (40) is the actual presupposition triggered in (39), but that in the absence of any reason to doubt Marcia's sanity we tend to assume that her belief in this respect is true, and accommodate accordingly. In order for (25) to be felicitous, we must assume that Marcia believes (correctly or not) that she has a bicycle. Many attitude predicates trigger presuppositions of this sort; recall *resent* in (4) – (6) above and *regret* in (25)-(27).[4]

That may be the right kind of account to give, but one should be wary of relying too heavily on appeal to presupposition accommodation to explain attested presuppositions and felicity. Presupposition accommodation has been the subject of extended debate; e.g., see Lewis (1979),

[4] See Heim 1992, Roberts 1996 for much discussion.

Beaver & Zeevat (2007), Abbott (2008), von Fintel (2008), Gauker (2008), Stalnaker (2008), Roberts (2015 in press). What we can conclude is that to avoid it *becoming* a wastebasket, we need a constrained account of accommodation itself.

Summarizing, Karttunen's rules and their closely-related successors in the theories of Karttunen & Peters (1979), Heim (1983), and van der Sandt (1992), are intended to predict how presuppositions project. But its most recent incarnations all assume that the filtering functions are a reflection of dynamic context update.

4. The adequacy of purported tests for presupposition:

The family of sentences tests illustrated above and encoded in Karttunen's projection algorithms are diagnostics for **projectivity** (Roberts et al. 2009) of a target implication, its tendency to project under appropriate contextual circumstances. As we saw in §2, there is a large class of triggers for projection, the non-anaphoric triggers, which quite often are used when the purported presupposition is actually novel, and this has generally been explained as involving accommodation. Hence, whether some implication carries a strong contextual felicity condition is not a uniformly useful diagnostic for presupposition. Instead, it has been assumed, projectivity is the best test for whether a target implication is presupposed.

However, it has become clear that not all that projects is presupposed. And some kinds of expressions that have generally been assumed to conventionally trigger presuppositions sometimes fail to project.

Here are some examples that illustrate the failure to project of the complements of factive verbs, the classical examples of presupposition triggers:

(41) [Interlocutors are aware that their friend Bill is trying to discover the whereabouts of his grown daughter Sally]
If Bill discovers that Sally is in New York, he'll be relieved.

[Variant on example due to Chierchia & McConnell-Ginet 2000, p.354 (40)]

(42) …I haven't tried this with wombats though, and if anyone discovers that the method is also wombat-proof, I'd really like to know. [Beaver 2010, (32)]

Beginning with Abusch (2002), several authors have explored the possibility that there are multiple sub-classes of presupposition triggers, some "weak" and others "strong", to attempt to explain why some are less likely than others to project. But the existence of clearly non-presuppositional triggers for projection argues that we need to look more deeply at the question of what triggers projection.

Chierchia & McConnell-Ginet (1990) observe that non-restrictive relatives are not intuitively pragmatic presuppositions, in that they are generally used to introduce information presumed to be new to the hearer. But, like the presuppositions associated with factives or *too*, when a non-restrictive relative is embedded under a hole to presupposition like negation, a question, or an *if*-

clause, the truth of the relative clause is projected. Hence, all of the following implicate that Monty is from Kentucky:

(43) Monty, who's from Kentucky, likes corn grits.
(44) Monty, who's from Kentucky, doesn't like corn grits.
(45) Does Monty, who's from Kentucky, like corn grits?
(46) If Monty, who's from Kentucky, likes corn grits, it isn't surprising.

But use of the non-restrictive relative is quite odd when the information it conveys is already in the Common Ground:

(47) A: Did you know that Monty's from Kentucky?
B: #Yes, Monty, who's from Kentucky, likes corn grits.

Chierchia & McConnell-Ginet conclude that what the operators involved are holes to is not presupposition in Karttunen's sense, but *background* material—that which cannot be directly contested or called into question because it isn't directly at-issue.

More recently, Potts (2005) has argued that non-restrictive relative clauses are not presuppositions but members of a much larger class of implications that he calls **conventional implicatures**, all of which project without being presuppositional in the classic sense of putting a felicity constraint on prior context. Besides non-restrictive relatives and appositives, these include politeness morphemes, as in (48) where use of *vous* in French to refer to a singular addressee unconditionally implicates that the speaker is in a deferential position with respect to the addressee, and a variety of expressives like the epithet in (49), which implicates that the speaker—and not the Democrats themselves—thinks the Democrats' proposals for reform are stupid:

(48) Si vous voulez, nous pouvons parler.
'If you (formal) wish, we can talk.'
Implies: speaker is in a deferential position with respect to the addressee

(49) Every Democrat advocating [a proposal for reform]$_1$ says [<u>the stupid thing</u>]$_1$ is worthwhile. (Potts 2005)
Implies: speaker thinks the Democrats' proposals are stupid

Moreover, sometimes we find projection without clear lexical or constructional triggers. For example, Abbott (2000) observes that presuppositions may arise with the use of manner adverbs. In (50), we tend to take the speaker to implicate that Hans did nod, and only conditionally entertain the possibility that he nodded *slowly*:

(50) If Hans nodded slowly, he's not in full agreement. (Beaver, 2010)

The default way of reading (50) when presented, as it is by Abbott, out of the blue, is with focus on *slowly*, and this yields the projective interpretation. But if we move that focus to *nodded*, we lose the implication that Hans nodded. So it seems that the projective implication only arises

with certain kinds of FOCAL structure. Simons et al. (2011) relate Abbott's observation to the old observation that non-focused material projects. For example:

(51) Paula isn't registered in PARIS (Kratzer 1989)
(52) PAULA isn't registered in Paris.

(51) means, roughly, that it is not in Paris that Paula is registered, implicating that she's registered somewhere, while the string-identical (52) means that it isn't Paula who is registered in Paris, implicating that someone is. Many other authors have discussed the anaphoric presuppositions triggered by FOCUS, including not only Rooth (1992) but more recently Geurts & van der Sandt (2004). But that does not immediately explain why prosodically *backgrounded* material—the content in the complement to the FOCUSed constituent(s) tends to project.

Summarizing, the family of sentences test for projectivity—the tendency of some kinds of content, at least in certain contexts, to project. But projectivity, as gauged by those diagnostics, is not observed in all contexts for the classical presupposition triggers, nor is projectivity sufficient for something to be characterized as a conventionally triggered presupposition.

Other purported tests for presupposition are similarly unsatisfactory. Consider the so-called *Hey! Wait a minute!* test, attributed to Shannon (1976) by von Fintel (2008). This consists of a dialog in which a target utterance (containing a suspected presupposition) is followed by an interjection by another speaker, beginning with *Hey, wait a minute!* and then taking issue with the suspected presupposition. The underlying observation is that while we can directly deny or call into question the proffered content of an utterance, we cannot do so with the presupposed content. So to avoid letting a presupposition slip by unchallenged we must call a halt to the conversational proceedings. In this frame, the proposition following *Hey, wait a minute!* is taken to be the motive for calling the presupposition into question. Applying this test to the two implications of an example with *stop,* we find that taking issue in this way with the presupposed implication clearly permits denial of its content, whereas direct denial does not:

(53) Have you stopped beating your wife?
implication (a): *the addressee has beaten his wife*
direct denial: No I have not!
does not address implication (a)
test: Hey, wait a minute—I have never beaten my wife!
may be taken to deny implication (a)

Note, however, that this test works with non-restrictive relative clauses. Hence, the direct reply to (54A) in (54B) fails to target the implication that Monty is from Kentucky, but C does so successfully with *Hey, wait a minute!*:

(54) A: Monty, who's from Kentucky, likes corn grits.
B: That's not true! √He *hates* grits./#He's from Indiana.
C: Hey, wait a minute—Monty grew up in Indiana! I was his neighbor as a kid.

Hence, it looks like the possibility of projection from under holes and passing the related *Hey! wait a minute!* type of test, are merely necessary behavior for presuppositions. But they still do not distinguish them from other kinds of projective content.

5. A taxonomy of projective contents

The classic approach to explaining presupposition projection within linguistics, illustrated by the work of Karttunen reviewed above and including the important work in Karttunen & Peters (1979), Heim (1983) and van der Sandt (1992), takes all the types of presuppositions reviewed in §1, and more besides, to be lexically triggered, part of the conventional content contributed by the trigger. Hence, these approaches predict that presuppositions should behave the same across all trigger types. But as we have seen, this is not the case.

Consider the following generalization about the conventional content contributed by a pronoun like *he*. I take the **CHARACTER** of an expression to be its conventional contributions to the utterance in which it occurs; this term is chosen because of a related use in the work on context of Kaplan (1972), though the way I would characterize CHARACTER is somewhat different from Kaplan's, as will become clear in lecture 5 on indexicality.

> CHARACTER of *he*: [to be revised later]
> PRESUPPOSED content: Use of *he* is only felicitous, and its proffered content is only defined, if the context of utterance entails the existence of a unique maximally salient entity *d* which is appropriately referred to using masculine gender.
> PROFFERED content: d

The presupposed content of *he* doesn't require an overt linguistic antecedent, hence predicts correctly that (56) is as felicitous as (55):

(55) Look at that kid over there. He sure is happy.
(56) [A kid on the playground is leaping for joy. Stewart and Alicia are watching him play, but haven't said anything about him up to this point. Alicia says:] He sure is happy.

Note that the presupposition is stated as a definedness condition on the proffered content. This is to say that should the presupposition fail, it is not possible to determine the intended proffered content. Thus, we expect dialogues like (57):

(57) [A kid on the playground is leaping for joy. Stewart sees him but Alicia hasn't noticed him yet.]
Stewart: He sure is happy.
Alicia: I don't know who you're talking about.

Alicia neither accepts nor rejects Stewart's claim, instead bringing to his attention that she cannot retrieve his intended $meaning_{nn}$.

Accordingly, we say that failure of an anaphoric presupposition involving a pronoun is "catastrophic" in that one cannot determine the intended truth conditional content without resolving the anaphora. Other kinds of anaphoric triggers behave similarly. For example, Kripke (2009) argues that *too* is anaphoric in something like this sense (though he doesn't describe it in precisely these terms). So consider (58):

(58) [The interlocutors are relatively well-informed about New York and its busy restaurant scene. But they haven't been talking about New York, only about John:]
JOHN had dinner in New York last night, too.

(58) is very odd in the context given, even though the context entails that millions of people ate dinner in New York on the previous evening. This is because anaphoric presuppositions require *particular*, *salient* antecedents. Following Heim (1992), we take *too* to trigger a presupposition derived by abstracting on the FOCUSed constituent in the clause to which it is adjoined to yield an alternative set, then presupposing that there is some member of that set *other than* the regular content of the clause which is entailed and salient in the context. The FOCUS alternative set for (58) would be something like {Stewart ate dinner in NY last night, Kate ate dinner in NY last night, Ahmed ate dinner in NY last night, ….}. If one of these propositions is salient and under discussion in the context, then uttering (58) will be felicitous; otherwise, as in the context given, it is not. And there's no way to "repair" this presupposition, just as in the pronominal case. The failure of the presupposition triggered by *too* doesn't feel quite so "catastrophic" as does failure of the pronominal presupposition, presumably because *too* is an adjunct, not one of the central functors or arguments of the clause, so that the proffered proposition it modifies can be determined without it. But without presupposition satisfaction there's clearly a hole that cannot be filled.

Note that with prosodic FOCUS, failure of the presupposition of an alternative set is also predicted to be catastrophic, but not as with pronominals (and ellipses) because we cannot determine the proposition expressed, but because we cannot "repair" the presupposition failure with accommodation:

(59) Who ate a peach?
a) MARY ate a peach.
b) #Mary ate a PEACH.

(59b) is extremely odd in the context following the question, and there's no way to readily accommodate a repair to the context to make it felicitous.

In the classical literature on presupposition cited above, the same kind of conventional CHARACTER is assigned to other, non-anaphoric presupposition triggers, as well, including the factives like *regret* and *know*. As we saw above, factives do tend to project. But they display a number of differences in behavior from the anaphoric triggers which this type of one-size-fits all account cannot explain.

Here we'll focus on the factive predicates like *know*, *discover*, and *forget*, but the same kind of argument can be made for other types of non-anaphoric presupposition triggers, as well (e.g. see Roberts 2011 on *only*). Here's a summary of what we want to explain.

Differences between factives and anaphoric presuppositions:

(a) Factives quite often fail to be presupposed in the sense that they don't impose a Strong Contextual Felicity Constraint on preceding contexts, unlike the anaphoric triggers. This is clearly the case in the following, which would amount to a pragmatic contradiction of the truth of the complement were truly entailed by prior context:

(53) I regret to inform you of the death of your goldfish.

This tendency was confirmed in fieldwork on Paraguayan Guaraní, a Tupi language, conducted by Judith Tonhauser and reported in Tonhauser et al. (2013): Factives were unlikely to impose strong contextual felicity conditions on the context of utterance, while anaphoric triggers did.

(b) Factives quite often, accordingly, fail to project, as we saw in (1) and (2) above.

(c) Failure of a factive presupposition to be entailed by prior context isn't "catastrophic", unlike the anaphoric cases. In fact, we often hardly even notice the "failure". This is usually accounted for in the classical uniform accounts to appealing to accommodation in the case of the factives and other "forgiving" triggers. Here is a comment on that strategy from Simons et al. (2011):

> As is well known, even classic presupposition triggers can be used when the presuppositions they trigger are not already in the common ground. These cases are typically treated within a common ground theory as involving accommodation — a process of "pre-updating" the context (common ground) with the presuppositional information prior to carrying out the update indicated by the sentence as a whole. Following Lewis (1979), accommodation is often treated as a kind of rescue strategy, triggered by an apparent violation of a common ground requirement. Suppose, then, that one were to extend the common ground account to projective expressions which are clearly allowed — perhaps only allowed — when their content is not in the common ground. To do this, it would be necessary to allow that accommodation is the default strategy for interpretation of these items. But this seems contrary to the standard understanding of accommodation, as a process triggered by an actual, observable, common ground constraint.
>
> There is, moreover, evidence that true common ground constraints are in fact not amenable to accommodation. Perhaps the most convincing cases of expressions which robustly require some existing shared information are anaphors, including ordinary pronouns as well as additive particles like too. These require the salience (or familiarity) of an antecedent in the common ground: (10) is felicitous only if a unique woman is salient in the common ground, thus satisfying the presupposition of the pronoun she.
>
> (10) If she didn't sleep in the hammock, I don't know where she slept.
>
> The common ground requirement of anaphors is well-known to resist accommodation (e.g. Geurts & van der Sandt 2004; Zeevat 2002; Beaver & Zeevat 2007; von Fintel 2008; Gauker 2008). Thus, in

the paradigm case of a common ground constraint, accommodation is generally ruled out. This suggests that it is conceptually problematic to treat accommodation of common ground constraints as the norm for some constructions. We conclude that common ground approaches to projection, which were developed mainly with presuppositions in mind, cannot plausibly be extended to capture projective behavior in general.

(d) There is a growing body of experimental evidence (see below) that some presupposition triggers are consistently more robust as presupposition triggers than others, in the sense of triggering the presupposition when overheard without prior context. Factives are among the least robust.

(e) Factives display cross-linguistic non-**detachability** (Grice 1967). An implication is non-detachable if it arises with near-synonyms of the trigger, suggesting that it's the meaning of the trigger itself that gives rise to the implication, and not the conventional content of the particular lexical item. Cross-linguistic non-detachability is even stronger: Factive presuppositions arise with translation equivalents in language after language, as we noted for Guaraní above. But non-detachability is supposedly a hallmark of *conversational* implicature—implicature that arises partly through the influence of context on interpretation, not *conventional* implicature—that which arises solely through the conventional content of the relevant expression.

In fact, (e) suggests another pragmatic universal:

> **The non-detachability of presuppositions**: If a lexical item *t* in language *L* triggers a notional (non-anaphoric) presupposition in one language, we expect that its translation equivalent *t′* in language *L′* will trigger the same presupposition.

Non-detachability cross-linguistically is well-attested not only for factives, but also for aspectual triggers like *stop*, with exclusives like *only*, and with clefts.

In turn, this suggests that, unlike conventional content generally, there is nothing arbitrary about being a presupposition trigger. It's not like God, designing a given human language, arbitrarily appointed certain lexical items to be the presupposition triggers: "You, you and you—you're presupposition triggers!"

This, in turn, raises an important question, one that leads us to the frontier of current work on presupposition:

> What about a particular presupposition trigger leads it to trigger the implication attested?

We cannot answer that question satisfactorily at this point. But Tonhauser et al. (2013) have offered a taxonomy of projective contents based on three different, independent diagnostics. Two of these we have already considered, the Family of sentences tests for whether content is projective, and the Strong Contextual Felicity constraint which obtains just in case failure of a presupposition to be entailed by preceding context leads to "catastrophic" results. The third test is Local Effect:

> **Local Effect**: An implication of an utterance has local effect just in case it is entailed by the local context in which it is triggered.

Recall that in embedded contexts, as in the main clause of a conditional, local context needn't equal the global context of utterance. The same obtains in the complement of a factive verb: As we saw with emotive factive *regret*, it filters out the presuppositions triggered in its complement, requiring in general only that the subject of *regret* believes them to be true, not that they be true in the global context. Hence, in that case the local context of the complement of *regret* includes the beliefs of the subject, which do not necessarily accord with the Common Ground, the global context. The same holds true of other non-factive cognitive attitude predicates, like *think* or *believe*. These examples illustrate the application of the test:

(60) Marcus is ill. Johanna regrets that <u>he</u> won't be able to accompany <u>his sister</u> to the party.

(61) Sheila thinks that Phil, <u>whom I know to be despicable</u>, is a sweetheart.

In (60), *he* triggers an anaphoric presupposition, in keeping with its CHARACTER, as sketched above. It is only felicitous in (60) because the global context of utterance makes maximally salient an antecedent appropriately referred to using masculine gender, Marcus. But this salience is not part of the meaning of the complement of *regret*, in which the trigger occurs. That is, the truth of (60) doesn't require that Johanna believes that there is a salient antecedent for *he* in the discourse in which the utterance occurs. She may not even know the discourse is on-going, let alone that we're talking about Marcus! So the anaphoric salience requirement *per se* (as opposed to the reference of the antecedent NP *Marcus*) has no local effect. This is in contrast to the implication triggered by the possessive, that Marcus has a sister; Johanna must believe that Marcus has a sister in order for the *regret* to obtain. The underlined non-restrictive relative clause in (61) triggers an implication, but it's one that also has no local effect. In order for (61) to be true, it is not required that Sheila think that Phil is despicable, underlined by the proffered content of the complement of *think*, whereby she takes Phil to be a sweetheart. So the appositive non-restrictive relative also has no local effect.

Compare (62):

(62) Moisha believes that Chris has stopped drinking wine for breakfast.

Recall that *stop* normally presupposes that the state described by its complement obtained just prior to the stoppage. Here, in the complement of non-factive *believe*, the truth of the complement 'Chris has stopped drinking wine for breakfast' fails to project. But still, for (62) to be true it must be the case that Moisha believes that Chris has been drinking wine for breakfast, i.e. the telic pre-state of *stop* must be locally true, in Moisha's belief state.

The following table offers a taxomomy based on these tests:

Diagnostics:	(1) FAMILY OF SENTENCES	(2) CONTEXTUAL ENTAILMENT	(3) LOCAL ENTAILMENT	Class
Properties: Contents:	Projective	Strong Contextual Felicity	Local Effect	
salience presuppositions	✓	✓	X	D
appositive, expressive	✓	X	X	B
factive complement, telic pre-state, prejacent of *only*	✓	X	✓	C

Table 1: Taxonomy of projective meanings
after Tonhauser et al. (2013)

This helps to bring into focus how what was once viewed as a homogenous class—the class of presupposition triggers, taken to be the same as the class of triggers of projection, actually is fairly diverse. And it leads us to think that when we fully understand how these properties arise, the CHARACTER of a projective trigger in Class B or C may differ from the kind of CHARACTER we sketched for *he* above.

6. FOCUS and projection

We can say something more about the way that prosodic FOCUS affects projection. Consider again these examples, repeated from above:

(51) Paula isn't registered in PARIS (Kratzer 1989)
(52) PAULA isn't registered in Paris.

Recall the discussion in lecture 2 about how the presupposition associated with FOCUS arises in English:

- Some constituents in an utterance are marked with the feature F (for FOCUS).
- Each constituent has a set of focal alternatives: the set of values obtained by ranging over all possible values for any F-marked sub-constituents and plugging those into the compositional semantics for the remainder of the constituent.
  If there's no F-marked sub-constituent, the constituent's focal-alternative set will be a singleton containing only its ordinary denotation.
- In any given utterance, there's one or more **focal frames**,[5] constituents marked with the operator ~. The operator ~ triggers a presupposition: there is a salient set of alternatives of which is a sub-set of the set of focal alternatives of the focal frame, and is such that the ordinary semantic value of the focal frame is a member of that set.

Let's assume that the logical forms (51) and (52) are as follows:[6]

[5] Rooth doesn't use the term *focal frame*, which is due to Truckenbrodt (1995). But the latter uses it to refer to Rooth's ~-annotated constituent.
[6] I only annotate these constitutes with "S", for *sentential* constituent. The exact status of the internal constituency of a clause (CP) containing negation is irrelevant to the discussion here.

(51′) $[_{S1}$ not $[_{S2}$ Paula is registered in $\text{Paris}_F\,]^{\sim}\,]$
(52′) $[_{S1}$ not $[_{S2}\ \text{Paula}_F$ is registered in Paris $]^{\sim}\,]$

They each have the same focal frame S_2, to which the ~ operator is adjoined, and differ only in the location of the FOCUSed constituent. Then following the informal derivation above, we get the following focal alternatives:

(51″) {Paula is registered in x | x is a location}
(52″) {x is registered in Paris | x is a person}

Each is a set of propositions containing the proffered, "ordinary" semantic content of S_2 as one of its members. There may be other, contextually suggested restrictions on the values for *x*: We may be talking about the set of three cities Paula was supposed to visit on her trip, and then (51) might be followed up with *Then perhaps you ought to try Barcelona and Lecce*. Or we might be talking about the three people we expected might visit Paris, following up (52) with *Well, perhaps Sharon or Giorgio are there*. But note that in each alternative set, each alternative includes some value for *x*: the alternatives in (51″) each entail that Paula is in some particular location, those in (52″) that some particular person is in Paris.

Technically, each of these alternative sets is a question: A question, recall, is a set of propositions, each of them intuitively one complete answer to the question. So the question in (51″) can be expressed as *Where (among the relevant locations) is Paula?*, that in (52″) as *Who (among the relevant individuals) is in Paris?* Then because each alternative in (51″) entails the existence of someplace Paula is, we can say that the question itself entails that there is some location *x* such that Paula is at *x*. And similarly, (52″) entails that there's someone in Paris.

But now notice that taking the focal structure of the utterances to be as given, we've predicted the attested presuppositions: (51) presupposes that Paula's somewhere because the focal presupposition (under the assumed focal frame) itself is a question that presupposes she's somewhere. (52) presupposes that there is someone in Paris because the focal presupposition (under the assumed focal frame) itself is a question that presupposes that someone's there.

Similarly, if we take the focal frame for the antecedent in (50) to be as follows:

(50′) If [Hans nodded $\text{slowly}_F\,]^{\sim}$ he's not in full agreement

Then the antecedent clause via its focal structure presupposes that Hans nodded in some way, thus that he nodded. Since, as we saw in Karttunen's rules, the antecedent of a conditional is a hole to presuppositions (its local context is its global context), this presupposition projects in the sense that it can only be satisfied globally. That is, this is only felicitous if the question of how Hans nodded is relevant and salient, which it will be if that is the QUD. But if we change the focal structure to (50″):

(50″) If [Hans $[\text{nodded}]_F$ slowly $]^{\sim}$ he's not in full agreement

then the presupposed question is ‘what did Hans do slowly?’, which fails to entail that Hans nodded, so that the only implication that projects is that Hans did something slowly. And if we change it to (50′′′), to derive the alternatives we abstract on the VP to derive the set of alternatives corresponding to the question ‘what did Hans do?’:

(50′′) If [Hans [nodded slowly]$_F$]$^{\sim}$ he’s not in full agreement

We can apply the same kind of analysis to examples involving narrow FOCUS in the complement of a factive, as in (63) (from Simons et al. 2015):

(63) A: James just found out that Harry’s having a graduation party, and I just can’t understand why he’s so upset about it.

B: He didn’t find out that HARRY’s having a graduation party,…
L+H* L-H%

(i) … he found out that HARRIET is having a graduation party, and HARRIET is his best friend.
(ii) … Harry certainly ISN’T having a graduation party.
(iii) . . .Harry IS having a party, but James doesn’t know about that one.

If *found out*, typically considered a factive, conventionally triggered a presupposition of the truth of the complement, it should still project in this case. But it clearly does not, as the felicity of (ii) argues. However, (63) does carry a focal presupposition. Suppose that, as with earlier examples, we take the focal structure of (63) to involve adjoining ~ just under the scope of negation in the main clause.

(63′) [not [James found out that Harry$_F$ is having a graduation party]$^{\sim}$]

Abstracting over the FOCUS in the focal frame, we derive the question ‘what is the value of *x* s.t. James found out that x is having a graduation party?’. This question (and hence the focal structure of (63′)) implicates that there is someone who satisfies the description ‘the person who James just found out is having a graduation party’. But the question doesn’t entail that *Harry*’s having a party. If we *don’t* assume that *found out* conventionally triggers a factive presupposition, then the focal presupposition derived in this way correctly predicts what’s implicated. Calling into question the value of *x* in this (indirect) way, in combination with the proffered denial that the correct value for *x* is Harry, implies that it may not even be true that Harry’s having a party. (Though do note that it doesn’t entail that Harry *isn’t* having a party—one might follow up with (iii) instead of (ii).) Hence, in this type of case, with narrow focus in the complement to the factive, a theory that explains the presuppositions associated with factive verbs by pragmatic means makes better predications—is empirically superior—to a theory that uses conventional triggering.

Similarly, narrow focus on factive *know* in (64) (also from Simons et al. 2015) also leads to a cancellation of any factive presupposition that might otherwise be associated with it:

(64) A: Putin is a straightforward, trustworthy guy.
B: Why do you say that?
A: George Bush said so.
B: Yes, but <u>Bush didn't KNOW he was a straightforward trustworthy guy</u>…
L+H* L-H%
(i) …He just BELIEVED it, or maybe HOPED he was.
(ii) … He's not!
(iii) He IS, but Bush had no reason to think so.

Here the underlined clause with narrow focus on *know* presupposes the question 'What (cognitive) relation did Bush bear to the proposition that Putin was a straightforward trustworthy guy?'. This, in turn, suggests a range of cognitive relations, including those suggested in (i). But not all of these entail the truth of their complement—in fact neither *believed* nor *hoped* does so. So the resulting question itself doesn't entail the truth of the complement of *know*. Then, in accord with our intuitions, the purported presupposition of *know* that its complement is true fails to project, as we see in the felicity of B's follow-ups in (ii) and (iii).

It thus follows straightforwardly from the account of the pragmatics of prosodic FOCUS in lecture 2 that we get the attested existential presuppositions in the examples just considered—that Harry found out someone is having a party, that Bush bears some cognitive attitude toward Putin. But this by itself doesn't explain why the canonical factive presuppositions *fail* to project, *unless* we assume that those presuppositions arise not because they are conventionally triggered, but because something about the meaning of the verbs themselves tends to lead to the assumption that the complement is true, even under negation, interrogation, etc., *when contextual conditions are right.* On such an account, the presupposition of the complement of a factive, with consequent projection, is a function of pragmatic factors, including prosodic focus and (according to Simons et al. 2015) RELEVANCE to the QUD. Simons et al. §4.3 offer an account of how the factive implication arises when we hear the utterance out of the blue, with carefully controlled prosodic properties of the utterance. For the story to be fully satisfactory, it would be necessary to show how to generalize it over all the factives, to explain both why they are factive in English and why this seems to be notional, in the sense of somehow adhering to what it is to stand in the particular relation denoted to some proposition. Only then could we take the question of how factive presuppositions are triggered to be satisfactorily explained.

7. <u>Language universals pertaining to presupposition and projection</u>

Recall that in discussing Karttunen's rule schemas for presupposition projection, we noted that they might best be understood (in contemporary terms) as reflecting ways in which the global context of utterance can be updated in the course of interpretation in such a way that the local context for interpretation of the remainder of the utterance is richer than the global context. This is the case when a construction *filters* presuppositions: What's really going on is that, as in the

conjunctions, conditionals, and disjunctions, the first clause interpreted (first conjunction or disjunction, antecedent of the conditional) updates the global context by adding its content (or, for a disjunction, the negation of its content) in such a way as to yield a richer local context for the interpretation of the second clause, a local context that may satisfy presuppositions of that clause in a way that the global context could not. This leads me to conjecture the following pragmatic universal, based on information in the literature and my own experience in working with presuppositions in various languages:

> **Projection pattern universal**: The patterns of projection and filtering captured by rules like Karttunen's (1983) and are attested across languages.

If this proves to be a robust generalization, as I expect it will, then the hypothesis that will explain it is that **patterns of presupposition projection are reflections of the way that context changes in the course of interpretation**. This was the central insight due to Heim (1983), reflected both in her Context Change Semantics (Heim 1982) and the Discourse Representation Theory (DRT) of Kamp (1981). There are other features of those accounts which have been shown to be problematic; but to date, it seems to be generally accepted that the correlation between rules for context change and projection patterns is quite robust.

We'll consider further the notion of context update in lecture 4, in the discussion of anaphora. But note here that the projection pattern universal and the proposed explanation from context update make a strong prediction:

> We will not find a language in which the translation counterparts of an English filtering construction fail to serve as a filter in the same way.

There are other conclusions, or hypotheses, we might draw from the data considered above (suitably verified by all members of the classes of triggers considered). It seems that triggers for projection can either arise conventionally (the functional triggers for anaphora or conventional implicature, classes B and D in the taxonomy in Table 1 above) or (at least partly) conversationally (the notional triggers, class C). Both types lead to projection, but only the anaphoric triggers impose a strong contextual felicity constraint on prior context—requiring that it provide an antecedent. And when that constraint is violated, and the anaphoric presupposition cannot be satisfied by resolving the intended antecedent, the result is catastrophic. And only the notional triggers in class C have local effects. So it's an empirical matter, for a given projection trigger to determine whether it arises purely conventionally or partly as a function of contextual factors.

We might say what the broader class of presuppositions which includes both the notional and the anaphoric have in common intuitively is that in some sense they, as well as the Conventional Implicature triggers for projection in class B, all seem to be taken for granted by the speaker, an idea that is wide-spread in the literature:

- "So the supposition must be not that it is common knowledge but rather **that it is noncontroversial**, in the sense that it is something that you would expect the hearer to take from you (if he does not already know)." (Grice ([1970] 1981: 190)

- "Presuppositions ... are something like the background beliefs of the speaker -- propositions whose truth he takes for granted, or seems to take for granted, in making his statement." (Stalnaker 1974: 198)
- "...a presupposition is a proposition that is conveyed by a sentence or utterance but **is not part of the main point**..." (Horton & Hirst 1988: 255)
- "To presuppose something is **to take it for granted** in a way that contrasts with asserting it." (Soames 1989: 553)
- "([A]n utterance of) a sentence S presupposes a proposition p if (the utterance of) S implies p and further implies that p is somehow already part of the background against which S is considered, that **considering S at all involves taking p for granted**." (Chierchia & McConnell-Ginet 1990: 280)

Stalnaker called the class of presupposition triggers he considered (1972, 1973, 1974, 1998), which did not include the anaphorically triggered presuppositions or the conventional implicatures, **pragmatic presuppositions**, and said that an implication of an *utterance* is a pragmatic presupposition just in case the speaker in making the utterance assumes that the implication is entailed by the interlocutors' Common Ground. But we have seen that that is too strong, as not all presuppositions carry Strong Contextual Felicity (see also Matthewson 2006, Tonhauser et al. 2013). But what does it mean to be taken for granted in this sense?

One thing we can say is that instead of being *pre*supposed, the implications of interest are merely *supposed*, i.e. taken for granted in the sense of assumed to be true by the speaker at the time of utterance, without being *proffered* in the sense discussed in lecture 2. This is important in addressing the pragmatic universal proposed above, repeated here:

> **The non-detachability of presuppositions**: If a lexical item *t* in language *L* triggers a notional (non-anaphoric) presupposition in one language, we expect that its translation equivalent *t′* in language *L′* will trigger the same presupposition.

As Matthewson (2006) shows for St'át'amcets and Tonhauser et al. (2013) for Guaraní, this universal can only be upheld if we understand presuppositions as not necessarily having a strong contextual felicity condition.

Recall that in order for an utterance to be felicitous, its proffered content must be RELEVANT to the QUD at the time of utterance. What we saw in the previous section in considering the way that prosodic FOCUS interacts with notional presupposition triggers to yield (non)projection is that the triggered implication projects just in case it is entailed by all the possible answers to the question—is taken for granted by the QUD. If it is not, as in cases involving narrow focus within the complement of a factive or on the factive trigger itself, then the implication fails to project.

Since notional presuppositions arise as a function of the character of the underlying notions, and hence are pragmatic (a function of world knowledge), it should not be surprising that whether they project might be influenced by pragmatic factors as well. This behavior differs from functional projection triggers like anaphoric elements and CI triggers, i.e. types of expression whose anaphoric or backgrounded (conventional implicature) content has no local effect and

whose *function* is to either connect with prior context (anaphoric) or to contribute content which is orthogonal to what's under discussion (conventional implicature).

As we saw in the previous section, the projection of the canonical presuppositions of notional triggers may be partly a function the FOCAL structure of the utterance in which the trigger occurs. Then recall what we observed in lecture 2:

> **FOCUS pragmatic universal**: The FOCAL structure of an utterance presupposes the relevance of a congruent alternative set. Among other things, this constrains what questions the utterance can felicitously address.

Then the following hypothesis would explain the observed effects of prosodic FOCUS on notional presupposition triggers like the factives:

> Hypothesis:
> The QUD determines what's at-issue in a particular context of utterance: content which addresses the QUD.
> What's taken for granted by a speaker (presupposed or conventionally implicated) is not at-issue, and what's at-issue is not taken for granted.
> Projective content is not at-issue. (Simons et al. 2011; Simons et al. 2015)

Observations in several languages seem to support this conjecture (Simons 2010, Beaver 2004, Abbott 2006, Abusch 2010, Abrusán 2011, Tonhauser et al. 2013), and recently this claim has been supported by experimental evidence for English (Xue & Onea 2011; Smith & Currie Hall 2011, to appear; Jayez & Mongelli 2013, Cummins & Amaral (2013), Cummins, Amaral & Katsos (2013), Jayez, Mongelli & Reboul 2015; Beaver & Tonhauser 2015; Tonhauser et al. 2015).

The difficulty is that such an approach to what projects and why has to explain why there is such a strong *tendency* for factives to project, at least when encountered out of the blue (in citation form), as they are so often presented in the literature.

In the next lecture, we turn to a more careful consideration of the anaphoric triggers involved in reference: pronouns, definite descriptions, and other referential Noun Phrases (NPs).

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