

Deriving Some Properties of Protasis-Referring Conditionals

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This work focuses on a class of conditionals which I will here term PROTASIS-REFERRING CONDITIONALS. The most common variant is shown in (1).

- (1) a. Felix would hate it if we got lost.
- b. It might amuse Gretchen if Felix danced a jig.
- c. It would wonderful if the tacos were tasty.
- d. Gretchen would be happy if the fog lifted.

The pronoun in the conditional consequent may take any number of interpretations. The interpretation of interest here is the protasis-referring reading, in which the pronoun appears to refer to the propositional content of the *if*-clause. Under this reading, the propositional content of the *if*-clause is interpreted as an argument of the consequent predicate. This is paraphrasable as follows:

- (2) Felix would hate that we got lost if we got lost.

In §1, I will show that the protasis-referring reading has a number of unusual properties which are not present under other readings of the conditional. In §2, I will present the classic type of analysis for these conditionals, what I term the MOVEMENT ANALYSES. Under these analyses, the *if*-clause is at some point an argument of the verb. I will show that movement analyses do not adequately account for the unusual properties associated with the protasis-referring reading. In §3, I will introduce a second type of analysis, which I term the QUANTIFICATIONAL ANALYSIS. Under a quantificational analysis, the *if*-clause functions as the restrictor of a tripartite quantificational structure. The pronoun sits within the nuclear scope, and is bound by the adverbial of quantification.

1. Properties of Protasis-Referring Conditionals

Under the protasis-referring reading, a sentence like (3-a) may be paraphrased as (3-b). Pre-theoretically, it seems as if the “non-quantificational” content of the *if*-clause is interpreted as an argument of the consequent predicate (Pesetsky 1991).

- (3) a. Felix would like it if the kitten were snuggly.
- b. Felix would like that the kitten was snuggly if the kitten were snuggly.

The protasis-referring reading has a number of properties which are not shared by the standard conditional readings. We will be concerned with two particular properties here, both of which look a great deal like lexical selection of the consequent predicate for the *if*-clause: The unavailability of certain predicates in the consequent and NPI degradation in the *if*-clause in protasis-referring conditionals occurring with certain predicates in the consequent clause. I will show that the quantificational analysis of these conditionals accounts for the unavailability of certain predicates far more neatly than copy analyses. I will also show that the quantificational analysis provides a more solid base for understanding the NPI degradation.

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I will first discuss the unavailability of certain predicates in the consequent. Not every predicate may appear as the consequent predicate under a protasis-referring reading. We will discuss several classes here:

- (4) *Antifactive predicates*
- a. *Gretchen would demand it if the tacos were tasty.
 - b. *Gretchen would want it if the fog lifted.
- (5) *Possibility predicates*
- a. *It would be likely if the tacos were tasty.
 - b. *It would be impossible if the fog lifted.
- (6) *Claim-class predicates*
- a. *The news would claim it if the sky had turned orange over Gilroy today.
 - b. *Scientists would posit if aerosols reflected more red light.

Note that these are only ungrammatical under the protasis-referring reading. If *it* refers to some other contextually salient object (*delicious horchata*, *sunscreen*, *that the apocalypse is coming*, or *that sunsets in polluted places are redder*, for example), the examples above become perfectly licit.

The discussion in the literature surrounding this interaction is somewhat limited; the majority of the discussion may be found in Pesetsky 1991, who claims that only predicates which fall into certain syntactic classes may appear in the construction—in particular, predicates which require certain types of complementizers in their complements. I will present an alternative view here, focusing on the lexical semantics of the predicates, and not syntactic selection. What unites these unavailable predicate classes, I claim, is the type of requirement they place on the preceding discourse in order to be used felicitously. An utterance of *demand/be likely/claim that p* requires that *p* has not been accepted in the discourse. Let us move through these three classes quickly, and then compare them to verbs of speech and factive verbs.

Antifactives—a class which I take to include verbs like *demand*, *plan*, *contrive*, *propose* and *request*—are a class of future-oriented desire and preference predicates. All of these predicates presuppose that their complements are not presupposed at the event-time of the predicate, and either presuppose or implicate that their complements are in fact false at event-time.¹ We see this in (7), where *demand* is illicit if the complement is assumed true at event-time; it is perfectly licit if the complement is realized after event-time.

- (7) a. #Max's tacos are tasty. He demands that his tacos be tasty.
 b. Max demanded yesterday that his tacos be tasty, and his tacos are indeed tasty.

It is useful to contrast the antifactives with a predicate of preference such as *prefer*, which does not seem to have the same type of future-orientation as the antifactives. *Prefer* is perfectly compatible with one's preferences already being realized, and may appear as the consequent predicate in a protasis-referring conditional:

- (8) a. Max's tacos are tasty. He prefers that his tacos be tasty.
 b. Max would prefer it if his tacos were tasty.

We can summarize this difference as a requirement on the preceding discourse: Antifactive predicates presuppose that none of the worlds in the common ground are *p* worlds, and either implicate or presuppose that all of the worlds in the common ground are $\neg p$ worlds.

The next set of predicates, possibility predicates, includes predicates such as *be possible*, *be impossible*, *be certain*, *be likely*, and *be unlikely*. These predicates do not have the same strong implicature or presupposition that all the worlds in the common ground are $\neg p$ worlds. However, we still see that these predicates do not allow their complements to be presupposed at the event-time of the predicate; we again have a presupposition or implicature that at least one world in the common ground is $\neg p$. This is shown by the strangeness of (9), where an assertion of *p* cannot be followed by an assertion of *possible that p*.

- (9) #The tacos are tasty. It is possible that the tacos are tasty.

¹Whether or not the complement is presupposed or implicated to be false is not important for our purposes here.

It is important to note that this is not a postsupposition. It is perfectly licit for a statement *be possible that p* to be followed with affirmation of *p*.

- (10) It is possible that the tacos are tasty. In fact, the tacos are indeed tasty.

What is important here is that at the time of the possibility statement, *p* is not presupposed—it is only after the possibility statement that the truth of *p* is then accepted.

The last class of predicates that I will discuss are the *claim*-class predicates, a class I take to include *claim* and *posit*. Like the possibility predicates, these predicates allow their complement to turn out to be true—they may, in fact, be used to argue for the truth of the complement:

- (11) Scientists posit that sunsets are redder now because of pollution. It must be true, then, that sunsets are redder now because of pollution.

However, these predicates may also be used to argue for the falsity of their complements, depending on how reliable we consider the claimant:

- (12) The meteorologist claims that it rained today in Ben Lomond. It must be false, then, that it rained today in Ben Lomond.

In addition, these predicates have a further unusual property: They are generally infelicitous if used with a complement whose truth is already widely known, as shown in (13).

- (13) a. #Max claims that Obama is president of the United States.
b. #Gretchen posits that the earth is round.

This cluster of properties, I propose, shows us something about the status of the complement to these predicates. Unlike antifactive and possibility predicates, which either implicate or presuppose $\neg p$, *claim*-class predicates do not require $\neg p$. In fact, I propose that *claim*-class predicates presuppose that neither $\neg p$ nor *p* is presupposed. Rather, *claim*-class predicates are used when the question whether *p* is under discussion.² When used in a context in which either *p* or $\neg p$ is already assumed, they are infelicitous.

Given this brief discussion, we can see one core commonality between the types of predicates which are not compatible with a protasis-referring reading of a conditional: These predicate classes cannot be used if their complements are presupposed. This is in contrast to the factive predicates, which necessarily presuppose their complements, and to many predicates of speech, which allow their complements to be presupposed:

- (14) a. Max is late. Gretchen hates that Max is late.
b. Max was late. Gretchen mentioned that Max was late.

The factive predicates and many verbs of speech allow their complements to be accepted prior to event-time; they may be used when the complement has just been accepted or is widely known. These predicates are also compatible with a protasis-referring reading of the conditional:

- (15) a. Gretchen would love it if the fog lifted.
b. Max would mention it if he were tired.

The differences between the protasis-referring reading and the standard conditional reading do not end with the types of predicates available in the consequent. As mentioned, NPIs are degraded in the *if*-clause when certain predicates appear in the consequent. These predicates are uniformly predicates of positive affect. The distinction between predicates of positive affect and predicates of negative affect or no affect is shown in (16).

- (16) a. I would hate it if anyone touched the painting.
b. I would mention it if anyone touched the painting.
c. *I would love it if anyone touched the painting.
d. *I would prefer it if anyone touched the painting.

²In the terminology of Farkas and Bruce 2010, *p* is *on the table*.

The distinction also holds when the *if*-clause appears in the pre-clausal position, although the effect is less strong here:³

- (17) a. If anyone touched the painting, I would hate it.
 b. *?If anyone touched the painting, I would love it.
 c. *?If anyone touched the painting, I would prefer it.

It is interesting to note that affective predicates are also split with regard to licensing of NPIs in their complements. It has been known since at least Klima 1964 that negative affective predicates are capable of licensing NPIs in their complements, and that positive affective predicates are not:

- (18) a. Max hates that Gretchen bought anything.
 b. *Max likes that Gretchen bought anything.
 c. *Max prefers that Gretchen bought anything.

Pesetsky (1991) takes this division to be at the heart of the NPI licensing data: If a predicate like *hate* in some way takes the *if*-clause as a complement, then we will expect to see NPIs licensed in the *if*-clause. If a predicate like *love* in some way takes the *if*-clause as a complement, then we expect to see NPIs being degraded in the *if*-clause.

At first glance, then, both the lexical compatibility restrictions and the restrictions on NPI licensing look quite like what we typically think of as lexical selection effects. The restrictions on what predicates may appear in the consequent could be seen as a result of only some predicates selecting for *if*-clause complements. Likewise, the quick sketch we have seen of the NPI licensing data suggests that the presence of a predicate of positive affect in the consequent of a protasis-referring conditional will cause degradation of an NPI in the *if*-clause. Again, this looks quite a bit like actual lexical selection.

2. Movement Analyses of Protasis-Referring Conditionals

There is a strain of analysis in the literature, beginning with Pullum 1987 and continued in Postal and Pullum 1988 and Pesetsky 1991, which takes the lexical selection effects at face value. These analyses propose that the *if*-clause is directly related to an argument position of the predicate through movement. I will discuss each analysis and some issues for the analyses in turn.

I will discuss Pullum 1987 only in brief, as he notices (but does not analyze) the NPI data and does not discuss the predicate restrictions. In Pullum's analysis, the *if*-clause begins as an argument of the predicate. It then undergoes rightward movement to adjoin to a higher phrase, with its trace spelled out as an expletive pronominal. This is in some ways very seductive: Our data that looks as if it is lexical selection can very easily be treated as lexical selection.

However, there are numerous issues with a movement-and-expletive analysis. Due to issues of space, I will discuss only two here, and briefly; the reader is referred to Thompson 2011 for further detail. Both issues that I discuss here are centered around *it*, which Pullum claims is expletive.

The first issue is cross-linguistic. English expletive and referential pronouns are not easily distinguished; they are morphologically identical and can appear in the same positions. For our purposes here, we will examine French, a language which morphologically distinguishes the expletive and referential pronouns. Both expletive *il* and referential *ce/ça* may be seen accompanying a *that*-clause. However, only *ce/ça* can appear alone as a sentential anaphor (Steriade 1981):

- (19) a. Il est tragique qu'elle soit partie.
 "It is tragic that she left."
 b. *Il est tragique.
 c. C'est tragique, qu'elle soit partie.
 "It is tragic that she left."
 d. C'est tragique.

Interestingly, only referential *ce/ça* may accompany a *if*-clause in a protasis-referring conditional:

³Pesetsky 1991 holds that NPIs in pre-clausal *if*-clauses are not degraded with positive affective predicates. However, the judgments of most speakers seem to be that the NPIs are poor, though not as poor as the post-clausal variant.

- (20) a. *Il serait tragique si elle était partie.
 b. Ce serait tragique se elle était partie.
 “It would be tragic if she left.”

If we wish to preserve any type of cross-linguistic similarity between English and French, then French casts doubts on an expletive analysis for the pronoun in the protasis-referring reading. Thompson (2011) shows that evidence from German also suggests that the pronoun in the protasis-referring reading is not expletive.

The next issue for Pullum regarding *it* is not a problem about *it* itself. Rather, it is the ability of non-expletive anaphora to participate in protasis-referring conditionals. Demonstratives may appear in protasis-referring conditionals, as may *so*-anaphora:

- (21) a. If we had a cheese plate in the room right now, that would be awesome.
 b. If unicorns existed, this would be wonderful. Pullum 1987
- (22) He would say so if he understood.

Most intriguing is the ability of null complement anaphora (NCA) to appear with a protasis-referring reading. This is a subtle distinction, but is illustrated in the examples in (23). (23-a), with the adjective *happy*, has two readings. On one reading, Gretchen is generally happy due to the existence of unicorns. On the other reading, Gretchen is generally unhappy; however, she is specifically quite pleased with the existence of unicorns. Adjectives which do not take NCA, such as *cheerful*, exhibit only the first reading, shown in (23-b).

- (23) a. Gretchen would be happy if unicorns existed.
 b. Gretchen would be cheerful if unicorns existed.

Given an analysis where the moved *if*-clause is spelled out as a pronoun, two possibilities arise. The first is that protasis-referring readings have two distinct derivations: One with movement and an expletive *it*, and one with a base-generated anaphoric element which receives its interpretation from the base-generated adverbial. Under this analysis, it is unclear why sentential *it* would be barred from the latter type of derivation. The other possibility is that the trace might be variably spelled out as a pronoun, demonstrative, NCA, and so on and so forth. However, this is problematic as well. Rightward movement of the *if*-clause would have to result in the presence of a feature on the trace such as [+dem], [+NCA], [+so], and so on, which could then trigger the appropriate morphology and semantics. However, it is completely unclear how these features would come into being, and why these features coincidentally produce already-existing sentential anaphora instead of new and special forms.

There are, then, some rather large problems for any movement-and-expletive analysis of protasis-referring conditionals. However, not all movement analyses fall prey to the difficulties in Pullum’s analysis. Pesetsky 1991 proposes that protasis-referring conditionals do not involve movement from an argument position; rather, they involve post-syntactic⁴ copying into an argument position. Under Pesetsky’s analysis, the pronoun is essentially a covert *that*-clause:

- (24) *If-Copying Rule* (IC) Pesetsky 1991, p.82
- a. Take a clause *k* of the form [*IF* IP], where *k* modifies a sentence Σ .
 b. Copy *k* as *k'*, substituting *that* for *IF*, making appropriate change to mood so as to replace irrealis with realis mood marking.⁵
 c. Place *k'* in an argument position of Σ . Leave *k* as an adjunct modifier. (It gets interpreted as a restrictive clause, with Σ the nuclear scope.)
 d. *k'* is factive.

In addition, Pesetsky proposes two generalizations regarding the interactions of verbs and IC. Particularly important for our discussion here is the generalization in (25), which governs the behavior

⁴Technically a post-LF operation; the If-Copying Rule results in a violation of the Projection Principle, which Pesetsky takes to hold at LF. Therefore, the operation must be a post-LF, pre-semantic representation level. The implications of such a level are not discussed by Pesetsky.

⁵Pesetsky does not discuss how a blind grammar is to implement this.

of verbs such as *believe*. This generalization essentially states that verbs such as *believe* do not undergo the copying rule; rather, their complements are complements at deep structure.

- (25) *Non-factive Generalization* Pesetsky 1991, p.87
 For *F* a CP, if a [-factive] predicate selects *F* or its copy as a complement at a level after IC, then *F* is in complement position at deep structure.

I will here discuss two major problems for the analysis, both of which involve the data discussed in §1: Lexical distribution and NPI licensing. Again, I will first discuss the lexical distribution data, as the main objective of Pesetsky's work is to account for the types of complements which various predicates take. The first objection one can make to the analysis is a minor one. The fourth part of IC states that the copied *that*-clause must be factive, thereby ruling out any predicate which is incompatible with factive clauses—for example, our earlier *demand* class. This certainly does the trick. However, it is not particularly satisfactory; the antifactivity effect is essentially stipulated, and does not fall out from the rest of the analysis. I contend that this effect can be made out to fall out from the rest of the analysis, and will show how this may be done in §3.

The second issue is a far more serious one. Pesetsky's non-factive generalization states that no non-factive verb may appear in a protasis-referring conditional. For Pesetsky, whose verb classifications are largely syntactic, this includes verbs such as *know* and *believe*. Both predicates occur felicitously in protasis-referring conditionals:

- (26) a. Felix would believe it if the world were flat.
 b. Felix would know it if the world were flat.

One might remove any issues with *know*, since the verb is standardly considered to be part of the semantic class of factives. However, *believe* is not semantically factive, nor is its syntax similar to the syntax of many factives. It is solidly within the non-factive class—and yet occurs in protasis-referring conditionals. In fact, Pesetsky's non-factive class seems to be rather split. Some non-factives, such as *believe*, *know* and *understand*, appear in protasis-referring conditionals. The majority—predicates such as *imagine*, *reckon*, and *claim*—do not allow the protasis-referring reading. It is therefore not possible for Pesetsky to merely cast away the generalization.

The second major problem for Pesetsky is the set of predictions made regarding NPI licensing. The IC is originally conceived in order to account for the strange distribution of NPIs noted in §1. The copied *that*-clause no longer appears under *if*, which Pesetsky takes to be an NPI-licensing element. However, it still contains an NPI. When the *that*-clause is copied as the complement to a predicate like *hate*, the unusual NPI licensing abilities of *hate* will allow the NPI to be licensed in the covert *that*-clause. Therefore, NPIs appear in sentences like (27-a). However, if the *that*-clause is copied as the complement to a predicate like *love*, the NPI will not be in the scope of a licensing operator; therefore, the entire sentence will crash, and examples such as *love* are predicted to be ungrammatical.

- (27) a. I would hate it if anyone touched the painting.
 b. *I would love it if anyone touched the painting.

This analysis is satisfactory when the view is limited to predicates like *love* and *hate*. However, protasis-referring conditionals are limited neither to emotives nor factives; they may appear with a fairly wide variety of predicates. This includes predicates such as *mention*, which do not license NPIs in their complements. However, *mention* is perfectly licit in a protasis-referring conditional containing an NPI in the *if*-clause:

- (28) a. *Felix mentioned it that anyone touched the painting.
 b. Felix would mention it if anyone touched the painting.

This is not predicted under Pesetsky's analysis. Since *mention* does not license NPIs in its complements, it should fall prey to the same difficulties that *love* falls prey to. In fact, the majority of predicates should fall prey to these difficulties; any predicate which is not a predicate of negative affect should not be able to appear in a protasis-referring conditional with NPIs in the *if*-clause.

A second difficulty for Pesetsky's analysis is that the data are sometimes more nuanced than they appear at first glance. The examples in (29) are particularly troublesome for Pesetsky; *love* should cause the NPI to be unlicensed under his analysis. However, it is perfectly licit.

- (29) a. Felix would love it if he ever won the lotto.
b. *Felix loved that he ever won the lotto.

We see, then, several problems for this analysis. The analysis underpredicts which predicates may appear in the construction; it also underpredicts which predicates are compatible with NPIs in the *if*-clause.

3. The Quantificational Analysis

I now propose an analysis which takes a quite different tack from previous analyses of these conditionals. Rather than relating the *if*-clause to its argumental correlate via movement, I propose that they are related by quantification (following, in this regard, the analysis of *every time*-clauses in Rothstein 1995). I will then show how this type of analysis easily accounts for the types of predicate restrictions we see, and how it affords a better foundation for understanding the NPI licensing data.

The analysis assumes a tripartite quantificational structure for conditionals (Lewis 1975, Kratzer 1986). The *if*-clause serves as the restrictor of a (potentially covert) adverb of quantification, while the main clause content serves as the nuclear scope of the quantification. I will represent this as quantification over situations here, as they give a useful flexibility; however, use of other types (worlds, events, and so forth) is certainly possible. I claim that what distinguishes a protasis-referring conditional from other conditionals is the content of the anaphor in the conditional consequent. I propose that under the protasis-referring reading with the neuter pronoun, the pronoun is bound by the adverb of quantification. This may be described as in (30) and (31).

$$(30) \quad \forall s [s \in p \wedge s \in \text{BEST}_{<}(p)] q(s)$$

- (31) a. It would be wonderful if the fog lifted.
b. $\forall s [s \in \text{the fog lifts} \wedge s \in \text{BEST}_{<}(\text{the fog lifts})] \text{wonderful}(s)$
c. $\text{BEST}_{<}(p) = \{s \in p: \neg \exists s' \in p(s' <_s s)\}$

An English description would be “For all situations *s* such that the fog lifts in *s* and *s* is in the closest possible world(s), *s* is wonderful.”

Let us now see how the analysis here deals with the restrictions on predicate types. Recall that we had one overarching generalization regarding the types of predicates which may appear in the consequent of a protasis-referring conditional: Compatible predicates allowed their complements to be presupposed. Incompatible predicates, such as *demand*, *be possible*, and *claim*, required that their complements were not in the common ground—i.e., *demand/be possible/claim that p* requires that none of the situations in the common ground are *p* situations.

Since the compatibility is defined relative to the discourse, it is necessary to understand the state of the discourse when the conditional consequent is evaluated. The consequent forms the nuclear scope of the adverbial quantification. The nuclear scope is evaluated against the situations described in the restrictor. For the purposes of the discourse, the situations described in the restrictor are temporarily accepted into the common ground (see Isaacs and Rawlins 2008 for one way of working this out formally). In the case of a protasis-referring conditional, reference is made again to the now-presupposed situations.

The effect may be made concrete by going through some examples in detail. Let us focus first on (32).

- (32) *Max would demand it if the tacos were tasty.
 $\forall s [s \in \text{the tacos are tasty} \wedge s \in \text{BEST}_{<}(\text{the tacos are tasty})] \text{demand}(M, s)$

In (32), *the tacos are tasty* is *p*. The situations in the restrictor exemplify *p*—i.e., they are situations in which the tacos are tasty. These situations are temporarily accepted into the common ground for

the purpose of evaluating the conditional. This makes p presupposed. Under a non-protasis-referring reading, where no reference is made to p in the nuclear scope, we would expect (32) to be fine. This is in fact the case; (32) is fine if *it* refers to *delicious horchata*. Under a protasis-referring reading, however, we will expect (32) to be ungrammatical. This is because the consequent contains *demand p*. However, the consequent is necessarily evaluated in a context where p is presupposed. We therefore expect to see a crash anytime a predicate whose complement cannot be presupposed is used in the consequent of a protasis-referring conditional.

We may also examine a grammatical example quickly, in order to make the analysis fully explicit. Let us take a similar example, (33).

- (33) Max would mention it if the tacos were tasty.
 $\forall s [s \in \text{the tacos are tasty} \wedge s \in \text{BEST}_{<}(\text{the tacos are tasty})] \text{mention}(\text{M}, s)$

Mention, unlike *demand* may be used when its complement is presupposed:

- (34) The tacos were tasty. Max mentioned that the tacos were tasty.

In (33), p again is *the tacos are tasty*. Again, the situations in the restrictor exemplify p . These situations are temporarily accepted into the common ground, making p presupposed. Unlike (32), (33) will be fine under a protasis-referring reading: A statement *mention p* is perfectly fine in a context where p is presupposed. We do not expect a crash of the *demand*-type with predicates whose complements may be presupposed.

Unlike the movement-based analyses, which must rely on special generalizations in order to account for which predicates may appear in protasis-referring conditionals, the quantificational analysis needs no special tools to characterize these predicates. Rather, the quantificational analysis relies only on the semantics of conditionals and quantification, and upon the semantics of the predicates themselves. Due to the binding of the pronoun, and the way in which conditionals are dealt with in discourse, the complement to the consequent predicate will be presupposed; therefore, any predicate which cannot allow its complement to be presupposed will be impossible under a protasis-referring reading.

In addition, the quantificational analysis also provides a more sensible way to approach the NPI data than previous analyses. Although the analysis does not claim to solve the problem, it provides a much more solid foundation for understanding the issue. Ladusaw 1979 shows quite clearly that the antecedents of conditionals, and restrictors of universal quantifiers more generally, license NPIs:

- (35) a. If anyone ever catches on to us, we'll be in trouble. Ladusaw 1979, p.167
 b. *If Mary spills the beans, then anyone will ever stop us.

The Pesetsky analysis predicts that NPI licensing in the *if*-clauses of protasis-referring conditionals will be rare—in fact, it will only happen when the predicate in the consequent is a negative affective predicate. The analysis here, following Ladusaw, predicts that NPI licensing in the *if*-clauses of protasis-referring conditionals will not be rare; in fact, it a priori predicts that all NPIs will be licensed. This is, of course, not the case; however, it comes quite closer to the truth, which is that only a very small class of predicates causes degradation of NPIs. The referential link between restrictor and anaphor may also provide a way of beginning to understand how material in the restrictor could be affected by material in the nuclear scope, perhaps via an understanding of NPIs as in Giannakidou 2006. What is necessary for full understanding is a way of understanding how not only negative affective predicates, but also *positive* affective predicates, interact with NPI licensing—unfortunately a task beyond the scope of this paper.

4. Conclusion

I have here examined *protasis-referring conditionals*—conditionals in which the propositional content of the *if*-clause seems to be interpreted as an argument of the consequent predicate. I presented two unusual properties of this type of conditional. The first is a restriction on the type of predicate which may occur in the consequent clause. I showed that, empirically, clauses which do not allow their complements to be presupposed are not possible in protasis-referring conditionals. The second is an

unusual NPI licensing pattern, in which NPIs are degraded in *if*-clauses of protasis-referring conditionals with certain predicates in the consequent clause.

We then went on to see that movement-based analyses face certain issues. In analyses where the pronoun is an expletive, we run into issues regarding the types of anaphora seen in protasis-referring conditionals. English allows more than just the neuter pronoun to appear in conditionals with protasis-referring readings; it also allows demonstratives, NCA, and *so*. In addition, we saw that in French—a language which distinguishes expletive and non-expletive anaphora—the contentful sentential anaphor is used in protasis-referring conditionals. This indicates that any analysis of protasis-referring conditionals cannot rely on the presence of an expletive; such an analysis cannot account for the English examples with other types of anaphora, nor for the basic French examples.

We also saw that movement-based analyses face difficulties with the lexical restriction data and the NPI data. The analysis in Pesetsky 1991, which addresses these issues, underpredicts the types of predicates which will appear in the consequent. The analysis also makes inadequate predictions for NPI licensing, predicting that NPIs will only occur in the *if*-clause when the consequent predicate is a negative affective predicate. This is shown to be incorrect in two ways. First, only positive affective predicates result in NPI degradation; non-affective predicates like *mention* are compatible with NPIs in the *if*-clause. Second, there are cases in which a positive affective predicate appears with a licit NPI in the *if*-clause. Although the analysis makes headway in linking the degradation of NPI licensing to affective predicates, it does not provide an adequate foundation for further analysis.

I then went on to propose a quantificational analysis of protasis-referring conditionals with pronominal arguments, in which the pronoun in the consequent was treated as a variable bound by the adverb of quantification. I showed that this analysis makes the correct predictions for the types of predicates which may occur in the consequent; the complement to the consequent predicate, whose content is essentially those situations described by the restrictor, is necessarily presupposed. Therefore, predicates which require that their complement is not presupposed are not possible in the construction. Second, I showed that the analysis provides a firmer foundation for analysis of the NPI licensing data. NPIs are a priori expected to be licensed in the *if*-clause under this analysis. The generalization that comes out of this is that positive affective predicates whose arguments have a quantificational link to an *if*-clause are able to effect the degradation of NPIs in that *if*-clause—a generalization which seems closer to reality.

References

- Farkas, Donka, and Kim Bruce. 2010. On Reacting to Assertions and Polar Questions. *Journal of Semantics* 27:81–118.
- Giannakidou, Anastasia. 2006. Only, emotive factives, and the dual nature of polarity dependency. *Language* 82:575–603.
- Isaacs, James, and Kyle Rawlins. 2008. Conditional Questions. *Journal of Semantics* 25:269–319.
- Klima, Edward. 1964. Negation in English. In *The Structure of Language*, ed. Jerry A. Fodor and Jerrold J. Katz, 232–246. Prentice-Hall.
- Kratzer, Angelika. 1986. Conditionals. In *Proceedings of CLS 22, Part 2: Papers from the Parasession on Pragmatics and Grammatical Theory*, ed. A.M. Farley, P.T. Farley, and K.-E. McCullough, 1–15. Chicago Linguistic Society.
- Ladusaw, William A. 1979. Polarity Sensitivity as Inherent Scope Relations. Doctoral Dissertation, University of Texas at Austin.
- Lewis, David. 1975. Adverbs of quantification. In *Formal semantics of natural language: Papers from a colloquium sponsored by the King's College Research Centre*, ed. Edward Keenan, 3–15. Cambridge University Press.
- Pesetsky, David. 1991. Zero Syntax, Vol. 2: Infinitives. Manuscript, Massachusetts Institute of Technology.
- Postal, Paul, and Geoffrey Pullum. 1988. Expletive noun phrases in subcategorized positions. *Linguistic Inquiry* 19:635–670.
- Pullum, Geoffrey. 1987. Implications of English extraposed irrealis clauses. In *Proceedings of the Fourth Eastern States Conference on Linguistics*, ed. Ann Miller and Joyce Powers, 260–270.
- Rothstein, Susan. 1995. Adverbial quantification over events. *Natural Language Semantics* 3:1–31.
- Steriade, Donca. 1981. If-Complements. Manuscript, Massachusetts Institute of Technology, December 1981.
- Thompson, Anie. 2011. Extraposition Structures Without Expletives. Manuscript, University of California, Santa Cruz.

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