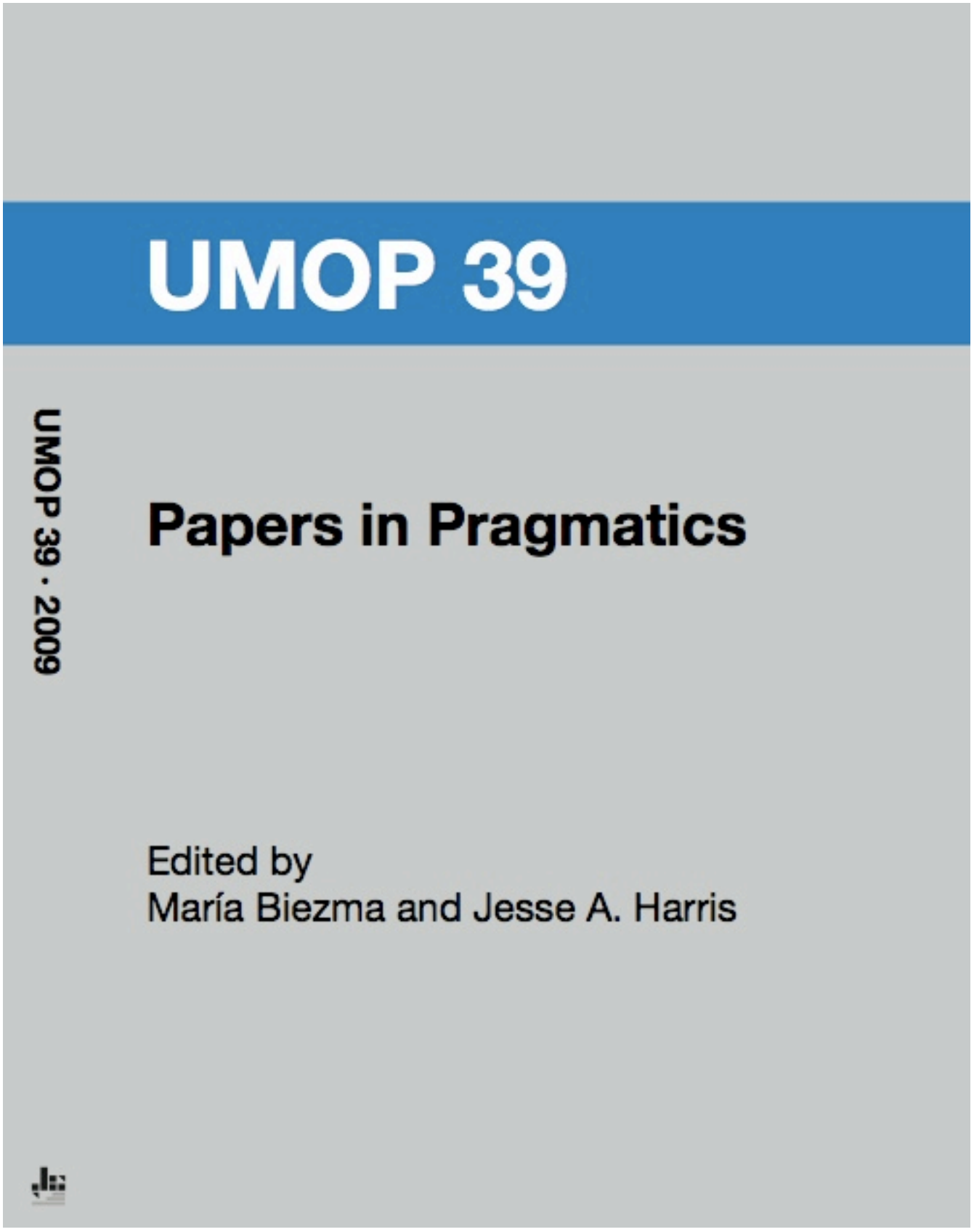

UMOP 39
UMOP 39 · 2009
Papers in Pragmatics
Edited by
María Biezma and Jesse A. Harris

UMOP 39: Papers in Pragmatics

María Biezma & Jesse A. Harris (eds.)

Reproduced and distributed by

GLSA
(Graduate Linguistics Students' Association)
Department of Linguistics
226 South College
University of Massachusetts, Amherst
Amherst, MA 01003
U.S.A.

glsa@linguist.umass.edu

ISBN: 1449919502

EAN-13: 9781449919504

The idea of putting this volume together came about because of increasing interest in pragmatics at the UMass Linguistics Department. It has been great to find out that so many people were interested in the project and that we could put together this collection of papers. Assembling this volume has been a long process and the editors would like to especially acknowledge the contribution made by Chris Davis, whose enthusiasm was key to getting the project started. We would also like to thank the authors who generously contributed to this volume. $\sim$ *The editors.*

Table of Contents

Cornering *the addressee* . . . . . 1 – 19
María Biezma

When Basic Meanings are (not) Enough: Processing Scalar Implicatures During Adult Language Comprehension . . . . . 21 – 39
Gennaro Chierchia, Charles Clifton Jr., & Lyn Frazier

Imperatives as Modal Restrictions . . . . . 31 – 47
Yurie Hara

Epithets and perspective shifting: experimental evidence . . . . 49 – 76
Jesse A. Harris

A formal semantics for the Singaporean English discourse particle wát . . . . . 77 – 104
Pasha Siraj

The relevance of focus: The case of let alone *reopened* . . . 105 – 123
Maziar Toosarvandani

When to Ask an Inner Negation Polar Question . . . . . 125 – 146
Martin Walkow

Cornering the addressee*

María Biezma

University of Massachusetts Amherst

1. Introduction

The questions *Are you making pasta?* and *Are you making pasta or not?* can both be answered with *yes* or *no*. The semantics traditionally given to these questions does not predict any difference between the two, and yet, as illustrated in (1), the two questions are not interchangeable (see Bolinger 1978).

(1) a. Would you marry me? [POLQ]
b. Would you marry me or not? [ALTQVN]

(1a) is perfectly fine as an initial marriage proposal. However, (1b) is perceived as odd in such a situation. The default interpretation of (1a) is that of a polar question (POLQ), whereas the default interpretation of (1b) is that of an alternative question in which two opposite alternatives are expressed (ALTQVN).

The question addressed in this paper is whether the difference between the sentences in (1) is due to a component that is part of the conventional linguistic meaning or attributable to pragmatic inferences. The answer offered in this paper is yes, in both cases. I argue that intonation is crucial for the semantics of questions like (1), leading to a difference in the interpretation of the possible answers. This difference in the semantics shapes discourse structure and accounts for pragmatic effects.

The paper is organized as follows: in §2 I illustrate the differences between the two kinds of questions by reviewing the data offered in Bolinger (1978). I offer new data illustrating what I call the *cornering* effect. I argue that this effect is at the core of the difference between POLQs and ALTQVNs, and look for an account in the rest of the paper. In §3 I review the semantics of POLQs and ALTQVNs, taking into account the meaning effects of their intonation. In order to do this I make use of Zimmermann's (2000) insights on the semantics of lists and the role of intonation. In §4 I make use of Roberts' (1996) and Büring's (2003) theories of discourse to explain the different pragmatic effects of POLQs

*This paper is essentially a reprint of Biezma (2009). The only difference with respect to Biezma (2009) is the inclusion of data from Spanish. I would like to thank Rajesh Bhatt, Lyn Frazier and Chris Potts for their help and support. Many thanks also to the audience of SALT XIX and to the Semantics Reading Group at UMass, especially to Annahita Farudi.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 1-19.
GLSA Publications. Amherst, MA.

and ALTQVNs in view of their different semantics. In §5 I go back to Bolinger's data and show how the proposal offered in this paper accounts for it.

2. The problem

Both questions in (2) can be answered with *yes* or *no*.

(2) a. Are you making pasta? [POLQ]
b. Are you making pasta or not? [ALTQVN]

However, the two questions are not interchangeable. Bolinger (1978) points out different scenarios in which POLQs are acceptable and ALTQVNs are not. In *requests* (4a), *inference drawing* (4), *rhetorical questions* (4c), *invitations* (2d) and *conversation starters* (4e) it is only appropriate to use a POLQ.

(3) PolQs Vs ALTQVNs:
a. **Requests:** Marriage proposal
i. Will you marry me?
ii. Will you marry me or not? *odd* [ALTQVN]
b. **Drawing inferences:** A conversation talking about David
i. A: I just saw David
B: Is David back from Toronto?
ii. B': Is David back from Toronto or not? *odd* [ALTQVN]
c. **Rhetorical Questions:** Your friend is telling you what he did last night
i. Are you crazy?
ii. Are you crazy or not? *odd* [ALTQVN]
d. **Invitations:** Your friends just arrived at your house
i. Do you want something to drink?
ii. Do you want something to drink or not? *odd* [ALTQVN]
e. **Conversation Starters:** Trying to start a casual conversation
i. Do you like to play golf ?
ii. Do you like to play golf or not? *odd* [ALTQVN]

The same differences are found in Spanish. The data in (4) are the Spanish parallel to (3).

(4) PolQs Vs ALTQVNs:
a. **Requests:** Marriage proposal
i. ¿Te quieres casar conmigo?
ii. ¿Te quieres casar conmigo o no? *odd* [ALTQVN]
b. **Drawing inferences:** A conversation talking about David
i. A: Acabo de ver a David

B: ¿Ha vuelto David de Toronto?

ii. B': ¿Ha vuelto David de Toronto o no? *odd* [ALTQVN]

c. **Rhetorical Questions:** Your friend is telling you what he did last night

i. ¿Estás loco?

ii. ¿Estás loco o no? *odd* [ALTQVN]

d. **Invitations:** Your friends just arrived at your house

i. ¿Quieres tomar algo de beber?

ii. ¿Quieres tomar algo de beber o no? *odd* [ALTQVN]

e. **Conversation Starters:** Trying to start a casual conversation

i. ¿Juegas al golf?

ii. ¿Juegas al golf o no? *odd* [ALTQVN]

In what follows, I stick to the English data, since it will make it easier for the reader to follow the examples. However, keep in mind that all the phenomena described and discussed below concerning the English data are also found in Spanish. As a result, the analysis proposed in this paper also holds for Spanish.

In addition to the differences between POLQs and ALTQVNs noted by Bolinger, (3), there is a difference between the two types of questions in terms of the options made available to the addressee. I will term this the *cornering effect*. It is illustrated in (5).[1]

(5) **Scenario:** You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. You talked to John yesterday and he said he would make stew but did not confirm whether he would also make pasta. Dinner is tomorrow and you need to know what is happening with the pasta.

a. You: Are you making pasta?
John: (Silence and dubitative faces)
You: Are you making pasta or not?

b. You: Are you making pasta?
John: (Silence and dubitative faces)
You: (C'mon) Are you making pasta?

Intuitively, when an ALTQVN is used, (5a), there is a reduction in the set of responses available to the addressee. As (5a) illustrates, the questioner uses an ALTQVN to try to 'force' an answer from the addressee. The use of a question asking about logically opposite alternatives, *you make pasta*, p, and *you don't make pasta*, $\neg p$, results in the *cornering* of the addressee. This effect is not observed if the POLQ is instead uttered again. As (5b) illustrates, the effect, if any, is that of insistence.

The cornering effect described above indicates that ALTQVNs are the preferred questions for seeking information when the addressee appears to be withholding it and

[1] van Rooy & Safárová (2003) have recently provided a purely pragmatic account of POLQs vs. ALTQVNs according to which POLQs are special because their positive answer has a higher utility value for the questioner. I cannot discuss their proposal here for reasons of space. However, they are not concerned with data exemplifying the cornering effect.

the speaker wishes to close the issue. Empirical support for this observation was obtained with a questionnaire experiment that tested speaker's intuitions regarding questions. In the experiment, participants were presented with scenarios like (5) and were asked which question they would choose if they wanted to obtain the relevant information and end the conversation. An example of the materials is presented in (6).

(6) You are hosting a party and offering drinks to everybody. You have asked your close friend Loren whether she wants a beer, and she has been talking to you for 10 minutes about how badly she wants a beer and worrying about how many calories they have. You want to move on and find out whether Loren does actually want a beer. Which of the next questions would you ask in order to conclude the conversation and find out about the beer?

a. Do you want a beer?	
b. Do you want a beer or not?	

10 different scenarios like (6) were presented to 36 UMass Undergraduate students with no linguistic training. The results indicated that, in such scenarios, 65.4% of the responses favored an ALTQVN over a POLQ. There was a significant difference: $p<0.05$.[2] The questionnaire results confirmed the intuitive descriptions of the cornering effect.

The interpretation traditionally given to POLQs and ALTQVNs does not capture the differences illustrated in (3) and (5a). If we consider the question operators proposed by Hamblin's (1973) and Karttunen's (1977), (7), the semantics of the sentences in (3) are similar. The question operators scoping over the denotation of *you make pasta* and *you make pasta or not* induce similar partitions (Romero & Han 2003).

(7) Questions operators

a. $[\![Q_{\text{yes/no}}]\!] = \lambda p_{\langle s,t\rangle}.\lambda w_s.\lambda q_{\langle s,t\rangle}.[q = p \vee q = \neg p]$

b. $[\![Q_{\text{Alt}}]\!] = \lambda p_{\langle s,t\rangle}.\lambda w_s.\lambda q_{\langle s,t\rangle}.p = q$

When $[\![Q_{\text{yes/no}}]\!]$ scopes over the denotation of *you make pasta*, it induces a partition of the set of possible worlds into a set in which you make pasta and a set in which you do not make pasta. The same is true when $[\![Q_{\text{Alt}}]\!]$ scopes over the denotation of *you are making pasta or not*.

(8) a. Polar questions: Are you making pasta?

$$[\![(2a)]\!](w_0) = \lambda q\,[q = \lambda w.make(pasta, you, w) \vee q = \lambda w.\neg make(pasta, you, w)]$$

b. Alternative Questions: Are you making pasta or not?

$$[\![(2b)]\!](w_0) = \lambda q\,[q = (\lambda w.make(pasta, you, w) \vee \lambda w.\neg make(pasta, you, w))]$$

[2] The experiment was controlled with items in which the scenarios involved starting a conversation. In those cases, participants preferred a POLQover an ALTQVN($p<0.05$).

In this paper I argue that the semantics of (2a) and (2b) are actually different. The difference in the semantics leads to a difference in the pragmatics that explains the *cornering effect* and also the data in Bolinger (1978).

3. The semantics: exhaustive alternatives

In this section we will see that questions expressing alternatives have two main intonational patterns. They may have a final rising or falling intonation. I illustrate the effects of these two patterns in discourse and link the differences obtained from these two possible intonations in questions to the phenomenon observed in lists (Zimmermann 2000). We can derive the relevant differences between POLQs and ALTQVNs with a semantics that characterizes both POLQs and ALTQVNs as involving lists of alternatives (spelled out or not): POLQs involve an open list (with just one alternative spelled out), indicated by final rising intonation,[3] whereas ALTQVNs involve closed lists (with all alternatives spelled out), indicated by final falling intonation. Open and closed lists differ semantically with respect to the absence/presence of a *Closure* operator acting on the possible alternatives (Zimmermann 2000). I treat the information provided by the closure operator as a presupposition.

3.1 A difference in intonation: *Yes/No* vs *Alternative* readings

ALTQVNs are a particular case of questions expressing alternatives. (9) is an example of an alternative question that is not an ALTQVN.

(9) a. Are you making pasta or fish?
b. Are you making pasta or ~~making~~ fish?[4]

The default reading for questions like (9a) is the alternative reading: *Which of these two things are you doing: making pasta or making fish?* However, questions presenting alternatives have another reading, a *yes/no* reading: *is it the case that you are making pasta or fish?* Pruitt (2007, 2008) shows that the *yes/no* reading is not the default reading. It appears when the question is uttered with its non-default intonation. The two intonations associated to the two possible readings are specified in (10).[5]

[3]Notice that the term POLQ is only used for questions that follow this pattern (they spell out one alternative and have final rising intonation).

[4]I follow Romero & Han (2003) in assuming ellipsis in the second disjunct.

[5]I follow Pruitt (2007) in characterizing the intonation of alternative questions and yes/no questions. According to Pruitt, "a canonical alternative contains (i) a pitch accent on the first disjunct; (ii) a H phrasal/boundary tone at the end of the first disjunct; (iii) a H pitch accent on the final disjunct; and (iv) L phrasal and boundary tones (L-L%) on the final disjunct. Features (i) and (ii) create the impression of a rise at the end of the first disjunct, while (iii) and (iv) cause the perception of a final fall. Features (i) and (ii) are often accompanied by a pause before *or*, but this does not appear to be required. Some have also noted that there is variation in the identity of the pitch accents in an Alt question (whether H or L), and perhaps in the phrasal tone of the non-final disjunct (again, whether H or L)." With respect to *yes/no* questions Pruitt (2007) indicates that "the notable features of a yes/no question, when defined in parallel to an alternative question are: (i) no pitch accent on the first disjunct; (ii) no phrasal/boundary tone on the first disjunct; (iii) a L pitch accent on the final disjunct; and (iv) H phrasal and boundary tones (H-H%) on the final disjunct. The

(10) Fall Vs Rise

a. Are you making pasta$_{L^*H-}$ or fish$_{H^*L-L\%}$? [Final Fall=Alternative]
Which of these things are you doing: making pasta or making fish?

b. Are you making pasta or fish$_{L^*H-H\%}$? [Final Rise=Yes/No]
Is it the case that you are making pasta or fish?

As Pruitt shows, the crucial difference that leads the human language processor to interpret the question as either an alternative question or a yes/no question is the final intonation. The alternative reading comes about when the final intonation is falling, whereas the yes/no reading comes about when there is final rising intonation.

(11) **Scenario:** You are in charge of coordinating the cooks for the colloquium dinner. John one of the cooks. The menu is pasta, fish and stew.

a. (You have already assigned the task of making stew to someone else.)
You: Are you making pasta$_{L^*H-}$ or fish$_{H^*L-L\%}$?
John: (No) I am making stew. [odd]
John': Wait, I wanted to make stew, isn't that possible?

b. (All the options are available.)
You: Are you making pasta$_{L^*H-}$ or fish$_{L^*H-H\%}$?
John: (No) I am making stew. $\surd$

The utterance of (11a) encodes that the only possibilities for John are either making pasta or making fish. By uttering (11a), the speaker limits the possible answers to those alternatives specifically expressed in the question. At this point in the discourse, it is understood by both participants in the conversation that no other alternative is available. To invoke a different alternative is not discursively appropriate. The speaker presupposition is indicated by the final falling intonation, and it needs to be accommodated by the addressee. This is illustrated by John's alternative response (perfectly fine), in which he wonders what happened to the possibility of making stew. John is wondering why the questioner is assuming that stew is not an option anymore.

Things are different in the case of (11b). The question in (11b) has a yes/no reading (notice the final rise): *is it the case that you are making pasta or fish?* John's response in this case is not odd, since the questioner is not indicating that (s)he assumes that making pasta or making fish are the only alternatives available.[6] The questioner may have guessed that pasta or fish are amongst John's favorite dishes and decided to spell them out. However, the questioner is not ruling out the possibility that other alternatives are in the picture.

As interim summary, we have seen that questions spelling out two alternatives have at least two possible intonational patterns, identifying two different readings. With default intonation (final fall), the alternative reading is obtained. Responses to these questions that

combination of features (iii) and (iv) in *yes/no* questions creates the percept of a final rise, while a lack of a significant pitch movement is characteristic of the first disjunct."

[6]Notice that John's response *I am making stew* in (11b) is indeed an answer: via pragmatic enrichment we understand that the answer to the quesition is "no", and John supplies further information, namely, that he is actually making stew.

are not formulated in terms of the explicit alternatives are odd. When the intonation has a final rise (and no phrasal/boundary tone in the first disjunct) the yes/no reading is obtained. Responses to these questions are fine even if they refer to alternatives that are not spelled out. For this reason, John's appeal to stew does not sound odd in (11a).

ALTQVNa are simply alternative questions that spell out opposite alternatives, p and $\neg p$.

(12) Are you making pasta$_{L^*H-}$ or not$_{H^*L-L\%}$?

Contrary to the case of regular alternative questions, ALTQVNs have only one possible intonation: final falling intonation. In what follows I argue that final falling intonation indicates exhaustivity. Questions asking about opposites naturally exhaustify the possible answers. Falling intonation in ALTQVNs signals that the alternatives spelled out are exhaustive.

Let us now turn to questions in which only one alternative is spelled out and we have final rising intonation, (13).

(13) Are you making pasta$_{L^*H-H\%}$? [Final rise = yes/no] (POLQ)

Exactly like in the case in which two alternatives are spelled out, with final rising intonation we have (again) a yes/no reading. This is the default intonation. Responses that make reference to alternatives that are not spelled out are acceptable in the discourse (this case is similar to the case of two alternatives spelled out).

(14) **Scenario:** You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks.

a. You: Are you making pasta$_{L^*H-H\%}$?
John: (No) I am making stew. $\surd$

Via pragmatic enrichment we infer that the answer to the question is "no" with regard to pasta, since he is actually making stew. The summary so far is in Figure 1.

# Alternatives	Final intonations	Reading	Exhaustivity
2 alternatives spelled out	final fall	alternative reading	$\surd$
	final rise	yes/no reading	X
1 alternative spelled out	final rise	yes/no reading	X

Figure 1: Alternatives/intonation/reading correspondence

Questions with only one alternative spelled out and final falling intonation are also possible, (15), although they are dispreferred.

(15) Are you making pasta$_{H^*L-L\%}$?

It is difficult to see what a question like (15) means: it asks about only one alternative but it also claims that it is the only possibility available. It cannot be interpreted as a yes/no question.[7] Questions like (15) behave like ALTQVNs, (16).

[7] A $[\![Q_{\text{yes/no}}]\!]$ operator like (7a) cannot scope over TP in this case because exhaustivity (signaled by final falling intonation) indicates that the only possible alternative is *you make pasta*, p. A $[\![Q_{\text{yes/no}}]\!]$ scoping

(16) **Scenario:** You are in charge of coordinating the cooks for the colloquium dinner. John is one of the cooks. You talked to John yesterday and he said he would make stew but did not confirm whether he was also going to make pasta. The dinner is tomorrow and you need to know what is happening with the pasta.

a. You: Are you making pasta$_{H^*L-L\%}$?
John: I am making stew. [odd]
You: I know that, but what about pasta? Are you making pasta$_{H^*L-L\%}$?

John's answer in (16) is odd because it refers to an alternative that the questioner is not considering available at the time of utterance, as indicated by the final falling intonation. John would only respond in this way if he wanted to be defiant and end the conversation by stating that he does not care about what you consider to be the possibilities available. He is going to make stew no matter what. As in (11a), the addressee would be aware that he is somehow defying the assumptions regarding exhaustivity being made by the questioner.

To summarize, in this section we have seen that differences in the final intonation in questions presenting alternatives lead to differences in discourse. When the final intonation is falling, the speaker signals to the addressee that (s)he assumes that the alternatives spelled out are the only alternatives available in the discourse. When the final intonation is rising, the speaker indicates that (s)he considers that the alternatives spelled out in the question are not the only contextually available ones.

In the next section I incorporate the effects of intonation in the semantics of questions to account for the data illustrated in this section. In order to do so, I make use of Zimmermann's (2000) proposal for lists.

3.2 The link with open and closed lists

Zimmermann establishes a link between intonation and lists of assertive disjunctions, illustrated in the example in (17).

(17) (Q) Which tube stations are one stop from Oxford Circus?
(L) Piccadilly Circus, Bond Street, Tottenham Court Road, Green Park, Warren Street, Regent's Park [are each one stop from Oxford Circus]$_{L^*H-H\%}$
(C) ... and no other underground station [is one stop from Oxford Circus].
[Zimmermann 2000, ex. (12)]

Imagine someone asks the question in (17Q), and the answer lists possible stops one stop from Oxford Circus, followed by the remark in (17C), signaling that the previous list is exhaustive. Notice that the list's final intonation in this situation is rising. Imagine now that there is no (17C) indicating exhaustivity, (18).

(18) (L) ..., Green Park, Warren Street, Regent's Park$_{L^*H-H\%}$
(C) (silence)

---

over it would also consider the negated alternative, $\neg p$, incurring in a contradiction. In general, this is true for every case in which exhaustivity is signaled.

As Zimmermann points out, if the list is not closed explicitly and the numeration of stations finishes with a final rise, the addressee is left with the impression that the list is not exhaustive. However, if the intonation at the end of the numeration is falling instead of rising the addressee is left with a very different impression.

(19) (L) ..., Green Park, Warren Street, Regent's Park$_{H^*L-L\%}$
(C) (silence)

When the numeration of stations finishes up with falling intonation, even if there is no final remark stating that the list is exhaustive, the addressee understands that there are no other stations one station away from Oxford Circus. Zimmermann proposes that the difference between lists finishing with final falling intonation and lists with final rising intonation is the presence of a closure operator present in the semantics triggered by the final falling intonation.

The phenomenon illustrated above with disjunctive list of assertions is exactly the same phenomenon we saw in the previous section: when the final intonation is falling, questions spelling out alternatives indicate that the list of alternatives offered is exhaustive, whereas when the final intonation is rising, they indicate that there are more contextually available alternatives than those spelled out. In the next section I argue that POLQs, which have final rising intonation, do not have a closure operator in the semantics. This indicates that other alternatives, besides those mentioned, may be available. ALTQVNs, however, have final falling intonation, indicating that there are no more alternatives available in the discourse besides those offered.

3.3 The semantic components

In this section I present the ingredients of the anlysis: the denotations of sentences, the question operators, and the closure operator. In what follows I make use of a Hamblin-style semantics and characterize the denotation of a sentence as a set containing a proposition. I assume that there is no *or* in the semantics (Zimmermann 2000, Geurts 2005, Alonso-Ovalle 2006), and disjunction only presents lists. Sentences with *or* denote the union of the sets corresponding to the disjuncts (Alonso-Ovalle 2006), (20).

(20)
$$[\![TP]\!] = \left\{ \begin{array}{l} \lambda w.make_w(2sg, pasta) \\ \lambda w.make_w(2sg, fish) \end{array} \right\}$$

$\{\lambda w.make_w(2sg, pasta)\}$ or $\{\lambda w.make_w(2sg, fish)\}$

For practical reasons, I make use of an extensional version of the question operators we saw in (7), adapted to take scope over sets of propositions.

(21) a. $[\![Q_{\text{yes/no}}]\!] = \lambda S_{\langle\langle s,t\rangle,t\rangle}\lambda q.\ q = (\bigvee_{r\in S}) \vee q = \neg(\bigvee_{r\in S})$
b. $[\![Q_{\text{Alt}}]\!] = \lambda S_{\langle\langle s,t\rangle,t\rangle}.\lambda q.\ q = r_1 \vee \cdots \vee q = r_{|S|},\ r_i \in S$ for all $1 \leq i \leq |S|$

The information provided by the closure operator is treated as a presupposition associated with closed-lists questions.[8]

(22) $\Gamma := \lambda G_{\langle\langle s,t\rangle,t\rangle} : (\forall q)[EpistemicallyAvailable(q) \leftrightarrow q \in G].G$

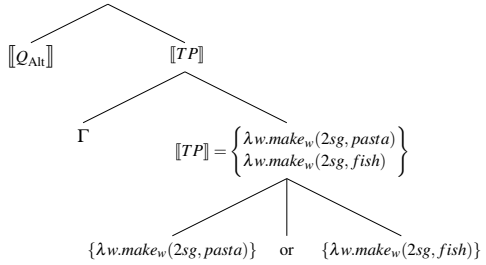
When the operator in (22) applies to a set of propositions, G, it returns the same set of propositions and checks the presupposition that these propositions are the only propositions epistemically possible. In that sense, the list is closed: the only epistemically possible alternatives are the spelled out alternatives. As in Zimmermann (2000), the presence of closure in the semantics is indicated by final falling intonation.[9]

With these ingredients in place, let us start by examining the resulting semantics of questions with final falling intonation. These are the questions in which Γ is present in the semantics.

(23) a. Are you making pasta$_{L^*H_}$or fish$_{H^*L-L\%}$?

b. $\lambda q.q = \lambda w.\ make_w(2sg, pasta) \vee q = \lambda w.\ make_w(2sg, fish)$

(Presupposition: the only epistemic alternatives are make(2sg,pasta) and make(2sg,fish))



(24) a. Are you making pasta$_{L^*H_}$or not$_{H^*L-L\%}$?

---

[8]The operator in (22) is inspired in Zimmermann's closure operator, (1).

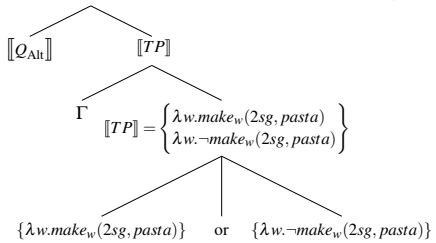
(1) $\Gamma_P := [\lambda G(\forall x)(\forall q)[[q = P(x) \& True(q)] \rightarrow q \in G]]$
where G ranges over groups of propositions and '$\in$' denotes group membership

Notice that Zimmermann considers sets of propositions that are modalized. The reader is referred to Zimmermann (2000) for details. The proposal has been modified to allow the operator to act over sets of propositions.

[9]Notice that the operator in (22) is not completely right. Obviously, there are many independent propositions that are also epistemically available, such as *it is raining right now*. What we want closure to introduce in the denotation of a question like *are you making pasta$_{L^*H_}$or fish$_{H^*L-L\%}$?* is the presupposition that for all the things you could make, the only ones epistemically possible are that you make either pasta or fish. One could solve this problem by making reference to the contextually salient epistemic alternatives. I do not have space to introduce the mechanisms that would solve the problem, nor the different theoretical challenges they present, thus I leave this question open. Also, one may want to consider the discussion introduced in Geurts (2005), who claims that the relevant notion of possibility is not purely epistemic, and may also be deontic.

b. $\lambda q.q = \lambda w.make_w(2sg, pasta) \vee q = \lambda w.\ \neg make_w(2sg, pasta)$

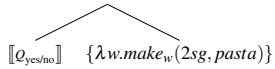
(Presupposition: the only epistemic alternatives are make(2sg,pasta) and¬make(2sg,pasta))



Both in the case of regular alternative questions, (23), and ALTQVNs, (24b), there is a closure operator in the semantics indicated by the final falling intonation. The final denotation encodes the presupposition that the only available alternatives are those asked about in the question. Let us turn now to questions with final rising intonation.

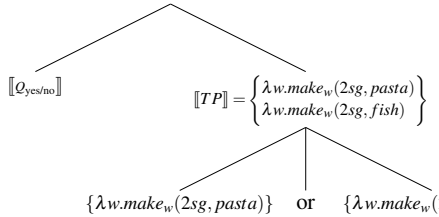
(25) a. Are you making pasta$_{L^*H-H\%}$?

b. $\lambda q.[q = \lambda w.make_w(2sg, pasta) \vee q = \lambda w.\neg make_w(2sg, pasta)]$



(26) a. Are you making pasta or fish$_{L^*H-H\%}$?

b. $\lambda q.[q = (\lambda w.make_w(2gpasta) \vee \lambda w.make_w(2g, fish)) \vee$
$q = \neg(\lambda w.make_w(2sg, pasta) \vee \lambda w.make_w(2sg, fish))]$



When the final intonation is rising, there is no closure operator and thus there is no presupposition regarding the exhaustivity of the alternatives, (25-26).

To summarize, I have claimed that both POLQs and ALTQVNs involve lists. In the case of POLQs, these are open lists, indicated by the final rising intonation, whereas in the case of ALTQVNs the lists are closed, as indicated by the final falling intonation. The difference in intonation signals a difference in the semantics, i.e., the absence/presence of a closure operator carrying presuppositional information, (27).

(27) a. ⟦Are you making pasta$_{L^*H-}$or not$_{H^*L-L\%}$?⟧=
$\lambda q.q = \lambda w.make_w(2sg, pasta) \vee q = \lambda w.\neg make_w(2sg, pasta)$ [ALTQVN]
Presup: the only epistemic alternatives are make(2sg,pasta) & ¬make(2sg,pasta)

b. ⟦Are you making pasta$_{L^*H-H\%}$?⟧=
$\lambda q.q = \lambda w.make_w(2sg, pasta) \vee q = \lambda w.\neg make_w(2sg, pasta)$ [POLQ]

In what follows I introduce a hierarchical discourse model and illustrate how this difference in the semantics leads to differences in the discourse.

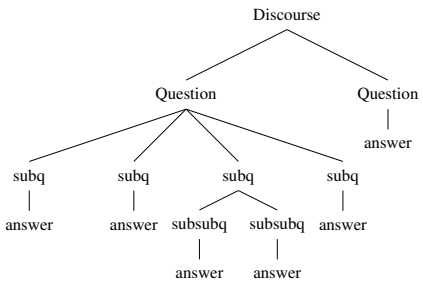
4. The discourse: a *cul de sac*

I argue that ALTQVNs are the last discourse *move* by the questioner: they cannot be followed by further questions. POLQs, on the other hand, are not the last possible move. They give the addressee more room to maneuver.

4.1 Background

Bulding on Roberts (1996), Büring (2003) proposes a hierarchical discourse model that can be represented by d(iscourse)-trees. Like Roberts, Büring considers the discourse to be structured by (implicit) questions. Following Stalnaker (1978), Roberts states that "the primary goal of disourse is communal inquiry. [...] But we must develop strategies for achieving this goal, and these strategies involve sub-inquiries. As in a game, some strategies may be better, some worse." Questions, when accepted, drive the discourse following a *strategy* whose goal is to answer the Big Question (in Roberts' terms, i.e., the ultimate question we want to answer).[10] Büring (2003) uses representations like the one in (28).

(28)



[Büring 2003, ex.(6)]

The discourse model proposed by Büring (2003) and illustrated in (28) is a hierarchical one. Every node is a *move*. In Büring's terms, a *move* is a syntactic phrase marker in the d-tree, and the d-trees encode a total ordering of moves. A question-answer pair, (29a), is well-formed if and only if there is a d-tree which contains it. In the same way, the system predicts that "a question-question sequence is well-formed if there can be a d-tree in which Q1 immediately dominates Q2," (29b).[11]

(29) a. Q b. Q1
| |
A Q2 [Büring 2003, ex (7)]

[10]This is the term that Roberts (1996) uses. Conceptually, it corresponds to the top-most node in Büring's tree (see below).

[11]See Büring (2003) for specific conditions on well-formed trees.

Büring sketches two conditions that characterize the set of well-formed d-trees: *informativity*, (30a), and *relevance*, (30b).

(30) a. *Informativity*: Don't say known things, don't ask for known things!
b. *Relevance*: Stick to a question until it is sufficiently resolved!

[Büring 2003, ex (8)]

As Büring points out, informativity can be checked against the participants' *common ground* (Stalnaker, 1978). With respect to *relevance*, Büring assumes that "A is an *answer to Q* if A *shifts the probabilistic weights among the propositions denoted by Q*." Büring's first attempt to define relevance is in (31) (Büring 2003, ex. (9)).

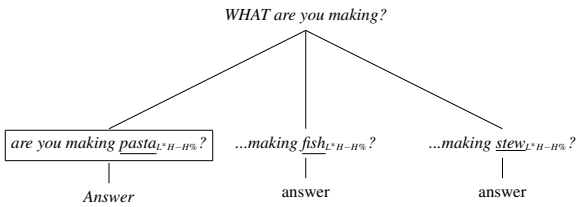
(31) Relevance
a. an assertion A is relevant in a d-tree DT iff A is an answer to the Q(uestion) U(nder) D(discussion) for A in DT.[12]
b. a question Q is relevant in a d-tree DT iff at least one answer to Q is an answer to the QUD for Q in DT.

These constraints, as they stand in Büring (2003), simply sketch a theory of discourse. However, they will be of good service to us in what follows. In the next section we will see how a hierarchical discourse model like the one presented in this section, in combination with the semantics of POLQs and ALTQVNs, can account for the pragmatic effects we have observed.

4.2 The semantics and the discourse

Let us start by looking at questions with rising intonation (corresponding to a lack of closure in the semantics). A d-tree for a PolQ like *are you making pasta*$_{L^*H-H\%}$*?* might look like (32).

(32)



The d-tree in (32) is constructed taking into consideration the focus structure of the questions. The question *are you making pasta?* has the focus structure in (33b), indicated by its pitch accent, (33a).[13]

(33) a. Are you making pasta$_{L^*H-H\%}$?

[12] For any move M, the question under discussion is the move M? immediately dominating it. (Büring 2003, pg 7)

[13] Focus anywhere else would need an intonation different from the default intonation in (33a).

b. Are you making [pasta]$_F$?

(33b) is a POLQ with final rising intonation, and involves an open list. Since the list is open, there are other epistemically possible/relevant alternatives which are not spelled out (Zimmermann 2000). I propose that the other members of the list (not spelled out) are the other sisters in the d-tree. Substituting the focused word (the only explicit member of the list) by other epistemically possible contextual alternatives, we obtain all the questions that are sisters of this question. All those questions are also sub-questions of the *wh*-question *what are you making?*, resulting from substituting the *wh*- word by all the alternatives. The d-tree in (32) also illustrates the relationship between questions, an entailment relationship:

(34) A question Q1 entails another question Q2 iff answering Q1 yields a complete answer to Q2. [Groenendijk & Stokhof 1984]

Any question on a d-tree entails any of its daughter-questions. For example, in (32), *what are you making?* entails any of its daughters, since a complete answer to it is an answer to any of its daughters.[14]

The d-tree in (32) illustrates that POLQs can be used as strategies to answer higher questions: even though the addressee is asked about pasta in (33b), it is understood that the question under discussion is *what are you making?*, and all the sisters of the uttered question are open alternatives (i.e., remain as possible epistemic alternatives). This proposal predicts that the dialogue in (35) is fine.

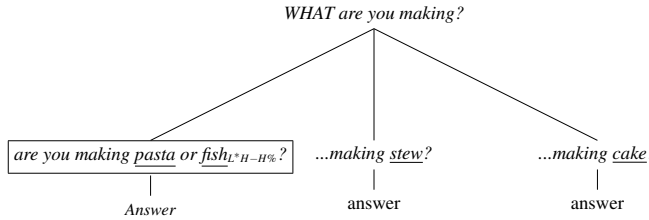
(35) A: Are you making pasta$_{L^*H-H\%}$?
B: Actually, I would prefer to make stew.

The dialogue in (35) illustrates that B considers that there are other alternatives open to him besides those presented by A. In terms of the semantics of questions, *Actually, I would prefer to make stew* is an answer to the question *are you making pasta?*: via pragmatic enrichment we can conclude that the addressee is not making pasta, since he wants to make stew.

The case of questions with final rising intonation and overt disjunction is similar to POLQs (there is no closure operator and $[\![Q_{\text{yes/no}}]\!]$ takes scope over the set of propositions). The discourse situation is alike in that there are epistemically available alternatives other than the alternatives spelled out. In our system this means that the question spelled out has sisters: the other epistemically available alternatives. The difference between POLQs and questions expressing two alternatives with final rising intonation is the number of alternatives spelled out: in the case of POLQs there is only one alternative spelled out, whereas in the case of questions with overt disjunction and rising intonation there is more than one alternative spelled out.

[14]The claims made about entailment here hold only if the semantics of wh-questions is exhaustive, as in Groenendijk & Stokhof (1984).

(36)



Comparing (32) and (36), we can see that the discourse situation at the time of utterance is the same in both cases.

Let's go a step further: what about sequences of questions in which an ALTQVN follows a PolQ? Taking into consideration the above discourse model, we should check whether the Q1–Q2 sequence in (37) is an appropriate discourse.

(37) *Are you making pasta?*
|
Are you making pasta or not?

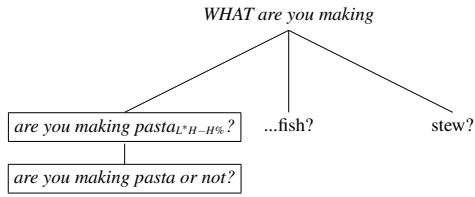
The moves in (37) are in an entailment relation, (34). Let us put the strategy in (37) in context, (38).

(38) Scenario: A wants to find out what B wants to cook for the colloq:

A: Are you making pasta?
B: (silence and dubitative faces)
A: Are you making pasta or not?
B: No/Yes

Seeing that the addressee is not quite decided, the questioner tries to close the issue by following his previous question with an ALTQVN, i.e., using a substrategy. This dialogue could be part of a d-tree like (39). The effect of the ALTQVN is that of 'forcing' the addressee to give an answer with respect to pasta.

(39)



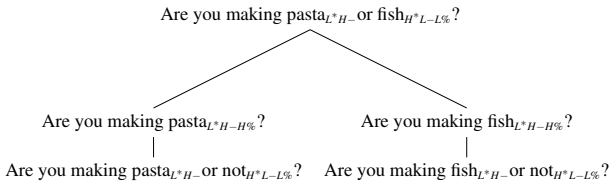
In the dialogue in (38), if the addressee answers *no* to the ALTQVN, the questioner could then ask whether the addressee is making stew instead (see (39)). This would be a case in which the questioner tries to help the addressee figure out which task he wants to be in charge of by discarding one by one each of the alternatives (evaluating all the alternatives at once seems to be overwhelming for the addressee). The dialogue in (38) illustrates that ALTQVNs can be used as *strategies* to help the questioner achieve the task of solving the previous question. In Büring's terms, "any sub-tree of a d-tree which is rooted in an

interrogative move is a strategy."[15] The ALTQVN is a move that is ultimately part of a strategy to answer the big question: *what are you making?*[16] When the ALTQVN is accepted, the closure presupposition carried by the question is accepted (or pretended to be accepted for conversational purposes (Stalnaker, 2002)). POLQs are different. When a POLQ is uttered, other epistemically possible/relevant alternatives are available.

ALTQVNs can be strategies used to obtain an answer for a PolQ. Is there any strategy that could be used to obtain an answer for an ALTQVN? The answer is no. Alternative questions do not have sisters. This is a consequence of the properties of alternative questions discussed above: alternative questions list all the epistemically possible/relevant alternatives (they exhaustify the "discursive space"). There are not further questions that can be used to narrow down an ALTQVN. The only possible move, if the alternative question is accepted by the addressee, is to give an answer to the ALTQVN, i.e., *yes* or *no*. ALTQVNs are a *cul de sac*.

It is important to point out that the cornering effect is not only the result of the exhaustivity associated with falling intonation. The nature of the alternatives is important too. Notice that a regular alternative question indicates exhaustivity with respect to the alternatives available but there is no *cornering*. This is because other questions can be use as strategies to answer the alternative question, (40).

(40)



Once the alternative question has been asked, the questioner can go on asking for the different alternatives spelled out (as a strategy to solve the question under discussion). It is when the question asks about opposite alternatives that we find the cornering effect. ALTQVNs are the last moves available to the questioner to try to solve the question under discussion. The issue cannot be narrowed down any further. The only move left to the addressee is to give an answer to the ALTQVN, *yes* or *no*. Notice that a sequence of two questions Q1–Q2, in which Q1 is an ALTQVN and Q2 is a POLQ, is not felicitous, (41).

(41) A: Are you making pasta or not?

B: (silence)

A: #Are you making pasta?

[15]This definition follows Roberts (1996). Roberts writes: "[Strategies are] questions designed to (at least) partially satisfy the aims of the game while obeying the game's constraints. Given that the main goal is to answer the Big Question, a reasonable strategy will involve a plan to do this by developing sub-goals which are easier to achieve and are logically related to each other in such a way as to facilitate achieving the main goal."

[16]Notice that the d-tree in (39) is well formed in Büring's terms.

The ALTQVN is the last question about a discourse-topic. At the point the questioner utters an ALTQVN, the discourse is just about making pasta, not about what you want to cook. There is no alternative to making *pasta* available at that point in the d-tree, since making pasta is the only epistemically possible/relevant alternative. A POLQ cannot be asked after an ALTQVN because once it has been established that there are only two epistemically available alternatives, making pasta or not making pasta, it is not possible to make a move that allows the addressee to think that there may be others, which is what happens with a POLQ.

The fact that ALTQVNs are the last question in a sequence of questions and that they do not have sisters explains the cornering effect. ALTQVNs are the preferred question to close open issues.

5. Back to Bolinger's data

Recall that we began by illustrating the differences between POLQs and ALTQVNs with Bolinger's data. Let us now examine how the proposal offered in this paper can explain the cases of *requests*, *invitation* and *conversation starters*, in which the use of a POLQ is fine, whereas the use of an ALTQVN is not discursively appropriate.

(42) a. Will you marry me or not? [odd]
b. Do you want something to drink or not? [odd]
c. Do you play golf or not? [odd]

We saw that ALTQVNs do not leave the addressee any room to maneuver. The only thing that the addressee can do after the questioner utters an ALTQVN is to give an answer. They are the last move, and this seems to indicate that there has been some previous discussion on the topic. However, in the situations listed above, there is no previous discussion, hence, the utterance of an ALTQVN is odd.

Let us turn now to the cases of inference drawing.

(43) A: I just saw David
B: Is David back from Toronto or not? [odd]

The use of an ALTQVN question in (43) is odd, whereas a POLQ would be fine. Were B to use a POLQ (*is David back from Toronto?*), he would only be trying to clarify a secondary issue that came to his mind during the conversation, i.e. whether David got back from Toronto. This is not the case with an ALTQVN. For one, the cornering strategy is justified only if A has "misbehaved" and not been straightforward, and in (43) there is no evidence that A has misbehaved. Second, since after the ALTQVN the only possible move by the addressee is an answer, the use of an ALTQVN 'forces' A to talk about a topic different from the one A seemed to be interested in. This makes the questioner's move odd.

The case of rhetorical questions is similar.

(44) Are you crazy or not? [odd]

Whereas a POLQ like *are you crazy?* is completely fine as a rhetorical question, an ALTQVN is not discursively appropriate. As in (43), the cornering strategy is not justified in

the situations in which the question is asked. POLQs are good rhetorical questions since they can be used to clarify a secondary issues: given what has been happening one comes to wonder whether you are crazy. ALTQVNs are not fit for this task. With an ALTQVN the questioner tries to make the issue presented by the question the main topic of the discourse and acts as if there had been some discussion about it. However, in the situations in which a rhetorical question is used, the issue was never open in the first place.

6. Conclusion

The central claim of this paper is that the *cornering effect* is at the core of the difference between POLQs and ALTQVNs. I have argued that the cornering effect is the result of semantic factors and the way those factors shape discourse. Both kinds of questions, POLQs and ALTQVNs, involve lists. However, there is a crucial difference in their semantics. In POLQs the list of alternatives is not exhaustive and it is understood that there may be other alternatives available in the context. In the case of ALTQVNs, there is a closure operator in the semantics, signaled by falling intonation, which triggers the exhaustivity presupposition. This difference in the semantics triggers differences in the discourse. Given the fact that ALTQVNs offer opposing alternatives, they become the last possible questioner's move: after an ALTQVN, the only possible response by a cooperative addressee is an answer to the question. This proposal also accounts for Bolinger's (1978) data.

References

Alonso-Ovalle, Luis (2006). *Disjunction in Alternative Semantics*. GLSA publications, Amherst.

Biezma, María (2009). Alternative vs. Polar Questions: the *Cornering* Effect. Ito, Satoshi & Ed Cormany (eds.), *SALT XIX: Proceedings of Semantics and Linguistic Theory*, Cornell University.

Bolinger, Dwight (1978). Yes-No Questions are not Alternative Questions. Hiz, H. (ed.), *Questions*, Reidel Publishing Company, Dordrecht, Holland, pp. 87 – 105.

Büring, Daniel (2003). On D-Trees, Beans, and B-Accents. *Linguistics & Philosophy* 26:5, pp. 511–545.

Geurts, Bart (2005). Entertaining Alternatives: Disjunctions as modals. *Natural Language Semantics* 13, pp. 383–410.

Groenendijk, Jeroen & Martin Stokhof (1984). *Studies in the Semantics of Questions and the Pragmatics of Answers*. University of Amsterdam, Ph.D. Thesis.

Hamblin, Charles Leonard (1973). Disjunction, Focus, and Scope. *Foundations of Language* 10, pp. 41–53.

Karttunen, Lauri (1977). Syntax and Semantics of Questions. *Linguistics & Philosophy* 1:1, pp. 3–44.

Pruitt, Kathryn (2007). Perceptual Relevance of Prosodic Features in Non-*wh*-Questions with Disjunction. UMass Amherst.

Pruitt, Kathryn (2008). Prosody and Focus in Alternative Questions: Accounting for Interpretation. *Experimental and Theoretical Advances in Prosody*, Cornell, Ithaca, NY.

Roberts, Craige (1996). Information Structure in Discourse: Towards an Integrated Formal Theory of Pragmatics. *OSU Working papers in linguistics 49: papers in semantics*, pp. 91–136.

Romero, Maribel & Chung Hye Han (2003). Focus, Ellipsis and the Semantics of Alternative Questions. Claire Beyssade, Patricia Cabredo Hofherr Francis Corblin, Olivier Bonami (ed.), *Empirical Issues in Formal Syntax and Semantics*, Presses Universitaires de Paris-Sorbonne, Paris, vol. 4, pp. 291–307.

van Rooy, Robert & Marie Safárová (2003). On Polar Questions. Young, R. & Y. Zhou (eds.), *Semantics and Linguistics Theory 13*, Ithaca, NY, Cornell University.

Stalnaker, Robert (1978). Pragmatics. Cole, Peter (ed.), *Pragmatics Syntax and Semantics*, Academic Press, New York.

Stalnaker, Robert (2002). Common Ground. *Linguistics and Philosophy* 25, pp. 701–721.

Zimmermann, Thomas Ed (2000). Free Choice Disjunction and Epistemic Possibility. *Natural Language Semantics* 8, pp. 255–290.

When Basic Meanings are (not) Enough: Processing Scalar Implicatures During Adult Language Comprehension*

Gennaro Chierchia[1]
Charles Clifton Jr.[2]
Lyn Frazier[2]

[1]*University of Milan-Bicocca*
[2]*University of Massachusetts Amherst*

A sentence like John has two cars may convey that John has at least two cars (the weaker, unstrengthened, "basic" meaning) or that John has exactly two cars (the stronger meaning). Typically it is assumed that the stronger meaning involves an inference: if the speaker had evidence for the assertion that John has three cars he would have made that assertion. Therefore the hearer infers that John has exactly two cars. Because such inferences involve scales with an informationally stronger, more constraining, (e.g. three) and informationally weaker (e.g. two) term, such inferences are known as scalar implicatures.

We report two experiments designed to investigate recent claims about how and under what circumstances such implicatures are drawn. The first experiment tests Chierchia's (2001) claim that these implicatures tend not to be drawn in a structurally-determined set of contexts, namely, those that license any. The second experiment investigates the processing of implicatures during self-paced reading to explore whether implicatures are part of the ongoing comprehension of a sentence or whether they only come about as part of a post-sentence inferencing mechanism. We turn first to a discussion of scalar implicatures and then to the existing psycholinguistic literature on processing scalar implicatures, before reporting the experiments.

Frequently a sentence like (1a) is taken to convey the conjunction of (1a) and (1b), viz. (1c).

(1) a. John saw some of the students
b. John didn't see all of the students
c. John saw some though not all of the students

*This research was supported by grant HD-18708 from the National Institute of Health to the University of Massachusetts. The order of the authors is alphabetical.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 21-39.
GLSA Publications. Amherst, MA.

This doesn't always happen. For example, it typically doesn't in the context of a discourse like (2):

(2) I am not sure whether John managed to see all of the students. He certainly saw some of them.

This phenomenon is usually analyzed, following Grice, 1989. as a pragmatic one. The basic meaning of some is taken to be compatible with *all/every*. E.g., the basic meaning of (1a) is compatible with John seeing all of the students (by "basic meaning" of an expression, we intend the one assigned compositionally to it by the rules of grammar). However, the conversational dynamics often leads us to strengthen such a basic meaning by, as it were, adding to it (1b), so that (1a) winds up being interpreted as (1c). This form of pragmatic strengthening does not take place if the context, for whatever reason, doesn't warrant it (as in (2)). Adopting Grice's terminology, we say that (1b) is an implicature of (1a). We refer to (1c) as to the (pragmatically) strengthened interpretation of (1a) and to (1b) as a "canonical" implicature triggered by (1a).

Similar considerations apply to the examples in (3).

(3) a. John will do a take home or write a paper
a'. John won't both do a take home and write a paper
b. John has two cars
b'. John doesn't have three cars
c. John is possibly home
c'. It is not the case that John is necessarily home

What these cases have in common is that they all can be seen as involving a scale, i.e. a set of lexically related items ordered in terms of their respective informational strength:

Scales (cf. Horn 1972)

a. $<$ some, many, most, all $>$
b. $<$ or, and $>$
c. $<$ possibly, necessarily $>$
d. $<$ one, two, three, ... $>$

The scales are displayed going from weak to strong. Informational strength is defined in terms of (asymmetric) entailment (e.g. *John saw all the students entails he saw most of them*, etc.). The implicatures associated with these items have come to be known as *scalar* implicatures (SIs). The basic mechanism behind SIs involves Grice's maxims of relevance and quantity and can be, very roughly, explicated along the following lines.

(4) What will John bring?
a. John will bring pizza or beer.
b. John will bring pizza and beer.

Gricean reasoning:

i. The speaker said (a) rather than (b), which would also have been relevant

ii. (b) entails, and hence is more informative, than (a)

iii. if the speaker knew that (b), he would have said so [quantity]

iv. the speaker is well informed

v. Therefore: (b) does not hold (or is unlikely to hold)

Obviously, in spontaneous conversation we do not go consciously through such a reasoning. But something like it is arguably at the basis of some sort of automatized routine that leads speakers to enrich with (scalar) implicatures the basic meaning of the sentences that get produced. (For relevant arguments see, e.g., Levinson 1983, 2000).

A generalization that governs the distribution of standard scalar implicatures is that they appear to be sensitive to the polarity of the context in which the implicature trigger appears. Thus, for example, while (5a) can easily be interpreted exclusively, within the scope of negation such an interpretation appears rarely (and it is tied to very special contexts, special intonational contours with contrastive focus on *or*, etc.):

(5) a. John will invite Mary or Sue
b. John won't invite Mary or Sue

Sentence (5a) is easily understood to involve exclusive alternatives: John will invite Mary or Sue, not both. But (5b) is clearly understood to involve inclusive alternatives: John won't invite either Mary or Sue. This generalizes, in fact, to all Downward Entailing (DE) contexts, (Chierchia, 2001). DE contexts, share which include negation contexts, have the capacity to license entailments from sets to subsets:

(6) a. [[first year students]] $\subseteq$ [[students]]
b. John won't invite students $\rightarrow$ John won't invite first year students
c. Every student has complained $\rightarrow$ Every first year student has complained
d. John talks to everyone who knows a student $\rightarrow$
John talks to everyone who knows a first year student.

To illustrate this point, contrast the VP vs. the NP in a simple sentence with *every* (like (6c). The VP part (which corresponds to the second argument of the quantifier every) is not DE and or tends, in fact, to be interpreted exclusively there; by contrast, within the subject NP (corresponding to the first argument of every, which is DE) the favored interpretation is not the exclusive one. This is illustrated by the following contrast:

(7) a. Every student will either write a paper or take an exam
b. Every student who either writes a paper or takes an exam is in good standing

Intuitively, (7a) seems to convey that students will not do both; on the other hand a student that both writes a paper and takes an exam will surely be in good standing; this is so in spite of the presence of *either* which is often felt to favor the exclusive construal. Similar

considerations apply to the relative clause in (6d) and to conditionals, where the consequent is not DE while the antecedent, arguably, is (see on this, e.g., Heim 1987).

The dependency of implicatures on the type of context is explainable, at least in part, in terms of the Gricean reasoning outlined in (4). The central idea there is that utterances are considered against the background of relevant alternatives that might have been used in their place. It is reasoning about such alternatives that leads, in general, to pragmatic strengthening. To illustrate, consider (8a), repeated below. Plausibly, among its relevant alternatives (utterances that might have figured as equally appropriate contributions to the conversation) there is (8b), where *and* replaces *or*:

(8) a. Every student will either write a paper or take an exam
b. Every student will write a paper and take an exam

Then, the usual reasoning, namely the one illustrated in (4), kicks in. (8b) is stronger (and hence more informative than) (8a), as (8b) entails (8a). The speaker, by choosing the weaker alternative, will be taken to convey that she does not believe the stronger holds; whence the implicature.

Now in the restriction (the NP portion) of *every*, things are very different. That constitutes a DE context, which, like negation, reverses entailment patterns:

(9) a. Every student who either writes a paper or takes an exam is in good standing
b. Every student who writes a paper and takes an exam is in good standing

Here the strongest, more informative member of the pair is (9a), for if writing a paper or taking an exam puts you in good standing, doing both will (in absence of an explicit ban) do the same. If the speakers goes directly for the strongest relevant statement, then no implicature arises.

So far we have a rather beautiful account of a complex phenomenon, the behavior and distribution of scalar implicatures. Implicatures arise by reasoning on possible alternative utterances. We draw them when they lead us to gain more information (from the same utterance); we don't draw them automatically each time we hit a potential trigger. This shows the presence in us of a sophisticated, if unconscious, logical device, one that distinguishes DE from non DE contexts (i.e. contexts where the canonical implicature will lead to weakening from those where it leads to strengthening). To linguists this is, perhaps, no surprise. DE contexts have been known to be relevant to the licensing of Negative Polarity Items (NPIs), like any in English, for some time (Ladusaw, 1979). The following paradigm illustrates:

(10) a. *Yesterday, John bought any book
b. *Yesterday every boy bought any book
c. Yesterday, every boy who bought any book complained

(11) a. *There is any cake left
b. *If we go home, there is any cake left
c. If there is any cake left, we are in luck

In Chierchia's (2001) theory, each expression in a sentence receives both its basic value and also a strengthened value. But the strengthened value will not be passed on as part of the interpretation in DE contexts. This mechanism captures the distributional generalization discussed above. It also permits embedded implicatures - implicatures frozen in particular local contexts. A simple example appears in (12), where it is clear that Mary is expressing doubt toward the proposition that John has exactly two cars.

(12) Sue: John has two cars

Mary: I doubt $\left\{\begin{array}{l}\text{it}\\ \text{John has two cars}\end{array}\right\}$; he said he had bought a third car

Without going into details, Chierchia's mechanism is distinct from a general inferencing mechanism in three aspects. It is local. It occurs hand-in-hand with computation of the basic meaning of an expression. It is sensitive to structurally- determined environments (DE contexts) which should influence whether an implicature is adopted or not.

The existing literature on processing scalar implicatures derives from two sources. A number of studies have investigated children's understanding of scalar implicatures. For example, Paris (1973) investigated children's understanding of or, by presenting pairs of slides and then a sentence like "The bird is in the nest or the shoe is on the foot." Both the children and the adult controls overwhelmingly indicated that the sentence was true when both disjuncts are true, indicating an inclusive understanding of or (see also Johanssen, 1977, Braine and Rumain, 1981). Papafragou and Musolino (2003) also studied scalar implicatures during language development. A puppet describes a situation and the child must say whether the puppet has "answered well." Scalar implicatures involving some (not all) and three (exactly three) could be computed by five year-olds. However the children computed the implicature only in contexts set up to make the implicature highly relevant. For example, one character claimed he was very good at throwing hoops and challenged Mickey to do the same with three hoops. Mickey concentrates and is able to put all three hoops around the pole. The puppet describes this as Mickey put some hoops around the pole. Under these circumstances, 5-6 year old children tended to correctly reject the underinformative description. The adult controls nearly always rejected the puppets description if it was logically true but underinformative. However, the contexts examined in these studies were always nonDE contexts: so they do not directly bear on the central issue of the present paper, namely, whether for adults DE contexts will tend to eliminate scalar implicatures.

The second type of existing psycholinguistic study examines, as its principal goal, adult performance on scalar terms. Noveck et al (2001) reported a validity judgment task which included or in DE contexts. As predicted by Chierchia (2001) adults tended to compute the basic (inclusive) meaning of or in the DE context studied. However, making validity judgments may be different than ordinary comprehension. So the generalizability of the results remains in question. Further, Noveck and Posada (2003) examined the processing of "underinformative" statements like Some elephants have trunks in an ERP study. In verification responses, they found subjects split. Roughly one third judged underinformative sentences true; the other two thirds judged them false (and took longer to make

their judgments). The longer times observed for the 'pragmatic' responders, the two thirds who judged the underinformative responses false, were not accompanied by the increased N400s in the ERP record that the investigators expected to find if the scalar implicature was drawn on-line.

These studies leave open the issue of how comprehenders deal with scalar implicatures in the absence of verification tasks. We attempt to deal with this question in Experiment 1 by simply asking native English speakers to fill out a written questionnaire, indicating their understanding of sentences by choosing one of the paraphrases provided.

Experiment 1

Experiment 1 tested the hypothesis that more pragmatic strengthening (exclusive or interpretations) would be observed in nonDE contexts such as simple one clause affirmative sentences or the consequent clause of a conditional than in DE contexts such as the antecedent of a conditional or the restriction (relative clause) of a universal quantifier.

Method

Materials

Twenty-four sentences or short discourses containing a disjunction of the form NP or NP were constructed. Four versions of each of these sentences were constructed, as illustrated in (13).

(13) a. Jeremy is a child or foreign. He must fill out a form.
b. If someone must fill out a form, he is a child or foreign.
c. If Jeremy is a child or foreign, he must fill out a form.
d. Everyone who is a child or foreign must fill out a form.

Sixteen of the 24 items had the disjunction in the VP of the sentence or (form d) the VP of the relative clause. The remaining eight items had the disjunction in the subject NP. Each sentence or two-sentence discourse was followed by a two-choice question as illustrated in (14).

(14) Is the writer talking about someone....
___ who is either a child or foreign, but not both
___ who is a child or foreign or possibly both

The first alternative answer specified the exclusive or interpretation (the strengthened interpretation) of the sentence or discourse, and the second alternative specified the inclusive or interpretation. The experimental items appear in Appendix 1.

The resulting 96 items were assigned to four counterbalanced separately randomized forms of a questionnaire, such that six items appeared in each version in each form, and each item appeared in each version in one form of the questionnaire. The 24 items in one form of the questionnaire were augmented by four unambiguous items, included simply to check the participant's attentiveness. Participants who made an inappropriate answer to more than one of these items were to be replaced, but this proved not to be necessary.

Participants and procedures

Forty-eight University of Massachusetts undergraduates were tested individually for course extra credit. Each read simple instructions asking for their "immediate, intuitive judgments about the probable meaning of some sentences" and were asked to check the alternative answer that was closer to their first understanding of the sentence.

Results

The mean percentages of Exclusive (strengthened) choices appear in Table 1.

Table 1: Mean Percentage of Exclusive Answers, Experiment 1

	Condition	Percentage
a.	Simple assertion	67%
b.	Conditional consequent	68%
c.	Conditional antecedent	59%
d.	Universal quantifier	42%

Simple t-tests with a Bonferroni adjustment were used to compare these mean percentages. The percentages of exclusive (strengthened) answers was less for condition d (universal quantifier) than for any other condition (all $t1(47) > 5.0$, $p < .001$; all $t2(23) < 4.0$, $p < .001$). Condition c, in which the disjunction occurred inside the antecedent of a conditional, approached being significantly less than Conditions a and b without the Bonferroni adjustment (both $t1(47) > 2.3$, $p < .03$; both $t2(23) > 1.64$, $p < 0.12$) but the difference was not significant after the Bonferroni adjustment. A simple t-test, justified on theoretical grounds, comparing Condition c to the mean of Conditions a and b, was fully significant by subjects ($t1(47) = 2.61$, $p < .02$) and nearly significant by items ($t2(23) = 1.97$, $p = .06$).

Discussion

The results of Experiment 1 indicate that the linguistic context of or influences the probability that comprehenders will pragmatically strengthen or, reporting an exclusive interpretation of it. In simple assertions and consequent clauses, the majority of responses, roughly two thirds were exclusive interpretations. By contrast, the DE contexts exhibited less strengthening, as predicted.

One question is why less pragmatic strengthening was observed in the relative clause every examples than in the antecedent of a conditional. The relative clause every examples are clear instances of nonaccidental generalizations. Conditionals, however, may vary. In the experimental materials, the subject of the antecedent clause was a proper name, as in (15a), giving rise to a one-time conditional (Kadmon, 1987). Compare (15b), with an indefinite, which gives rise to a many-time interpretation of the conditional.

(15) a. If Jeremy was a child or foreign, he filled out a form.

b. If someone is a child or foreign, he must fill out a form.

We suspect that many-time conditionals and sentences conveying nonaccidental generalizations resist pragmatic strengthening, whereas sentences interpreted as descriptions of episodic events encourage pragmatic strengthening.

Similarly consider (16).

(16) a. A/The man who shot two deer will be punished.

b. A/The man who shoots two deer will be punished.

Sentence (16a) may be interpreted as a description of an episodic event, encouraging pragmatic strengthening (exactly two), whereas (16b) is law-like and resists strengthening (hence, two is interpreted as at least two.)

Our claim that DE contexts overall promote less strengthening than other contexts is compatible, we think, with differences within DE contexts and differences within non-DE contexts. But rather than focusing on these differences,[1] we turn now to a self-paced reading study which investigates whether effects of scalar implicatures are indeed computed during sentence comprehension and not just during some post-sentence inferencing phase.

Experiment 2

To explore the online computation of scalar implicatures, Experiment 2 measured reading times for sentences containing numerals that were later disambiguated toward their basic (at least n) or the strengthened (exactly n) interpretations. Numerals were used because it seemed possible to make up strongly disambiguated sentences for sentences with numerals without repeating the same material (e.g. possibly both, not both) in all the experimental items.

Method

Materials

Twenty-four items were constructed in four forms each, as illustrated in (17) and (18). (See Appendix 2 for a list of all the items.)

(17) a. If John has two cars,/then I guess that he must be quite rich.

b. If John has two cars,/then the VW outside must belong to someone else. (from Levinson, 2000)

c. John has two cars./I guess that he must be quite rich.

d. John has two cars. The VW outside must belong to someone else.

(18) a. Every girl who has three brothers/is a tomboy.

[1] Kratzer 2003 suggests that situation semantics offers a distinction between strong assertion, a proposition true of worlds, and weak assertion, a proposition true of a situation. This distinction may well be related to the difference we noted for nonaccidental generalizations versus descriptions of episodic events.

b. Every girl who has three brothers/dreads having four brothers.
c. The girl has three brothers./She is a tomboy.
d. The girl has three brothers./She dreads having a fourth one.

Versions a and b presented the quantified NP (two cars, three brothers) inside a downward-entailing context (a conditional for 12 items, as illustrated in (17), and a universal quantifier for 12 items, as illustrated in (18)).Versions c and d presented the quantified NP in a separate simple sentence. Items in Conditions a and c were followed by a clause designed to permit the nonstrengthened ("N or more") interpretation of the quantified NP, while items in Conditions b and d were followed by a clause designed to force the strengthened ("exactly N") interpretation of the quantified NP. Each item was divided into two presentation regions, as indicated by the '/' marks in (17) and (18).

The resulting 96 items were assigned to four counterbalanced lists, with six items (half from the conditional and half from the universal items) appearing in each version in a list. Across the lists, each item appeared once in each version. Each list contained an additional 56 items of various forms.

Half of the experimental items, together with 36 other items, were followed by two-choice questions. A few of the questions queried the interpretation of the quantified NP (e.g., "How many cars does John have? Exactly two; Two or more") but this interpretation was not questioned systematically and the question answers will be treated largely as an indication that the participants were attending to the sentences.

A practice list containing eight items, unrelated in form to the experimental items, was also constructed.

Participants and procedures

Forty-eight University of Massachusetts undergraduates were tested in individual half-hour sessions. The session began with the practice list and then continued with one of the four counterbalanced lists. On each trial, the participant saw a preview of the item on a computer screen. In the preview, each non-space character was replaced by an underscore, so that the participant would know where words would appear. When the participant pulled a response trigger, the first phrase, clause, or sentence (up to the / in (17) and (18)) appeared on the screen, replacing the underscores. The participant was instructed to read this clause at a quick but natural rate, pulling the trigger after it was read. When the trigger was pulled, the first display disappeared, to be replaced by underscores, and the second display appeared. After pulling the trigger to indicate that the second phrase was read, the participant saw a two-choice question which s/he was to answer by pulling the trigger under the correct answer, or saw a message indicating that the next trial was to begin. The time each phrase was viewed and the time and accuracy of answering questions were recorded.

Predictions

Consider sentences (17c-d). They differ from sentences (17a-b) solely in the presence of an if/then (otherwise the clausal structure and lexical items are the same). Hence, one might

expect that the difference in reading time between (17a) and (17c) should be the same as the one between (17b) and (17d), such a difference being due, in both cases, to the presence of if/then. The same holds for the sentences in (18). Chierchia's approach makes a different prediction. In DE contexts (like the antecedents of conditionals) canonical implicatures are not generally present (for in such contexts they require the special "freezing" mechanism discussed in (12) above). So a continuation that forces the canonical implicature in DE contexts (as in (17b)) should be costly, more so than a continuation that forces the implicature in a non DE contexts (17d). Hence Chierchia's approach predicts that the difference in final clause reading time between the d and the b cases should be bigger than the one between the a and the c cases:

(19) Prediction: b - d $>$ a - c

It is perhaps worth emphasizing that this prediction only makes sense under the assumption (crucially made in an approach like Chierchia's) that implicatures are indeed factored in on line.

Results

Questions were generally answered accurately (85, 81, 72, and 75% correct for versions a, b, c, and d, respectively).

Two items (items 7 and 15 in Appendix 2) had to be eliminated because of typographical errors in one version. The mean reading times for the second display region of the remaining items, which permitted or forced a nonstrengthened reading in Conditions a and c, and forced a strengthened reading in Conditions b and d, appear in Table 2.

Table 2: Mean Reading Times (ms), second presentation region, Experiment 2

Context	Permitted/Forced Interpretation	
	Non-strengthened (N or more)	Strengthened (Exactly N)
	Conditional Items	
Conditional/Quantified	1839 (a)	2370 (b)
Simple	1764 (c)	2146 (d)
	Quantified Items	
Conditional/Quantified	1476 (a)	1865 (b)
Simple	1767 (c)	1916 (d)
	All Items	
Conditional/Quantified	1658 (a)	2118 (b)
Simple	1766 (c)	2030 (d)

Analyses of variance were conducted with the factors interpretation (strengthened vs. nonstrengthened) and initial region (simple vs. conditional/quantified). The second region was read faster when it permitted the non-strengthened reading than when it forced

the strengthened interpretation ($F1(1,47) = 36.67$, $p < .001$; $F2(1,23) = 10.11$, $p < .001$), but this difference may simply reflect the different lexical content or length of the two types of regions. The difference became nonsignificant ($F < 1.0$) when the reading times were adjusted for the length of the region, following the linear regressionprocedure introduced by Ferreira and Clifton(1986; see Trueswell, Tanenhaus, & Garnsey, 1995, for discussion). Most importantly, the interaction between initial region and interpretation was significant ($F1(1,47) = 5.73$, $p < 02$; $F2(1,21) = 4.61$, $p < .04$). The disadvantage of the strengthened reading over the nonstrengthened reading was greater in the downward entailing context (conditional/quantified) than in the simple sentence context, 460 vs. 264 ms. This difference was equivalent for conditional and quantified items (in an analysis of variance that added conditional vs. quantified item type, the interaction of item type, interpretation, and initial region had an $F < 1.0$).

Discussion

The results of Experiment 2 revealed two effects. Sentences disambiguated to their strengthened interpretation took longer to read than their counterparts disambiguated to their basic meaning. This finding cannot be interpreted since different material was read in the two cases. The second finding was the interaction of DE vs. nonDE context by disambiguation type. As predicted, the disambiguation toward the strengthened interpretation increased reading times more for the DE-context sentences than the nonDE sentences.

The fact that disambiguation to a strengthened interpretation (exactly n) adds more time to reading DE sentences than to nonDE sentences suggests that scalar implicatures are drawn on-line as part of comprehending sentences (especially nonDE ones) not just under circumstances when verification or validity judgments are required. This supports two basic aspects of Chierchia's proposal: the distinction among sentence contexts (DE vs. nonDE) and the idea that implicatures need not involve global inferencing at the level of the entire utterance. The results fit well with a view where sentence structure influences whether scalar implicatures are computed or not, and with views where drawing scalar implicatures is part of the essential understanding of sentences.

General discussion

Pragmatics covers a lot of territory. There is insufficient evidence at present to hazard a guess about precisely which aspects of pragmatics will be computed generally and automatically and about which contexts will favor or inhibit pragmatic inferences of which type.

The present results at least eliminate some accounts of particular scalar implicatures. As already emphasized, the results of Experiment 2 eliminate any account which relegates all implicatures to a post-sentence inferencing stage or to verification procedures. They also do not fit well with accounts emphasizing that scalar implicatures are not automatic but involve effortful inferencing. Such an account would lead us to have expected a main effect only, due to long times in processing sentences consistent only with the strengthened interpretation.

In the case of numerals, it has been argued (Carston, 1990, Horn, 1992) that an underspecified meaning (essentially the disjunction of the exactly n, at least n, at most n meanings) might be involved rather than a true scalar implicature. For example, unlike other scalar terms, numerals can get an at most n interpretation (Mary may have 2000 calories a day). In compounds, only the exactly n interpretation seems to be permitted (a three-cornered hat). Acquisition evidence might also be taken to support the view that underspecified representations are assigned to numerals. Papafragou and Musolino (2003) showed that five year old children exhibited adult-like behavior with numerals before they exhibited adult-like behavior with other scalar terms. Specifically the children in their study rejected underinformative statements more often for numerals than for some or start in situations warranting the use of all or finish. But the present results, while not being in contrast with the view that the grammar of numerals may have its own specific features, draw an underspecification account of numerals into question. It is unclear on that account why difficulty should emerge when disambiguation in the same sentence provided evidence for a particular fully specified interpretation. In studies of underspecified lexical representation (Frazier & Rayner 1990, Frisson & Frazier in progress) late disambiguation of a particular sense (e.g. abstract vs. concrete sense of book) does not show a penalty in eye movement recording studies. We have established here that there is penalty in online processing of implicatures in structurally determined contexts (namely, DE ones). If underspecification is to be a unitary phenomenon it remains to be seen why it would work differently with numerals than with other lexical items.

We are not committed to the details of the formal mechanism Chierchia (2001) proposed for computing scalar implicatures. However, we have presented evidence here for two fundamental insights his system captures, namely, the distinction between DE and non-DE contexts and the important claim that at least some scalar implicatures are computed locally, during sentence comprehension.

References

Braine, M. and B. Rumain. (1981). Children's comprehension of "or": Evidence for a sequence of competency. *Journal of Experimental Child Psychology*31, pp. 46–70

Carston, R. (1990). Quantity maxims and generalized implicature. *UCLA Working Papers in Linguistics*, 2, pp. 1-31. Reprinted in *Lingua* 96 (1995), pp. 213-244.

Chierchia, G. (2001). Scalar implicatures, polarity phenomena and the syntax/pragmatics interface. To appear in A. Belleti (ed.) *Structure and Beyond*, Oxford University Press.

Frazier, L. and Rayner, K. (1990). Taking on semantic commitments: Processing multiple meanings vs. multiple senses. *Journal of Memory and language* 29, pp. 181–200.

Frisson, S. and Frazier, L. (in progress). Processing polysemy.

Gazdar, G. (1979). *Pragmatics: Implicature, Presupposition and Logical Form*. New York: Academic Press.

Grice, P. (1989). *Studies in the Ways of Words*. Harvard University Press, Harvard, MA.

Heim, I. (1987). A Note on Negative Polarity and Downward Entailingness, *NELS* 14, pp. 98–107.

Horn, L. (1992). The said and the unsaid. In C. Barker and D. Dowty (eds.) *Proceedings of Semantics and Linguistics Theory II*, pp. 163–192. Department of Linguistics, Ohio State University. Columbus, OH

Horn, L. (1972). On the Semantic Properties of Logical Operators in English, UCLA doctoral dissertation.

Johanssen, B.S. (1977) Levels of mastery of the coordinates and and or and logical test performance. *British Journal of Psychology*, 68, pp. 311–320.

Kadmon, N. (1987) On Unique and Non-unique reference and Asymmetric Quantification, Ph. D. Dissertation, University of Massachusetts at Amherst. Printed in 1992 by Garland Inc., New York.

Koh, D. and Clifton, C (2002) Resolution of the antecedent of a plural pronoun: Ontological categories and predicate symmetry. *Journal of Memory and Language*, 46, pp. 830–844.

Kratzer, A. (2003) Scalar implicatures: Are thre any? Presented at the Workshop on Polarity, Scalar Phenomena, and Implicatures. University of Milan-Bicocca. June 18, 2003.

Ladusaw, W. (1979). Polarity Sentitivity as Inherent Scope Relation, Ph. D. Dissertation, University of Texas, Austin (Distributed by the Indiana University Linguistic Club).

Levinson, S. (1983). *Pragmatics*, Cambridge University Press, Cambridge, U.K.

Levinson, S. (2000). *Presumptive Meanings*, MIT Press, Cambridge,MA.

Noveck, I., Chevaux, F., Guelminger, R., Sylvestre, E. and Chierchia, G. Linguistic-pragmatic factors in interpreting disjunctions.

Noveck, I. and Posada, A. (2003). Characterizing the time-course of an implicature: an evoked potentials study. *Brain and language*, 85, pp. 203–210.

Papafragou, A. and Musolino, J. (2003). Scalar implicatures: experiments at the semantics-pragmatics interface. *Cognition*, 86, pp. 253–282.

Paris, S. (1973). Comprehension of language connectives and propositional logical relationships. *Journal of Experimental Child Psychology*, 16, pp. 278-291.

Sauerland, U. (2002) Scalar implicatures in complex sentences.

Appendix1. Materials for Experiment 1

(1) a. Jeremy is a child or foreign. He must fill out a form.
Is the writer talking about someone ...

__ who is either a child or foreign, but not both

__ who is a child or foreign or possibly both

b. If Jeremy is a child or foreign, he must fill out a form.
Is the writer talking about someone ...

__ who is either a child or foreign, but not both
__ who is a child or foreign or

c. Everyone who is a child or foreign must fill out a form.
Is the writer talking about someone...

__who is either a child or foreign, but not both
__who is a child or foreign or possibly both

d. If someone must fill out a form, he is a child or foreign.
Is the writer talking about someone ...

__who is either a child or foreign, but not both
__who is a child or foreign or possibly both

(2) a. Mary will write a paper or take an exam. She must show she has learned something.
b. If Mary will write a paper or take an exam, she can add the course.
c. Everyone who will write a paper or take an exam can add the course.
d. If someone adds the course, she must write a paper or take an exam.

(3) a. Shawn will take Psychology 490 or Neuropsychology. He needs one more course to graduate.
b. If Shawn will take Psychology 490 or Neuropsychology, he'll get a certificate.
c. Everyone who will take Psychology 490 or Neuropsychology will get a certificate.
d. If Shawn will get a certificate, he'll take Psychology 490 or Neuropsychology.

(4) a. Valerie will go to Paris or London. She wants to visit some European capital.
b. If Valerie will go to Paris or London, she have a good time.
c. Everyone who will go to Paris or London, will have a good time.
d. If Valerie will have a good time, she will go to Paris or London.

(5) a. Patrick will buy a Toyota or a Subaru. He likes Japanese cars.
b. If Patrick will buy a Toyota or a Subaru, he'll get a good deal.
c. Everyone who will buy a Toyota or a Subaru will get a good deal.
d. If Patrick will get a good deal, he'll buy a Toyota or a Subaru.

(6) a. Karen will marry a Frenchman or an Italian. She likes Europeans.
b. If Karen will marry a Frenchman or an Italian, she'll live in Europe.
c. Everyone who will marry a Frenchman or an Italian will live in Europe.
d. If Karen lives in Europe, she' ll marry a Frenchman or an Italian.

(7) a. Sarah will plant tulips or lillies. She doesn't like roses.
b. If Sarah will plant tulips or lillies, she won't plant roses.

c. Everyone who will plant tulips or lillies won't plant roses.

d. If Sarah won't plant roses, she'll plant tulips or lillies.

(8) a. Arnold will go to Stop and Shop or Bread and Circus. He needs some fresh produce.

b. If Arnold will go to Stop and Shop or Bread and Circus, he can get some fresh produce.

c. Everyone who will go to Stop and Shop or Bread and Circus can get some fresh produce.

d. If Arnold can get fresh produce, he'll go to Stop and Shop or Bread and Circus

(9) a. George will call Anne or Tessa. He wants to invite somebody out.

b. If George will call Anne or Tessa, he'll get an invitation to dinner.

c. Everyone who will call Anne or Tessa will get an invitation to dinner.

d. If George gets an invitation to dinner, he'll call Anne or Tessa.

(10) a. Max will write a novel or a book of short stories. He wants to be famous.

b. If Max will write a novel or a book of short stories, he'll be famous.

c. Everyone who will write a novel or a book of short stories will be famous.

d. If Max is famous, he will write a novel or a book of short stories.

(11) a. Antonio will do community service or pay a fine. He could be deported otherwise.

b. If Antonio will do community service or pay a fine, he won't be deported otherwise.

c. Everyone who does community service or pay a fine won't be deported.

d. If Antonio isn't departed, he will do community service or pay a fine.

(12) a. The head librarian will shelve books or help students. Her assistant has been fired.

b. If the head librarian will shelve books or help students, she will earn her pay.

c. Everyone will shelve books or help students, she will earn her pay.

d. If the head librarian will relax, she will shelve books or help students.

(13) a. Angela will clean the house or do the laundry. She will be tired afterwards.

b. If Angela will clean the house or do the laundry, she will be tired.

c. Everyone who will clean the house or do the laundry will be tired.

d. If Angela is tired, she will clean the house or do the laundry.

(14) a. Beth will take art classes or do karate. She is planning to work less.

b. If Beth will take art classes or do karate, she'll be happy.

c. Everyone who will take art classes or do karate will be happy.

d. If Beth is happy, she who will take art classes or do karate.

(15) a. Gregory will play tennis or basketball. He needs to do some exercise.
b. If Gregory will play tennis or basketball, he'll stay healthy.
c. Everyone who plays tennis or basketball will stay healthy.
d. If Gregory stays healthy, he'll play tennis or basketball.

(16) a. Rita will babysit or help around the house. She needs to earn some extra money.
b. If Rita will babysit or help around the house, she will be calm.
c. Everyone who will babysit or help around the house will be calm.
d. If Rita is calm, she will babysit or help around the house.

(17) a. Mary or Sue will put me up. I can't pay for a hotel.
b. If Mary or Sue will put me up, I'll go to Rome.
c. Everyone who Mary or Sue will put up will go to Rome.
d. If I go to Rome, Mary or Sue will put me up.

(18) a. Tom or Richard will give me a ride. I need to get to Northampton early.
b. If Tom or Richard will give me a ride, I will go to dinner in Northampton.
c. Everyone who Tom or Richard will give a ride will go to dinner in Northampton.
d. If I go to dinner in Northampton, Tom or Richard will give me a ride.

(19) a. The mechanic or the owner will help me. I need to know what's wrong with that car.
b. If the mechanic or the owner will help me, I'll leave my car.
c. Everyone who the mechanic or the owner will help will leave his car.
d. If I leave my car, the mechanic or the owner will help me.

(20) a. The department assistant or the secretary will register Sam. He needs to add that the new course.
b. If the department assistant or the secretary will register Sam, he'll add the course.
c. Everyone who the department assistant or the secretary will register will add the course.
d. If Sam adds the course, the department assistant or the secretary will register him.

(21) a. The director or the supervisor will advise Joe. He is submitting a grant application.
b. If the director or the supervisor will advise Joe, he'll submit a grant application.
c. Everyone who the director or the supervisor will advise will submit a grant application.
d. If Joe will submit an application, the director or the supervisor will advise him.

(22) a. The waitress or the hostess will assist Jim. He nees to find room for his whole family.

b. If the waitress or the hostess will assist Jim, he can get out of here.

c. Everyone who the waitress or the hostess will assist Jim can get out of here.

d. If Jim can get out of here,the waitress or the hostess will assist him.

(23) a. Pam or Claire will give directions. Tony will go to the party.

b. If Pam or Claire will give directions, Tony will go to the party.

c. Everyone who Pam or Claire will give directions will go to the party.

d. If Tony will go to the party, Pam or Claire will give directions.

(24) a. The professor or the TA will see Colleen. She has failed all tests.

b. If the professor or the TA will see Colleen, she will do the assignment.

c. Everyone who the professor or the TA will see will do the assignment.

d. If Colleen will do the assignment, the professor or the TA will see will see her.

Appendix2. Materials for Experiment 2. Alternate versions separated by |; presentation regions separated by /

1. a. If John has two cars,/then I guess that he must be quite rich.

   b. If John has two cars,/then the VW outside must belong to someone else.

   c. John has two cars./I guess that he must be quite rich.|John has two cars.

   d. The VW outside must belong to someone else.
   Is John rich if he has two cars?
   Yes, he is. No, he isn't.
   How many cars does John have?
   Exactly two. Two or more.

2. If Melissa has two jobs,/then she is surely overworked.|If Melissa has two jobs,/then she can't take a third job.|Melissa has two jobs./She is surely overworked.|Melissa has two jobs./She can't take a third job.

3. If Carla stole three vehicles,/then she must go to jail.|If Carla stole three vehicles,/then three of us don't have our cars.|Carla stole three vehicles./She must go to jail.|Carla stole three vehicles./Three of us don't have our cars.

4. If Timothy received an A in three classes,/he gets to go to Hawaii.|If Timothy received an A in three classes,/he didn't get straight As.|Timothy received an A in three classes./He gets to go to Hawaii.|Timothy received an A in three classes./He didn't get straight As.

5. If the waitress broke four cups,/she'll be fired by the end of the week.|If the waitress broke four cups,/the owner will give her four saucers.|The waitress broke four cups./She will be fired by the end of the week.|The waitress broke four cups./The owner will give her four saucers.

6. If Tom bought two computers,/the University will pay for a printer.|If Tom bought two computers,/he won't have room in his office for a third one.|Tom bought two computers./The University will pay for a printer.|Tom bought two computers./He won't have room in his office for a third one.

7. If the biologist published two papers in five years, he will probably get tenure.|If the biologist published two papers in five years, he won't write a third paper.|The biologist published two papers in five years. He will probably get tenure.|The biologish published two papers in five years. He won't write a third paper.

8. If George got ten answers correct,/he will get a prize.|If George got ten answers correct,/he didn't set a record.|George got ten answers correct./He will get a prize.|George got ten answers correct./He didn't set a record.

9. If the supervisor hired two assistants,/there will be enough help.|If the supervisor hired two assistants,/he won't hire a third one.|The supervisor hired two assistants./There will be enough help.|The supervisor hired two assistants./He won't hire a third one.

10. If the salesman sold 30 coffins, the manufacturer will stay in business. |If the salesman sold 30 coffins, the manufacturer won't have material to make any more. |The salesman sold 30 coffins.The manufacturer will stay in business. | The salesman sold 30 coffins. The manufacturer won't have material to make any more.

11. If the announcer makes two mistakes, she will probably soon be demoted.| If the announcer makes two mistakes, she will be careful not to make a third one.|The announcer made two mistakes. He will probably soon be demoted.|The announcer made two mistakes.He will be careful not to make a third one.

12. If the policeman stopped five cars, he is doing the job he should do.|If the policeman stopped five cars, he won't bother to stop a sixth one.|The policeman stopped five cars. The policeman is doing the job he should do.|The policeman stopped five cars. The policeman won't bother to stop a sixth one.

13. Every girl who has three brothers/is a tomboy.|Every girl who has three brothers/dreads having four brothers.|The girl has three brothers./She is a tomboy.|The girl has three brothers./She dreads having a fourth one.

14. Every student who has two As on exams/will pass the course.|Every student who has two As on exams/needs a third A.|The student has two As on exams./She will pass the course.|The student has two As on exams./She needs a third A.

15. Every boy who has two demerits/could be expelled.|Every boy who has two demerits/will get a third demerit.|The boy has two demerits./He could be expelled.|The boy has two demerits./He will get a third one.

16. Every chef who has won one award/can enter the contest.|Every chef who has won one award/is eligible for a second award.|The chef won one award./He can enter the contest.|The chef won one award./He is eligible for a second award.

17. Every visitor who has one free coupon/can park in the preferred lot all day.|Every visitor who has one free coupon/is ineligible for a second coupon.|The visitor has one free coupon./He can park in the preferred lot all day.|The visitor has one free coupon./He is ineligible for a second coupon.

18. Every salesman who sold three mansions this year will get a free vacation.|Every salesman who sold three mansions this year will be urged to sell a fourth.|The salesman sold three mansions this year. He will get a free vacation.|The salesman sold three mansions this year. He will be urged to sell a fourth.

19. Every candidate who gathered 100 signatures/will be on the ballot.|Every candidate who gathered 100 signatures/will need 100 more signatures. |The candidate gathered 100 signatures./He will be on the ballot.|The candidate gathered 100 signatures./He will need 100 more signatures.

20. Every representative who received 20 votes will be invited to the press conference. |Every representative who received 20 votes needs to obtain another 20 votes.|The representative received 20 votes. He will be invited to the press conference.|The representative received 20 votes. He needs to obtain another 20 votes.

21. Every employee who took three personal days will be laid off in the near future.|Every employee who took three personal days will be denied a fourth personal day.|The employee took three personal days. He will be laid off in the near future.|The employee took three personal days. He will be denied a fourth personal day.

22. Every child who failed two assignments/will be held back a year.|Every child who failed two assignments/will be given a third assignment.|The child failed two assignments./He will be held back a year.|The child failed two assignments./He will be given a third assignment.

23. Every friend who called Ana twice in one day will be called back.|Every friend who called Ana twice in one day will be told not to call a third time.|A friend called Ana twice in one day. She will be called back.|A friend called Ana twice in one day. She will be told to call a third time.

24. Every student who missed two classes/will be dropped from the course.|Every student who missed two classes/will be told not to miss a third class.|The student missed two classes./He will be dropped from the coursetold not to miss a third class.

Imperatives as Modal Restrictions*

Yurie Hara

City University of Hong Kong

1. Introduction

Imperatives are often analyzed analogous to root deontic modals (Portner, 2006, Schwager, 2005). That is, the interpretation of (1a) is often conceived as similar to that of (1b).

(1) a. Study Swahili!
b. You must study Swahili.

Assuming Kratzer's (1987) theory of modals as quantification over possible worlds, the previous analyses maintain that the semantics of imperatives corresponds to the semantics of the nuclear scope of the quantification. That is, both (1a) and (1b) are analyzed to have the interpretation roughly sketched in (2).

(2) For every world *w* compatible with what the speaker commands, the addressee studies Swahili in *w*.

In this view, however, it is puzzling why the Japanese focus particle *sae* 'even' cannot appear in imperatives (3a), while it can in deontic modals (3b).

(3) a. * Suwahirigo-**sae** benkyoo siro!
Swahili-even study do.IMP
'Study even Swahili!'
b. Suwahirigo-**sae** benkyoo sinakerebanaranai.
Swahili-even study must
'You must study even Swahili.'
(implicature: Swahili is the least likely subject to study.)

Incidentally, *sae* 'even' can appear in the consequent of a conditional, but it cannot in the antecedent. Let us look at the case where *sae* occurs in the consequent clause of a conditional and yields the 'least-likely' implicature.

*This work is supposed by the Research Fellowship of the Japan Society for the Promotion of Science for Young Scientists under Grant No. 18-2162. Thank you to Takao Gunji, Stefan Kaufmann, Angelika Kratzer, Eric McCready, Magdalena Schwager, Yukinori Takubo, participants at Kin3 roundtable and CiL18, and especially to Shoichi Takahashi, with whom I started this project. All errors are my own.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 41-47.
GLSA Publications. Amherst, MA.

(4) a. moshi Suwahirigo-o benkyoo sur-eba, Toodai-ni-**sae** goukaku suru
if Swahili-ACC study do-COMP Tokyo.Univ-DAT-sae pass do
'If you study Swahili, you will pass even Tokyo University.'
(implicature; Tokyo University is the least likely university to pass.)

The least-likely reading of *sae* cannot be embedded under the antecedent of a conditional:

(5) * moshi Suwahirigo-**sae** benkyoo sur-eba, Toodai-ni goukaku suru
if Swahili-even study do-COMP Tokyo.Univ-DAT pass do
'If you even study Swahili, you will pass Tokyo University.' (If you study Swahili and Swahili is the least likely think you study, you will pass Tokyo University.)[1]

Taking these data as evidence, this squib explores the proposal that imperatives contribute as a modal restriction of an implicit modal expression; hence the semantics of imperatives is analogous to that of *if*-clauses.

2. Proposal

Intuitively, issuing an imperative entails that there is some desire about the outcome brought by the instantiation of the action like (6a). If the outcome is known to be undesirable as in (6b), the use of the bare imperative is infelicitous, and requires an additional morpheme as in (6c).

(6) a. Tobi-oriro! Tasukaru kara.
Jump-down.IMP survive because
'Jump off! Then, you will survive.'

b. # Tobi-oriro! Sinu kara.
jump-down.IMP die because
'Jump off! Then, you will be dead.'

c. Tobi-orite-miro! Sinu kara
Jump-down-try.IMP die because
'Dare you jump off! Then, you will be dead.'

Based on this intuition, I propose the following.

(7) **Proposal** Imperatives contribute as the modal restriction (the modal base) ϕ of the implicit future modal expression $\mathbf{F}(\phi)(h)(w)(t)$, where h is a contextually supplied outcome.

[1]Note that the construction (5) is not ungrammatical, but it yields an unexpected interpretation, which is similar to an anankastic conditional: 'If you study only Swahili, you will pass Tokyo University', i.e., 'Studying Swahili is sufficient for passing Tokyo University'. Although this available reading is very intriguing, it is very difficult to understand how this interpretation is compositionally achieved. In this short paper, hence, I will concentrate on the fact that the 'least-likely' meaning of *sae* cannot be present in the antecedent of the conditional.

The nuclear scope of the modal quantification corresponds to the outcome h, which is brought by the compliance of the command. Hence, the semantics of an imperative clause looks like the following:

(8) $[\![\text{IMP}(\phi)]\!] = \mathbf{F}(\phi)(h)(w)(t) = \forall w'[w' \in Rel(w) \cap \phi][\exists t' \succ t[h(w')(t')]]$

Assuming Kratzer's (1991) analysis of conditionals, therefore, the semantics of an imperative is analogous to the semantics of the antecedent of a conditional.

2.1 Conditional Coordination in English

There is an independent motivation for our proposal from English coordination structures (discussed by Russell (2007)) which involve imperatives as their first conjuncts, and the future modal tense in their second conjuncts as in (9a). As a whole, these constructions are interpreted as conditionals:

(9) a. Drink another can of beer and you'll win the game. (Russell, 2007)
b. If you drink another can of beer, you'll win the game.

Russell (2007) shows that the imperative in the coordinate construction can contribute as the modal restriction X of the future tense in the second conjunction via anaphoric reference and modal subordination:

(10) $\textbf{Future}_X(p)(w)(t) =_{def} \forall w' \in R[w] \cap X : [\exists t' \succ t[p(w')(t')]]$ (Russell, 2007)

Russell's data also demonstrates that an imperative force is always associated with its desirable consequence. For instance, the first conjunct of (11) is not an imperative, but a subject-less bare VP declarative, while that of (9a) is ambiguous between an imperative and a bare VP.

(11) Drink another can of beer and you'll puke. (Russell, 2007)

Russell (2007) argues with a wide range of evidence that the first conjunct of (11) does not carry an imperative force. One piece of the supporting evidence is that issuing a real imperative when the outcome brought by the compliance of the command is not desirable results in an infelicitous utterance: (12b).

(12) a. Drink another can of beer. If you do, you'll win the game.
b. # Drink another can of beer. If you do, you'll puke. (Russell, 2007)

Our treatment of imperatives above can be considered as a further extension of Russell's insight of the coordination construction.

3. Analysis

3.1 Informal Approximation

In order to account for the asymmetry in (3), i.e., the (in)availability of *sae*, we need to know the semantics of *sae*. Unfortunately, at the moment I could not offer a full analysis of *sae*, and here I only stipulate what is compatible with the available facts. It is well-known that *sae* 'even' induces a least-likelihood meaning ('p is least likely among alternatives.') in an affirmative sentence.

(13) Context: John never comes to a party, while Mary never misses a party.
   a. John-sae kita.
      John-even came
      'Even John came.'
   b. # Mary-sae kita.
      Mary-even came
      'Even Mary came.'

We understand likelihood as a probability calculated based on the speaker's knowledge space. In other words, *sae* denotes a relation between the speaker's knowledge and a *particular instantiated* event (rather than a property of events/individuals). That is, *sae* expresses low likelihood of the embedded event calculated according to the speaker's knowledge.

Now, as we have seen in section 2, imperatives and antecedents of conditionals denote modal restrictions, i.e., hypothetical/unsettled events. Since *sae*'s argument needs to be a particular event, *sae* cannot occur in the clauses which denote hypothetical/unsettled contexts. In the following subsections, I will first stipulate the meaning of *sae* and then go through how the explanation sketched above is implemented.

3.2 Assumption

As for the semantics of *sae*, I follow Schwarz's (2005) analysis of German *sogar*. *Sae* 'even' is a sentential operator that takes a prejacent proposition as its argument and generates a conventional likelihood implicature.

(14) *sae*(ϕ)(KS(w)) implicates that according to the knowledge space KS accessible from w, ϕ is less likely than any other relevant alternatives.

Intuitively, in order to understand the probability of some event, the event itself needs to be a settled and instantiated events. In other words, the argument of *sae* denotes a particular instantiated event rather than some abstract property of an event. Given this intuition, I will assume (without any further discussion) that as its argument, *sae* takes a proposition of type $\langle s,t\rangle$ rather than an event predicate $\langle \varepsilon,st\rangle$ or a property of individuals $\langle e,st\rangle$.

3.3 Implementation

Conditionals Let us go back to the example (5) repeated here as (15).

(15) *moshi Suwahirigo-**sae** benkyoo sur-eba, Toodai-ni goukaku suru
if Swahili-even study do-COMP Tokyo.Univ-DAT pass do
'If you even study Swahili, you will pass Tokyo University.

Now, following Kratzer's (1991) analysis of conditionals, the antecedent of a conditional is of type $\langle \varepsilon, st \rangle$ since it is the restriction of quantification. For instance, the sentences in (16) has the logical representations in (17).

(16) a. Sometimes, if a man buys a horse, he pays cash for it.
b. Always, if a man buys a horse, he pays cash for it.
c. Most of the time, if a man buys a horse. he pays cash for it. (Kratzer, 1991)

(17) a. There is an event e [if e is an event that involves a man buying a horse, then e is part of an event in which this man pays cash for it]
b. For all events e [if ... (e) ..., then ... (e) ...]
c. For most events e [if ... (e) ..., then ... (e) ...] (Kratzer, 1991)

Given that the argument of *sae* must be of type $\langle s,t \rangle$, having *sae* within the antecedent of the conditional results in a type mismatch. Therefore, the least-likely reading of *sae* is not available within the antecedent of the conditional.

Imperatives According to the current proposal, imperatives also denote modal restrictions, hence *sae* is not available within imperatives due to a type mismatch as we have seen in (3a) repeated here as (18).

(18) *Suwahirigo-**sae** benkyoo siro!
Swahili-even study do.IMP
'Study even Swahili!'

Universal Quantifier The current analysis predicts that *sae* is not available under any clauses which do not denote a semantic object of type $\langle s,t \rangle$. This prediction is indeed attested. For instance, *sae* cannot occur under a relative clause when it serves as the restriction of universal quantification as in (20). Following Quine (1960), Heim & Kratzer (1998) treat relative clauses as predicates. For example, in (19), 'which is empty' denotes the function $\lambda x.\ x$ is empty.

(19) The house which is empty is available. (Heim & Kratzer, 1998, p.87)

Therefore, a relative clause needs to be of type $\langle e, st \rangle$ (set of individuals), while *sae* takes a proposition $\langle s,t \rangle$ as its argument; hence it causes a type mismatch.

(20) *Suwahirigo-*sae* benkyoushita **dono** seito-**mo** daigaku-ni goukakushita.
Swahili-even studied which student-INDET university-DAT passed
'Everyone who studied even Swahili passed the university.'

The construction above can be amended by the use of a floating quantifier an in (21). I suggest that the construction like (21) involves a non-restrictive relative clause. That is, (21) is expressing two independent propositions à la Potts (2005): 'all of the students passed the university' and 'the students studied Swahili.' The latter proposition is the argument of *sae*, hence it does not cause a type mismatch.[2]

(21) Suwahirigo-*sae* benkyoushita seito-ga **min'na** daigaku-ni goukakushita.
Swahili-even studied student-NOM all university-DAT passed
'The students, who studied even Swahili, all passed the university.'

To summarize, *sae* is not available in hypothetical/unsettled contexts, such as antecedents of conditionals, imperatives, and restrictions of a universal quantifier. In this squib, I stipulate that *sae* is a sentential operator which takes an argument of type $\langle s,t\rangle$. An imperative denote restrictions ($\langle\varepsilon,st\rangle$) just like an antecedent of conditional and a restriction of universal quantification ($\langle e,st\rangle$). Hence, *sae* is not available under imperatives, since it would cause a type mismatch.

4. Conclusion

I have presented evidence in favor of the claim that the semantics of imperatives is analogous to that of the antecedent of a conditional. In other words, an imperative denotes a modal restriction of an implicit modal expression, rather than the nuclear scope of the deontic necessity modal. The current analysis crucially relies on the stipulation I made about the semantic type of *sae*, i.e., *sae*'s argument needs to be of type $\langle s,t\rangle$. Future research should reveal the validity of this stipulation.

References

Heim, Irene & Angelika Kratzer (1998). *Semantics in Generative Grammar*. Blackwell.

Kratzer, Angelika (1987). Modality. von Stechow, A. & D. Wunderlich (eds.), *Handbook of Semantics,*, Walter de Gruyter, Berlin, pp. 639–650.

Kratzer, Angelika (1991). Conditionals. von Stechow, A. & D. Wunderlich (eds.), *Semantics: an international handbook of contemporary research*, De Gruyter, Berlin, pp. 651–656.

Portner, Paul (2006). Imperatives and modals. Georgetown University.

Potts, Christopher (2005). *The Logic of Conventional Implicatures*. Oxford Studies in Theoretical Linguistics, Oxford University Press, Oxford. [Revised 2003 UC Santa Cruz PhD thesis].

[2]The same explanation holds when *sae* appears within other relative clauses which do not involve universal quantification.

Quine, Willard (1960). *Word and Object*. MIT Press, Cambridge, MA.
Russell, Benjamin (2007). Imperatives in conditional conjunction. *Natural Language Semantics* 15:2, pp. 131–166.
Schwager, Magdalena (2005). Exhaustive imperatives. *Proceedings of the 15th Amsterdam Colloquium*, University of Amsterdam, Paul Dekker and Michael Franke.
Schwarz, Bernhard (2005). Scalar additive particles in negative contexts. *Natural Language Semantics* 13, pp. 125–168.

Epithets and perspective shift: experimental evidence*

Jesse A. Harris

University of Massachusetts Amherst

1. Introduction

It is often said that, provided a situation in which to evaluate reference, the literal meaning of words and phrases amounts to the objects they denote in that situation. For instance, *dog* refers to a set a dogs; *brown dogs* refers to the set of dogs that are brown, and so on. Yet, certain words and phrases may contribute another, more subjective sense to the greater linguistic context in which they occur. A prime example is the taboo intensive *damn* in (1a), which contributes the speaker's sentiment about the fact that the dog is on the couch (1b), roughly paraphrased in (1c).

(1) a. The dog is on the damn couch!
b. The dog is on the couch.
c. ≈ I'm upset by the fact that the dog is on the couch.

Here, *damn* contributes a meaning quite distinct from the propositional content of the sentence without *damn*, i.e., that which is associated with (1b). Instead, it expresses an emotional relationship the speaker has to the proposition expressed (1c).

Potts (2005) uses such cases as fodder for making a distinction between two types of information conveyed by an utterance. The first class of meanings is termed AT-ISSUE content, akin to the familiar propositional contribution of an utterance. The second class of meanings were initially recognized by Grice (1989) to be derived from conventional aspects of language. These CONVENTIONAL IMPLICATURES (CIs) are claimed to interact with at-issue content, though the two classes are semantically distinct (Potts, to appear).

The dual contribution of at-issue and CI content is perhaps most clearly illustrated by EXPRESSIVES. I focus here on one kind of expressive: EPITHETS, such as *that bastard*, *the jerk*, which add emotional charge to the descriptive content of the utterance. Although there is some variance in how the term *epithet* is used, I will follow Aoun & Choueiri (2000, 2), who characterize epithets as "definite noun phrases (DPs) which consist of either a definite article or a demonstrative with an NP. The NP contributes mainly affective meaning,

*Many thanks to Rajesh Bhatt, Lyn Frazier, Chris Potts and Tom Roeper for their assistance. Thanks also to Heidi Buetow for comments on an earlier draft.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 49-76.
GLSA Publications. Amherst, MA.

which is typically negative: contempt, anger, irony, etc."[1] One way to identify whether a noun is an epithet employs schema (2). A noun is an epithet if it can be substituted into the NP position of (2), in which D is a definite or demonstrative determiner.

(2) D + (adjective +) NP + proper name
   a. the (slippery) bastard Jones
   b. that (lovable) idiot Smith

In addition to referring to the individual (or sets of individuals) that they pick out, epithets indicate the emotional stance of the speaker with respect to the referent of the epithet. Supposing that in (3), the epithet *the idiot* refers to Marcus, then (3B) entails (3C) but not vice versa. Only the former conveys an additional dimension that relates speaker opinion to the utterance (Cruse, 1986; Löbner, 2002; Potts, 2005).

(3) A. How did Marcus do in the school play?
   B. The idiot flubbed nearly all his lines.
   C. Marcus flubbed nearly all his lines.

Epithets are interesting, in part, because they clearly display some of the core, abstract properties associated with expressive meaning. The important properties cited by Potts (2007) for the present are listed below: expressives are said to be *non-displaceable* and *perspective independent*.

(4) *Nondisplaceability*: Expressives predicate something of the utterance situation.

(5) *Perspective dependence:* Expressive content is evaluated from a particular perspective. In general, the perspective is the speakers, but there can be deviations if conditions are right.

This paper examines properties (4) and (5) in hopes of better determining how the perspective of an epithet is calculated, and under what conditions it can shift away from the speaker's perspective. I use the terms PERSPECTIVE and PERSPECTIVE SHIFT in a narrow sense throughout. By the perspective of an epithet, I mean the viewpoint to which the expressive content of the epithet can be attributed; by perspective shift, I mean to consider cases in which the perspective of an epithet reflects not the speaker's, but another agent's in discourse. For present purposes, I consider only cases in which a perspective shifts from the speaker, likely the default interpretation, and onto the previously mentioned subject of a attitude predicate. When the expressive content of an epithet reflects the subject's perspective, I refer to such cases as *subject-oriented interpretations*. Cases in which the expressive content reflects the speaker's perspective are called *speaker-oriented interpretations*. And though these terms of course apply to related phenomena – e.g., appositive clauses, expletive constructions, predicates of personal taste, etc. – in a familiar way, I will not be much concerned with those here.

[1] As hinted by Aoun & Choueiri (2000), not all uses of epithets express negative affect; in fact, uses expressing positive affect are readily observed and systematic (Potts, 2007).

Growing interest in the topic has brought out many different – and sometimes conflicting – intuitions. I present data from a questionnaire, which tested whether unembedded epithets could reflect subject, and not speaker, perspective. The results suggest that indeed they can, given that certain contextual features are present. Consequently, current theories must be evaluated against how well they stand up against the data.

I compare two kinds of theories that achieve potential shifts in perspective very differently.

(6) I. CONFIGURATIONAL: Shifting the orientation of an expressive away from the speaker's perspective is achieved by semantic binding of the expressive. Only semantic binders, such as attitude predications, within the object language standing in a particular configuration with the expressive may shift the expressive onto another perspective (Schlenker, 2003, 2007; Sauerland, 2007)

II. CONTEXTUAL: Perspectival information encoded within an expressive is calculated with respect to the interaction of various contextual and pragmatic factors, which favor a speaker orientation for independent reasons. Embedding the expressive under an attitude predicate is not necessary to shift the perspective of the expressive onto another agent in the context, though it may facilitate it (Potts, 2007; Harris & Potts, 2009, to appear)

This paper advocates treating perspectival shift of expressive content in contextual terms, and attempts to disentangle the competing accounts (6I–II) both empirically and theoretically. First, the two accounts make different empirical predictions. The configurational approach (6I) does not expect perspective shifts when the expressive is not embedded. The contextual approach (6II) allows for perspective shifts in unembedded environments, while explaining why shifting the perspective away from the speaker's perspective is a dispreferred strategy. The results from these experiments bear directly on the issue of whether perspectival shifting is licensed in unembedded cases. Second, provided that an epithet may shift even when not embedded, repairing the configurational account would require either (i) positing hidden semantic binders which would otherwise be unlicensed or (ii) proposing a pragmatic account of shiftability for unembedded contexts. In reply to the first option, I will argue that positing covert semantic binders, while perhaps formally elegant, requires further motivation, and without which remains a stipulation. In reply to the second, I further argue that proposing an additional pragmatic principle obviates the need for semantic binding and amounts to conceding to the principle points of the contextual account.

A clarification is perhaps in order: in advocating a contextual account of perspective shift in *expressive meaning*, I am assuming that expressives and indexicals differ in nontrivial respects. That is, the contextualist proposal involves (i) a distinction between the context dependence of expressive meaning and the context dependence of indexicals, and (ii) an argument against treating the context dependence of expressive meaning in terms of semantic binding. Crucially, the proposal makes no new claims about how indexicals, properly construed, are dependent on context. Therefore, it is possible that *descriptive* content is indeed controlled by semantic operators as in, for instance, Percus (2000).

2. Expressives and perspective taking

The remainder of the paper is organized as follows. Section 2.1 introduces data suggesting that expressive content must reflect speaker sentiment. Section 2.2 then discusses cases which counter-exemplify this general claim. In section 3, I present a pilot questionnaire which test whether unembedded epithets can receive non-speaker-oriented interpretations. In section 4, I evaluate how well current theories stand up to the results from this study. I propose that the contextual account best accounts for the experimental results, and discuss possible avenues to explore in fleshing out this broad hypothesis more concretely.

2.1 Speaker-orientation and scope

As mentioned, epithets are typically speaker oriented; (7) is inconsistent because use of the epithet *that jerk Conner* contradicts the previous sentence. That is, using epithets commits the speaker to an emotional stance, whether it be uttered in sincere rage or mock derision.

(7) I am not sure whether Conner is a jerk. # Is that jerk Conner coming to the party tonight? (Potts, 2005)

Potts and others have also used examples like (7) to argue that expressive content is calculated *outside* of the scope of various kinds of embedding operators, including various presupposition plugs and attitude reports. This point is illustrated by a similar pair of examples (8), contrasting the agent of the attitude verb in the second sentence.

(8) a. # I am not prejudiced against Caucasians. But if I were, you would be the worst honky I know.

b. I am not prejudiced against Caucasians. But John, who is, thinks/claims that you are the worst honky he knows. (Schlenker, 2003)

The argument proposes that the infelicity of (8a) owes to the fact that the emotive content of the pejorative term *honky* scopes over irrealis mood. In other words, since (8a) already established that the speaker is not prejudiced against Caucasians, the negative connotation of *honky* conflicts with the speaker's stated emotional stance. In contrast, no such contradiction arises in (8b). This argument was meant to convince us that epithets are, in general, *scopeless*, their content calculated outside of the scope of other semantic operators.

Nevertheless, example (8b) displays another interesting property. Here, the term *honky* appears to reflect the opinion of the subject of the report, *John*, rather than the speaker. This suggests that two interpretations are available: one in which the emotive content reflects the *speaker's* attitude toward the referent of the epithet, and another in which it reflects the *subject's* attitude.

The choice of interpretation may be manipulated by inference, though it is highly constrained by the context. For instance, the epithet *that bastard Webster* in (9) from Kratzer (1999) can be interpreted as conveying either (a) *my father's* or (b) *my own* emo-

tional stance towards Webster.[2] While the context is highly biased towards the former interpretation (9a), the latter reading appears to be available once the appropriate context is presented (9b).

(9) My father screamed that he would never allow me to marry that bastard Webster (Kratzer, 1999)

a. but I truly love Webster, so we plan to go through with it anyway.
(expressive content attributed to father)

b. and I'm glad, since my father only arranged the whole thing to tighten company relations with his beloved protege, who I personally could never stand. Somehow, he thought he was actually *punishing* me by canceling the marriage with Webster!
(expressive content attributed to speaker)

2.2 Perspective shift

In earlier work, Potts claimed that conventional implicatures, including the emotive dimension associated with epithets, are in general scopeless (though see Potts (2007, to appear)). In a recent review, Amaral, Roberts & Smith (2008) challenge the general scopelessness of conventional implicature (see also Karttunen & Zaenen (2005) and Wang, Reese & McCready (2005)). Amaral et al. (2008) provide several contexts in which the associated attitudes "appear to take narrow scope relative to the embedding attitude predicate," and suggest that cases of speaker-oriented scope can be better treated in terms of indexicality (similar appeals for an indexical treatment may be found in Schlenker (2007) and Sauerland (2007)).

(10) [Context: We know that Bob loves to do yard work and is very proud of his lawn, but also that he has a son Monty who hates to do yard chores. So Bob could say (perhaps in response to his partner's suggestion that Monty be asked to mow the lawn while he is away on business):]
Well, in fact Monty said to me this very morning that he hates to mow the friggin lawn. (Amaral et al., 2008)

What example (10) is supposed to show is that, like (8), the orientation of perspective can *shift* from the speaker to another discourse agent. Amaral et al. (2008, 736) write that this shift is "context-dependent and in general seems to be easier with embedded complements of attitude verbs than indirect speech." That is, the CI takes *narrow* scope under the embedding attitude predicate – an interpretation which is otherwise unexpected if the CIs are necessarily scopeless.

Amaral et al. (2008) suggest that CIs prefer to take wide scope because they are in some way *indexical*. Their orientation shifts from speaker to subject in attitude reports because CIs are "anchored to the agent whose point of view is salient at the time of the

[2] Kratzer (1999) noticed this shift in perspective, writing that in these cases the epithet may "be predicated of the reported situation, rather than the utterance situation."

utterance." Thus, the basic empirical claim is that while CIs may take wide scope by default, if they are embedded under a propositional attitude verb where the matrix subject's point of view is made salient, the CI may be associated with the subject rather than the speaker.

Nevertheless, it is unclear what such examples actually show about the orientation of the expressive content or in what way expressive content is to be indexical. While *friggin* in (10) certainly does not convey Bob's viewpoint, the example does not necessarily show that it directly conveys his son's viewpoint either. Interestingly, this particular case may involve a "register clash" in that we might expect that Bob would not use the term "friggin" in his own speech. Similar cases might express the speaker's representation of another agent's attitude via partial quotation; in which case, these examples would share something in common with mixed quotation:[3]

(11) George says Tony is his 'bestest friend' (Geurts & Maier, 2005)

Here, the speaker would perhaps not approve of the *use* of 'bestest' as the proper superlative, yet she can *mention* George's use of the term.[4] The point of view of the speaker, George, is in this case represented by directly quoting his terminology. Quotation of this kind distances the speaker's commitment from the actual content of the quoted material. Thus, we know to attribute the quoted material exclusively to the matrix subject, not to the speaker (see section 4.4 for more discussion).

Perspective shifts, however, can also appear without quotation marks – orthographic or other – and do not require embedding attitude predicates. The following example, found on the Internet, contains an epithet *the Apple cronies* whose CI content should be attributed not to the author but rather to the holders of what the author considers to be a fallacious argument. As the article makes clear, the author does not believe that Apple employees are Steve Job's cronies; rather, he sarcastically mentions the term in association with a kind of opinion that he intends to ridicule.

(12) [Context: While shopping at one of my local Apple stores the other day, I overheard an earnest conversation about safeguarding Mac computers against things like viruses and trojans. The customer and companion were new to Mac life and were convinced that they should be very worried about viruses. The Apple salesperson on the floor repeatedly assured them that they would not need extra antivirus protection for their Mac. The customer then argued that Symantec makes an antivirus program for Macs, therefore, it must truly be a credible threat, otherwise there would be no such products. Some antivirus products are even sold in Apple stores.]
I've heard similar arguments before: if companies like Symantec or McAfee make antivirus applications for the Mac, then Macs must truly be vulnerable somehow, somewhere. Steve Jobs and the rest of *the Apple cronies* must be lying.[5]

[3] See Anand (2007) for the explicit connection between quotation and perspective shift.

[4] See, e.g., Recanati (2000) or Cappelen & Lepore (2007) for discussion on the various relations between use, mention, and quotation.

[5] Source: http://news.digitaltrends.com/feature/79/antivirus-programs-for-mac-snake-oil-or-public-service emphasis added.

The interesting point for Amaral et al.'s claim is that the epithet is not explicitly embedded, nor, in fact, are there any other salient agents in the immediate context to which to attribute the attitude. In fact, it's unclear whether the writer is attributing the exact attitude to any participant in the discourse, over and above a *stereotypical kind* of computer user. What's more, the epithet appears in the matrix subject of a main clause. And yet we would misunderstand the rhetorical force of the epithet if we resolved the CI to the speaker.

Numerous questions regarding the data remain. How robust are such cases? Examples like (10) and (12) appear to require a rather substantial context with sharply contrasting perspectives to facilitate perspective shift. Provided that such cases are stable enough to test, what factors reliably signal that a perspective shift should be made? The remainder of this paper investigates perspective shifts in main clause contexts with epithets. The central goal of the following section is to establish whether there are contexts in which language users reliably attribute the expressive content of the epithet with a perspective associated with some other agent besides the speaker. The contexts explored here are those in which (i) the agent is portrayed as standing in a negative relation to the epithet's referent, and (ii) the epithet is syntactically unembedded.

In (13), for instance, the choice of positive (*high*) versus negative (*low*) evaluative adjective in the embedded clause of the first sentence leads to different interpretations of the epithet of the second sentence.

(13) My friend Sheila said that her history professor gave her a really (high/low) grade. The jerk always favors long papers.

i. 'high' ⇒ CI content of the epithet *jerk* is speaker-oriented

ii. 'low' ⇒ CI content of the epithet *jerk* may be speaker or subject-oriented

If the adjective is positive, a natural reading of the second sentence is one in which the speaker is jealous of Sheila's high grade – the context provides no motivation for Sheila's negative emotional stance towards her professor. If the adjective is negative, a subject reading of the epithet is more likely, perhaps because the negative stance of the attitude report may be seen to justify the perspective shift towards the subject's point of view. Note that in this case the epithet may also be interpreted as speaker-oriented so long as the speaker commiserates with the subject (see section 4.4 for more discussion). Thus, the prediction for these contexts is that when an epithet attributes a negative stance to the subject, epithets may be interpreted as either speaker or subject oriented, while in positive contexts, they are more likely to be interpreted as speaker-oriented.

Non-speaker-oriented interpretations of unembedded CI content are unexpected under a configurational account, as well as any account that predicts only speaker-oriented readings (e.g., Potts, 2005). In the first case, if CI content is indexical and must be semantically bound by a higher operator to receive an interpretation, then epithets in matrix clauses cannot be attributed to any agent other than the speaker. In the second case, if CI content invariably takes scope over at-issue content, then epithets should always be interpreted as reflecting the speaker's viewpoint. Thus, neither Potts (2005) nor the configurational approach (6I) necessarily predicts that the CI content can be attributed to the subject in unembedded contexts. Before suggesting how to best address this problem, however, I

present the results of an experimental study confirming that non-speaker-oriented readings are in fact available in unembedded environments.

3. Pilot questionnaire

3.1 Materials and methods

The experiment tested whether a positive or negative 'evaluative' adjective would affect how the referent of an epithet like *the jerk* would be determined. Materials consisted of 8 pairs like (14), in which either a positive (*high*) or negative (*low*) evaluative adjective appeared (see Appendix for materials). In a following sentence, an epithet (*the jerk*) appeared which referred to the subject of the propositional attitude (*her history professor*).

Participants were instructed to judge who was responsible for the emotive content associated with the epithet – e.g., in (14) subjects determined who held the opinion that the history professor was a jerk. To make the speaker more salient, a basic discourse content was given in **bold**, explicitly introducing the speaker.

(14) **Suppose that you and I are talking, and I say:**
My friend Sheila said that her history professor gave her a really (high/low) grade. The jerk always favors long papers.

Whose opinion is it that Sheila's history professor is a jerk?

a. Mine
b. Sheila's
c. Both mine and Sheila's
d. Neither mine nor Sheila's

It was predicted that participants would attribute the emotive content of the epithet to the subject more often when the adjective in the preceding sentence was negative than when it was positive. In other words, b. or c. responses were expected to occur more frequently when the attitude holder was portrayed as evaluating the situation negatively than positively.

Questionnaires were divided into four randomized and counterbalanced lists, so that subjects saw one and only one condition from each item. Two other experiments, testing entirely different constructions, added a total of 40 experimental items to the questionnaire. Additionally, 10 genuine filler items were included for a total of 58 items per questionnaire.

3.2 Participants

Twenty undergraduates from the University of Massachusetts, Amherst participated in a questionnaire for course credit. All participants were enrolled in an introductory linguistics class in Fall 2008 and were contacted via email. Students had no exposure to the topics tested here, nor explicit knowledge of psycholinguistic tasks in general. Participants were simply instructed to read the questions carefully and answer according to their intuitions.

3.3 Data analysis

Figure 1 shows the distribution of total responses. Participants attributed the CI content of the epithet to the speaker in the vast majority of cases, regardless of condition. The speaker-oriented preference is expected under most accounts of CI scope taking, including both Potts (2005) and Amaral et al. (2008).

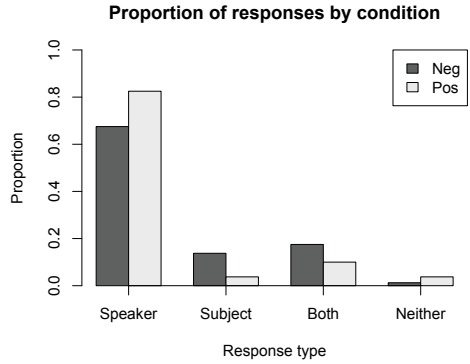


Figure 1: Distribution of responses

However, participants *did* interpret the CI content as subject oriented, i.e., with narrow scope, at least some of the time. The question is whether they did so more often for negative contexts, and whether certain items were more effective than others. These issues are addressed in turn.

First, a note about response coding is in order. The four responses (a – d) were coded according to whether the *speaker* or *subject* interpretation was possible. The coding thus consisted of two columns with binary values (Table 1).

	Response	Speaker	Subject
a.	Speaker only	1	0
b.	Subject only	0	1
c.	Both	1	1
d.	Neither	0	0

Table 1: Response coding

Since it was uncontroversial that the speaker-oriented reading was available, the analysis focuses on whether the subject-oriented reading was available. Thus, the analyses presented below take the second column (Subject) as the dependent variable for all statistical models.

By Condition

Although the non-subject (speaker) orientation was preferred across the board, participants reported more subject-oriented interpretations in the Negative condition (31.25%) than in the Positive condition (13.75%). Thus, there was more variance of response in the Negative condition, as summarized in Table 2.

		Condition	
		Neg	Pos
Response	Subject (1)	25 (31.25%)	11 (13.75%)
	Non-Subject (0)	55 (68.75%)	69 (86.25%)

Table 2: Proportion of responses by condition

The data was modeled as a linear mixed effects logit regression (Baayen, Davidson & Bates, 2008; Jaeger, 2008), with participants and items as random effects in the R statistical computing software (R Development Core Team, 2008). The model was used to evaluate whether the availability of subject interpretations of expressive content was affected by the choice of positive or negative evaluative adjective. A model with a single categorical variable of `condition` was found to significantly predict whether the epithet could plausibly be attributed to the matrix subject, rather than to the speaker.[6] The model is provided in Figure 3.

	Estimate	Std. Error	z value	p value
(Intercept)	-1.77	0.43	-4.1	< 0.001
Neg	0.67	0.23	3.00	< 0.01

Table 3: Linear mixed effects model: This linear mixed effects logistic regression tests whether the Neg condition significantly increased the likelihood of a Subject response over scores observed in the Pos condition.

The above linear mixed effects logit model tests suggests that the Neg condition correlated with an increased likelihood of a Subject response, $p < 0.01$. The model intuitively corresponds to the proportion of scores, in which over twice as many Subject responses were observed in the Neg condition as compared to the Pos condition. This provides initial evidence that perspectival calculation is dependent on some features of the context, which this study successfully manipulated. Random effects did not significantly vary with the manipulation and are omitted for convenience.

[6]It may be claimed that the 'neither' responses should not be interpreted, as it is unclear whether subjects understood the sentence or the task. To address this concern, an additional logit model over data culled of the 'neither' responses was performed, and essentially the same results obtained, although at a higher significance level of $\alpha = 0.05$.

In addition, a chi-squared tested of goodness-of-fit was computed and found that the above model better fit the data than the unsaturated (intercept) model, $\chi^2(1, N = 20) = 7.17, p < 0.01$. In other words, adding the Neg condition as a factor to the model explained variance in the data significantly better than a model without it.

An alternate view of the data counts only subject-oriented responses as non-speaker-oriented interpretations, since the "both" response includes the speaker as well as the subject. Separating these "speaker-only" responses from the "both" responses biases against the hypothesis that the Negative context condition will be associated with increased non-speaker-oriented readings.

		Neg	(%)	Pos	(%)
Response	Subject only (1)	11	(14%)	3	(4%)
	Not subject (0)	69	(86%)	77	(96%)

Table 4: Proportion of responses by condition – counting only subject responses as non-speaker-oriented interpretations

Nevertheless, recoding the responses does not alter the basic pattern: the number of subject only responses increased significantly from 3 responses (4%) in Positive contexts to 11 responses (14%) in Negative contexts, $p < 0.05$.

By Items

Not all items were equally amenable to a subject interpretation. While some items approached chance interpretation (item 3), others remained stably speaker-oriented (items 5 and 6). The remaining items were interpreted as subject-oriented between 20 - 30% of the time. The complete distribution of responses by item is shown in Table 5 below. No significant differences between items were found when items were included as a predictor in the statistical model.

		Items							
		1	2	3	4	5	6	7	8
Response	Not Subject	14	16	11	16	18	19	15	15
	Subject	6	4	9	4	2	1	5	5
	Subject (%)	30	20	45	20	10	5	25	25

Table 5: Proportion of responses by item

3.4 Discussion

As predicted, the interpretation of expressive content was affected by the polarity of the evaluative context. Although there was a persistent bias towards speaker-orientation in both

positive and negative contexts, participants reported more subject-oriented interpretations in negative contexts than in positive contexts. This pattern suggests that expressive content can – under the right circumstances – be interpreted as reflecting subject sentiment, and that an expressive need not be embedded for this kind of perspective shift to occur.

While the results from the pilot are encouraging, the manipulation nevertheless yielded a low overall percentage of subject-oriented readings ($< 14\%$), perhaps suggesting that participants were often hesitant to override the default subject-oriented interpretations in these scenarios.

4. Context and the calculation of perspective

While the experimental work presented above is preliminary, some tentative conclusions may be drawn from the results, if only to shape future research in the area. Theories of expressive meaning must account for two patterns in the data. The first concerns interpretation and has two components: (a) expressives *typically* reflect speaker commitment, but (b) not *exclusively so*. The second concerns the syntactic embedding of the epithet: non-speaker-oriented meaning is accessible even when the expressive is unembedded. Both patterns are, at least *prima facie*, problematic for configurational accounts. For semantic binding itself does not explain the preference towards speaker commitment, nor does it predict that unembedded expressions should receive a non-speaker-oriented interpretation.

This much is clear: expressives are context-dependent. In the next section, I present various ways in which context dependence could be formalized, mapping the configurational and contextual approaches to encoding perspective information in expressives onto the varieties of context dependence, discussed by Recanati (2007). I will claim that the configurational account must endorse a view of narrow indexicality, while the contextual account is underdetermined between broad indexicality and a process of pragmatic enrichment which Recanati terms *modulation*.

4.1 The varieties of context dependence

Context dependence comes in many forms. We may say that an expression is context dependent, broadly speaking, when its meaning is affected by the context in which it is used. Indexical expressions are prime examples of context dependent items. In his work on the topic, Kaplan (1989) defends the idea that demonstratives and other indexical expressions *directly* refer to their referents without the mediation of Fregean *Sinn*, i.e., the sense of an expression, the aspect of an expression which gives it its "cognitive significance." Such items refer to specific entities in a context via a conventional rule, which determines how the particular item is to be interpreted on any occasion of use. For instance, take the 1st person pronoun 'I' in the following English sentence (15).

(15) I am speaking now.

Sentence (15) is certainly true of the speaker at the time of its utterance, but it is probably not true of the hearer at the same time. Even if it were true of the hearer, (15) would be misunderstood if 'I' were taken to designate the addressee of this utterance.

Kaplan argued that stating a formal rule for these expressions demanded a split between two kinds of meanings: *content* and *character*.

Briefly, content is the familiar meaning associated with expressions; contents are functions from circumstances (worlds, or world-time pairs) to extensions. In other words, contents are Carnapian intensions. Character, in contrast, conventionally determines contents in contexts of use. In a given context, the character of an expression yields the content of the expression. In other words, characters can be understood as functions from contexts to contents.

What exactly are contexts? Although the question has been at the center of much recent controversy, Kaplan's (1989) basic answer was that contexts include at least an author, a world, and a time (and possibly a location). We represent the major parts of contexts as follows: a context C contains c_a, c_w, c_t. Some other context C' may contain other arrangements of author, world, and time components, e.g. a different author $c'_{a'}$ or a different time $c'_{t'}$. As such, contexts are often represented as *tuples* of values $\langle c_a, c_w, c_t \rangle$, though there is some question about whether contexts should be thought of as n-tuples of (shiftable) indices (Lewis, 1980), or as situations (Kratzer, 2009). I remain agnostic about the issue here.

It is easy to see that indexical expressions are interpreted differently in different contexts, yet share some aspect of meaning. In (16), Heidi and Max say different things. Heidi says that *she* is blond, while Max says that *he* is blond. The utterances occur in different contexts: the first is one in which Heidi is the speaker C_H, the second is one in which Max is the speaker C_M.

(16) a. Heidi: I am blond.
b. Max: I am blond.

That is, (16) expresses a different content when uttered in context C_H than when uttered in context C_M. Yet, some aspect of the meaning of 'I' remains constant in any context, in that it is used to refer to the author c_a of that context. Kaplan (1989) argued that the aspect of meaning which remains constant could be identified as the character: once the context is fixed, we know how to interpret the indexical pronoun.

Kaplan's (1989) treatment of context dependence for indexicals and demonstratives has been extremely influential. Nevertheless, the term "indexical" continues to be used in a variety of ways. In some cases, "indexical" is used to cover any kind of context dependence. In others, it is used as a kind of linguistic element whose meaning is determined by a particular rule of interpretation.

Recanati (2007, 1) distinguishes these different uses of indexicality by the terms "broad" and "narrow" indexicality, respectively. I quote Recanati's discussion of *broad indexicality* at length:

> In the broad sense, indexical expressions are expressions whose semantic content depends on the context. Only a particular occurrence of such an expression carries semantic content. Independent of context, the expression type possess a conventional significance, or 'linguistic meaning', that falls short of determining the expression's content.

In other words, broad indexicals contribute underspecified meaning to the semantic content of an expression.

A *narrow indexical* is just like a broad indexical, save that its "linguistic meaning additionally *encodes* this dependency upon the context of speech." Such expressions are accompanied by so-called *token-reflexive* rules that conventionally determine the content within a given context.

Expressions of both broad and narrow indexical type trigger *saturation*, a "contextual process of completion or value assignment through which the semantic content of the expression in determined." Saturation is a necessary process. Without it, the semantic content of an expression containing an indexical, broad or narrow, is underdetermined.

The varieties of context dependence are not exhausted by indexicality of the broad or narrow sort, whose meanings must be resolved before the expression in which they occur may be evaluated. Indeed, Recanati (2007) further posits an additional kind of context dependence, *modulation*, which modifies an already semantically complete content. As such, modulation is not mandatory; it is invoked to pragmatically coerce the meanings of words in order to better understand their meanings in a context.

I take these three kinds of context dependency for granted.[7] They may be other forms of context dependence (for instance, as in Lasersohn (2005, 2008)). The next task is to determine with which of these three kinds of context dependence, if any, our accounts in (6) are consistent. The basic picture I adopt is illustrated in Figure 2 in which the configurational approach could only treat expressive content as indexical in the narrow sense, while the configurational account may treat expressive content either as broadly indexical or as an instance of modulated meaning.

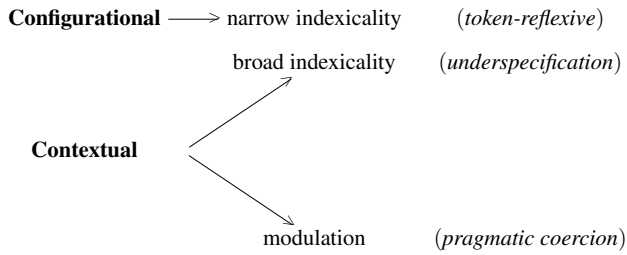


Figure 2: Configuration vs. Contextual accounts and the kinds of context dependence

The remainder of the paper concentrates on fleshing out these three proposals and evaluating their plausibility. Fortunately, the indexical variants of the configurational and contextual accounts have already been proposed in some detail. To my knowledge, a modulation variant of the contextual account has not been presented elsewhere.

[7] Though see Huang (2007) for a clear overview of alternative proposals for pragmatic enrichment.

4.2 Perspective shift as narrowly indexical

The narrow indexical approach is extremely attractive. There are already several accounts that treat the interpretation of personal pronouns and temporal adverbials in terms of binding by controlling attitude predicates (Schlenker, 1999, 2003, 2007; von Stechow, 2003) or other context-shifting operators (Anand & Nevins, 2004). A narrow indexical account would incorporate expressive meaning into the fold of more familiar indexicals. In particular, the perspectival orientation associated with an expressive would be treated just as indexicals are in these frameworks, items which are obligatorily bound by higher operators.

I doubt that all proponents of a configurational approach to indexicality would endorse extending this treatment to expressive meaning. I therefore concentrate on Schlenker (2007) who explicitly proposes to cover expressive meanings in this way (for a similar proposal, see Sauerland (2007), whose treatment I do not discuss). Before discussing these accounts, I provide some background on the standard analysis of attitude predicates.

Attitude predications

Following Hintikka (1969), the standard treatment of attitude predicates relates the attitude holder to a proposition. For instance, to formalize the semantics of *believe*, we might define an accessibility relation $\mathscr{B}$ between possible worlds w, and w' such that $w\mathscr{B}_a w'$ holds just in case world w' is compatible with agent a's belief state in w. The complement to the attitude predication provides a set of worlds. If these worlds are compatible with John's beliefs in the utterance world, then the belief predication holds of John. For instance, if we were to take (17), the complement *he$_i$ is a hero* would provide a set of worlds in which the individual denoted by he$_i$ is a hero.

(17) John believes that he$_i$ is a hero

Thus, attitude predicates are standardly treated as shifting a *world* variable, not an entire context. Combined with Kaplan's (1989) treatment of demonstratives, the analysis correctly prohibits the indexical *I* in (18) from being interpreted *de se*, i.e., in which *I* is interpreted as *John*.[8]

(18) John said that I am a hero
$\neq$ John said that he is a hero

Similar observations led Kaplan (1989) to posit a prohibition on operations that shift or quantify over contexts, as in *in some contexts* (19). *Monstrous operators*, as they are called, would allow an interpretation of an indexical in some context other that the context of utterance.

(19) $\underbrace{\text{In some contexts}}_{\text{monster}}$ it is true that I am not tired now.

[8] An additional issue to be raised is the extent to which attitude predicates, e.g., *believe, think, etc.*, and verbs of saying, e.g., *say, claimed, etc.* are alike. Although differences between them are often ignored in the literature, such a practice is perhaps mistaken (see Karttunen (1974) and Forbes (1997) for some discussion).

If the monster in (19) were to shift the context of evaluation, the indexicals *I* and *now* could refer to an individual i and a time t, respectively, for which i was not tired at this very moment, but at some other time t. In which case, the indexicals would not refer *directly* to the individuals they denote, at least in some specialized contexts. Kaplan's (1989) response is simply to deny the existence of such context shifting operators in the object language, save as quotations.

Kaplan's (1989) strategy has recently been the object of much scrutiny. Schlenker (2003, to appear), Anand & Nevins (2004) and others have observed that while – in English – the indexical *I* (18) must refer to the speaker, not the attitude holder, this pattern is violated in other languages. In particular, Schlenker (2003) shows that certain indexicals embedded under attitude verbs in Amharic may reflect the attitude holder and not the speaker. Schlenker (2003) proposes that attitude verbs may indeed be monstrous: they quantify over *contexts*, not worlds.[9] In order to account for the different behaviors of indexicals in languages such as English and Amharic, he posits two classes of context variables: a shiftable context variable c and a a non-shiftable context c^* that picks out the actual speech context. He then locates the difference between English and Amharic in the lexical specification of the indexical: Amharic indexicals are shiftable, resolved with either context c or c^*, but English indexicals are not, taking only the actual speech context c^*.

The point is that if attitude predicates quantify over contexts, they may serve to shift the context in which the indexical is evaluated. Schlenker (2003, 69) takes great pains to show that *only* attitude predicates may shift contexts in his framework. Thus, non-attitude predicates are not predicted to associate with a context shift in any language. Indeed, Amharic and English are alike in this regard: under a factive verb like *found*, the indexical must be interpreted with respect to c^*, the actual speech context.

However, our main concern is the calculation of perspectival information with respect to epithets, a concern which has gone largely unaddressed in the above section. That is, how does Schlenker's (2003) framework inform perspective shifting in *epithets*? I now turn to Schlenker's (2007) answer, which treats expressive meaning as involving a (narrowly) indexical component.

Expressive presuppositions

In a commentary on Potts (2007), Schlenker (2007) proposes that expressives are shiftable indexicals, that contribute "self-fulfilling" presuppositions to the common ground – i.e., a set of propositions and attitudes that speakers of a discourse take to be accessible by other agents in the discourse. Thus, according to his treatment of indexicals, expressives come in two varieties: standard and shiftable. The standard indexicals are evaluated with respect to the actual speech act, while shiftable indexicals may be evaluated with respect to any context, including that of the reported speech act. In addition, Schlenker (2007) argues that, in subject oriented readings of expressives, the context variable that resolves the indexical is left free. Thus, expressives are normally evaluated with respect to the actual

[9] Though see von Stechow (2003) for criticism of Schlenker's claim that attitude predicates are monsters in this framework.

speech situation c^*, but when embedded, and only when embedded, they may be shifted so that they are evaluated with respect to the reported speech act.[10]

Under this brand of narrow indexicality, it's not clear why expressives could take the context variable from these attitude predicates in particular; nor is it clear why shifting the context is so limited, even when the predicate is of the right type. However, as noted already by Potts (2007, 176), no approach in which the indexical associated with an expressive can be *entirely* controlled by the overt embedding attitude verb. For, as the results from the above experiment suggests, the context must be accessible to unembedded expressives, as well.

Proponents of the narrow indexical approach to perspective shift may wish to posit an additional operator to semantically bind the syntactically unembedded epithet. Such an analysis is not without precedent. For instance, in her analysis of Navajo direct discourse complements, Speas (1999) suggests that a covert speech operator optionally incorporates into a verb of saying. Like Amharic (Schlenker, 2003), 1st and 2nd person pronouns in Navajo may be resolved to discourse agents other than the speaker and addressee, respectively, when embedded under verbs of saying (see also Hollabrandse (2000) for discussion).

Speas's (1999) account could be extended so that these silent operators, instead of the attitude predicates themselves, shift the context of evaluation. Therefore, these silent speech act operators could appear above unembedded epithets in Cinque's (1997) 'evaluative' position, shifting the perspectival information of the epithet away from the speaker and onto another discourse agent.

However, as Speas (1999) observes, epithets in Navajo *do not* shift in direct discourse contexts where the 1st person pronoun is attributed to the matrix subject. This means that even if an evaluative head shifts the resolution of the indexical, it need not affect the perspective associated with the epithet. Most, if not all, of the approaches to perspective shift that rely on binding mechanism state that parameters of the context must shift together (for instance, Anand & Nevins (2004) and Schlenker (to appear); see also Kratzer (2009) for discussion). Shifting entire contexts means that once the context changes in embedded cases, it should not be able to shift back to the speaker's perspective; once the context has shifted for the indexical, it could have no way of shifting back to the speaker's perspective for the epithet. If so, then the Navajo data could be considered evidence for treating indexicals and expressives as independent.

A further conceptual problem faced by narrow indexicality accounts is that they require an additional principle to explain why, even when the necessary conditions for perspectival shift obtain, the subject reading is still favored. Sauerland (2007) offers one such principle in passing: " the individual strong emotional content is attributed to must be unambiguously recoverable unless it is the speaker of the utterance." Whatever the reason may be, these accounts do not, as of yet, explain the distribution of perspective shift without also adopting a pragmatic principle explaining the preference towards the speaker. And, as I argue below, a principle that explains why the subject reading is favored is all that is

[10] Although Schlenker (2007) does not directly claim that expressives, as shiftable indexicals, could only be shifted to a different context under an attitude predicate, the result is immediate from his earlier work (Schlenker, 2003).

required to sufficiently capture perspectival shift in expressives. Since such accounts do not need to posit context shifting mechanisms, I propose that such mechanisms are redundant in the analysis of perspectival information in expressive meaning.

4.3 Perspective shift as broadly indexical

In a contextualist account, I have claimed, the way in which expressive meaning is dependent on context could be developed in a variety of ways. In this section, I present Potts's (2007) account, which I categorize as 'broadly indexical.' Recall that for an element to be broadly indexical, in Recanati's (2007) terms, some aspect of its semantic content remains underspecified unless saturated by some feature provided by the context. Potts (2007, 175) proposes an account of perspectival shift in expressives in which a contextual judge is hardwired "directly into the denotation of expressive." The contextual judge contributes an underspecified aspect of the expressive's meaning – although it aligns with the speaker of a context, c_a, as a default, it can also be shifted to another perspective if the conditions are right.

The contextual judge was proposed independently by Lasersohn (2005) in the analysis of so-called predicates of personal taste (POTs). What are POTs? They are difficult to categorize; although the typical POT is a gradable adjective (Glanzberg, 2007), there are no clear, established tests to distinguish POTs from similar predicates (Lasersohn, 2008). I follow Lasersohn (2005, 2008) in eschewing a formal characterization in favor of an intuitive understanding, noting only that POTs are predicates which appear to allow interpersonal variation in the assignment of degrees. That is, POTs admit a degree structure, which is assigned on a subjective, rather than objective, basis. In (20), for example, the predicate *fun* applies differently to different judges: roller coasters may be fun for *me*, but they are not necessarily fun for *the addressee*, or anyone else in the discourse.

(20) Roller coasters are fun

Lasersohn (2005) presents two basic options for how to encode the judge parameter. The first way, adopted by Potts (2007), encodes the judge parameter into the content of the POT (21a). In the second, advocated by Lasersohn (2005), the judge parameter enters via pragmatic contexts to resolve an individual index expressed within the meaning of the POT (21b). In either case, the context has to be revised to include a parameter for a particular kind of individual: in the first case, it is the judge of the context, and in the second it is merely an individual who may or may not be associated with the judge of the context.

(21) Two analysis of POTs

a. $[\![\text{ fun }]\!]^{w,t,c}$ = the set of things that are fun for c_J in world w at time t.

b. $[\![\text{ fun }]\!]^{w,t,i,c}$ = the set of things that are fun for individual i in world w at time t.

On either account, POTs are judged differently in different contexts depending on the value of c_J. Potts (2007, 184) defines a context and the notion of an *expressive index* as follows:

(38) A context is a tuple $c = \langle c_A, c_T, c_W, c_J, c_\varepsilon \rangle$, where c_A is the agent (speaker) of c, c_T is the time of c, c_W is the world of c, c_J is the judge of c, and c_ε is a set of expressive indices.

(37) An *expressive index* is a triple $\langle a \mathbf{I} b \rangle$, where $a, b \in D_e$ and $\mathbf{I} \sqsubseteq [-1, 1]$

Potts (2007) allows a limited form of context shift that operates on expressive elements in the context, c_ε. His idea is that expressives are performative by nature: uttering an expressive is an expressive act which serves to situate an emotional relationship between the judge and the referent of the expressive (represented by the expressive index). In short, expressives *change the expressive dimension of the content*, without affecting the descriptive content of the expression containing the expressive element.

As such, expressives obligatorily shift the expressive dimension of a context. Yet, we still do not have a firm grasp on the conditions under which the contextual judge can change, thereby reflecting the shift in perspective of emotive attitude expressed by the expressive. In his reply to Potts (2007), Lasersohn (2007) offers the following explanation for why expressives tend to "project" out of embedded contexts:

> Because expressive are so emotionally charged, and because their use can carry a significant social risk, I suspect that speakers are especially cautious about using them in embedded contexts where there is a chance of their content "leaking" – except of course, if the speaker does agree with the content of the expressive and is willing to make this agreement public.

In essence, speakers tend not to use expressives in embedded contexts unless they are willing to be associated with the emotive viewpoint established by the expressive.

I believe that Lasersohn's (2007) intuition is on the right track, subject to some important modifications. Broadly speaking, Lasersohn's central idea is that the speaker-orientation of expressives is dominant because it is a stable interpretive strategy. His proposal rests on the claim, *pace* Potts (2005), that expressives pattern along with presuppositions. Just as the presupposition that France is a monarchy can "leak" out of an opaque context (22a), Lasersohn (2007, 228) argues that expressive content can fail to be contained in similar contexts (22b).

(22) a. John thinks the king of France is bald

b. Sue believes that that bastard Kresge should be fired

However, this idea would have to be extended to cover the experimental stimuli. Since the epithets appeared outside the scope of an embedding predicate, at least ostensibly so, there is no need to worry that the emotive content could unintentionally leak. Perhaps the stable interpretive strategy which enforces a speaker interpretation precludes this concern. It seems to me that Lasersohn's (2007) approach would predict a vast predominance of some variety of speaker-oriented interpretation – either "speaker only" or "both" response. This is in partial accordance with the experimental results. Yet, a subject

only response appeared as a viable option, which was successfully manipulated by context.[11] Further research is required to determine whether subject only and both interpretations have a different status, and it may be crucial to determine the viability of Lasersohn's proposal.

The experimental results reported above provide initial evidence that slight, but crucial, changes in the context warrant different interpretations of the expressive orientation. What is missing from the accounts discussed above are clear principles that determine which contextual factors influence the availability of non-speaker-oriented readings of expressive content and how these factors succeed in doing so. The next section explores the possibility that perspective shift of expressive content is primarily a pragmatic phenomenon by which hearers violate the stable interpretive strategy in order to make the use of the expressive better cohere with the presumed intention of the speaker. Doing so requires very strong cues from from the speaker, and as such presents a significant risk for misinterpretation.

4.4 Perspective shift as modulation

Lastly, I consider perspectival shift as a form of modulation. The term *modulation* can be seen as a cover term for various kinds of processes resulting in pragmatic enrichment or implicature. Modulation, also called "free enrichment" (Recanati, 2004a; Huang, 2007), consists of at least two subtypes: strengthening and expansion. Strengthening enriches a fully saturated proposition with a conceptual constituent so that the enriched proposition now logically entails the original proposition. The proposition in (23a) is enriched to (23b) by adding a temporal adjunct locating the event in time. As such, the enriched proposition entails the minimal proposition from which it was built.

(23) **Strengthening**

a. John has showered (minimal proposition)

b. John has showered [today] (strengthened proposition)

Expansion is just like strengthening, save that the enriched proposition does not logically entail the minimal proposition (Bach, 1987; Recanati, 2004b). One such example, from Huang (2007), is illustrated by the pairs in (24).

(24) **Expansion**

a. I have nothing to wear (minimal proposition)

b. I have nothing [suitable] to wear [to John's wedding] (expanded proposition)

However, in the case of perspectival information, it is unclear with what the proposition could be 'enriched' to convey a shift of expressive orientation. Now, it could be that it is, in fact, the judge parameter c_J which is added to the proposition. Different perspectives are augmented by different contextual judges. The default judge may be the speaker:

[11] See also Harris & Potts (2009) for an experiment on appositives in which *subject only* responses predominated in both embedded and unembedded contexts.

in order to properly understand the utterance, the contextual judge must be retrieved from the context. This view would imply that expressives do not come specified for a judge. Rather, an appropriate judge is added to the representation according to what the hearer believes the speaker intended. However, this view makes the wrong predictions for the ways in which an expressive could be defeasible.

Example (25) illustrates an important contrast between potential defeasibility in POTs and expressives. While the inference that roller coasters are fun for the speaker may be canceled in (25a), the inference that the speaker holds Ed in disregard cannot be canceled in (25b).

(25) a. ?Roller coasters may be fun, but they're not for me.
b. #Ed may be a jerk, but I don't think he is.

The above pair casts doubt on whether adding a contextual judge as an enrichment of the original proposition will help us in determining the locus of perspectival information. That is, (25b) suggests that perspectival information is encoded into the semantics of the expressive, rather than inserted into the semantics by a post-semantic process.[12]

I think that a more promising route incorporates conversational implicature into the calculation of expressive orientation. It could be argued that modulation may potentially include certain kinds of Gricean conversational implicature (Grice, 1989).[13] In particular, perspective shift could be the result of repairing a Quality implicature (as suggested on separate occasions by Lyn Frazier and Chris Kennedy, personal communication).

Although the basics of Grice's (1989) pragmatic agenda are well-know and widely accepted, I provide some of the necessary background here. In an effort to identify the principles guiding conversation, Grice proposed the cooperative principle which states that discourse participants are expected to be *cooperative* and *rational*.

(26) **Cooperative principle:** "Make your contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged."

Grice further developed the ways in which participants could be rational in terms of four conversational maxims. The maxims are principles to which participants should adhere if they intend to be cooperative. The most relevant, and arguably most basic, maxim is the Maxim of Quality:

(27) **Maxim of Quality:** Try to make your contribution one that is true.

[12] A better example might have been (1), which both uses a real epithet (that jerk) and which explicitly introduces another perspective as a potential judge. Nevertheless, the disregard cannot be (easily) canceled, unless it is anchored to another perspective by partial quotation.

(1) # You can complain about that jerk Ed, but I don't think he's a jerk.

[13] I am aware that I am playing fast and loose with Recanati's framework. It's not at all clear that he would count implicature as a species of modulation.

Grice, however, realized that the maxims could nevertheless be *flouted*, in which a speaker violates a maxim with the intention that this violation will be apparent to other participants. The intriguing part of flouting is that so doing does not necessarily violate the Cooperative Principle. That is, the hearer may realize that the speaker has violated a maxim, for instance, Quality, *without* concluding that the speaker is uncooperative. Rather, the hearer must find another meaning for the utterance that better coheres with what the hearer imagines the speaker would have intended.

(28) A cooperative speaker S utters x, which standardly means p in the context of utterance c, to hearer H.
   a. If p could be (is likely to be) literally true in c, then H assumes that S cooperatively intended p by his use of x in c.
   b. Otherwise, H infers that S did not intend p by x, and
      i. H reasons that a cooperative speaker does not contribute false or misleading statements to the discourse, and
      ii. H, therefore, reasons that S did not intend p by x in c, and, as such, did not intend to convey the literal meaning p of x in c, but rather a meaning q derivable from p in c.

What could q, the non-literal but intended, meaning of x be in the case of expressive meaning? Some options include (i) an ironic rendering of the expressive, (ii) a partial quotation of the expressive, or (iii) commiserative use of the expressive. These different options provide different possible emotive associations between the speaker and the expressive. In the case of irony, the speaker provides strong cues to *dissociate* himself from the literal meaning of the expressive. If the literal, or at least standard, meaning of the expressive is taken to be speaker-oriented, then, in effect, the speaker does not endorse the relationship posed by the expressive. Such a use is most clearly evinced by example (12).

The case of partial quotation is less clear. By using a partial quotation, the speaker clearly indicates that the use of the expressive originates in another context and should be attributed to another speaker (Anand, 2007). However, by placing the expressive in a partial quotation does not determine whether or not the speaker endorses that use. Other contextual factors must be present in order to determine whether the speaker fully dissociates herself from it.

Lastly, the speaker may intend to commiserate with the attitude expressed by the expressive. Here, the speaker endorses the use of the expressive, while indicating that its source may be found elsewhere. In this case, the speaker takes another agent's perspective as her own, perhaps because she lacks the necessary epistemic basis with which to independently establish an opinion on the matter. To illustrate the three options about, let us reconsider example (13) in light of this analysis.

(29) a. My friend Sheila said that her history professor gave her a really high grade. (speaker-oriented)

b. My friend Sheila said that her history professor gave her a really low grade. (subject-oriented)

The jerk always favors long papers.

One reading of the speaker-oriented case (29a) is one in which the speaker uses the epithet *the jerk* to express jealousy – Sheila is now interpreted as a competitor with the speaker. Since there is no reason given in the short context to assume that Sheila stands in a negative emotive relationship with her professor, a subject reading is ruled out. Consequently, *the jerk* is strongly biased towards a speaker-oriented interpretation.

The subject-oriented interpretation of the expressive in (29b) may be captured in at least two ways. In the first, the speaker may be *partially quoting* Sheila. To achieve the effect of partial quotation, the speaker might use a variety of cues, such as intonation and gesture to make it clear that the use of the epithet is borrowed from another source, in this case Sheila. It is not clear whether the speaker endorses Sheila's view of her professor, as well. It at least allows for the possibility of a purely subject-oriented reading.

In the second case, the speaker *commiserates* with Sheila: he thinks that the professor is a jerk because he believes what Sheila does about the professor. Note that this interpretation may correspond to the *both* responses observed in the experiment. Here, evidential information is crucial: if Sheila is the speaker's only source of knowledge about the professor, then her opinion will significantly determine his own.

Note that the stable interpretative strategy discussed above is not necessarily violated in the case of commiseration. The speaker *is* committed to expressing the negative stance towards the epithet, but the context allows the hearer to infer that the source of the opinion derives from elsewhere.

	Strategy	**Perspective**
i.	Dissociative	Non-speaker
ii.	Quotative	Underspecified
iii.	Commiserative	Subject and Speaker

Table 6: Comparing non-standard communicative strategies

The three non-standard communicative strategies discussed above are summarized in Table 6. First, the speaker can choose to dissociate herself from controversial content, in which case she signals that the expressive dimension in the epithet is non-speaker-oriented. As discussed in Harris & Potts (to appear), dissociation might be signalled in a variety of ways, along both intonational (e.g., contrastive focus, the adoption of a different pitch range, etc.) and gestural (e.g., eye-rolls, head-shakes, etc.) dimensions. These ways usually employ sarcasm to distance the speaker from the literal meaning of what she says.

Second, the speaker might use quotation to communicate that the source of the content originates elsewhere. While the speaker still dissociates herself from the content of what she says in this strategy, she does not use sarcasm to do so, and thereby leaves

open the possibility that she endorses the content, whether descriptive or expressive, of the quoted material. Thus, the quotative strategy is underspecified with respect to perspectival information.

Third, the speaker may signal that she endorses the expressive content because she commiserates with the source from which it originated. Such cases are likely to involve an evidential component, as the speaker has become acquainted with the referent through the attitude holder. In this way, the speaker's perspective is identified with the attitude holder's perspective (see Simons, 2007 for discussion).

I have only briefly sketched a view of perspective shift of expressive meaning, motivated by resolving a violation of the Maxim of Quality. Yet the discussion has brought out many important features of these contexts. Crucially, we see that these situations involve many complex inferences, such as evidential information, commiseration with the subject, etc. It also allows us to explain select violations of the stable strategy discussed by Lasersohn (2007), and to directly associate some violations with particular interpretations, e.g., irony (and perhaps partial quotation) to purely subject-orientation interpretations, and commiseration with the Both responses.

I will conclude with the suggestion that a whole range of strategies are available, the choice of which depends on what kind of contextual evidence is present. In particular, two important dimensions are at play: (i) the source of the speaker's knowledge about the referent and (ii) whether relevant aspects of the subject's viewpoint is shared by the speaker.

Lastly, it is not clear whether attributing perspectival shift to modulation is necessary inconsistent with an underspecification approach. Rather, it may be that trying to recover *what was intended* from *what was said* drives an interpretation of expressive perspective which deviates from the stable interpretive strategy. Only when the hearer encounters evidence that the stable strategy will fail to deliver the intended meaning is the hearer drawn away from directly associating speaker perspective with the expressive content.

5. Conclusion

This paper explored the possibility of non-speaker-oriented interpretations of expressive meaning, focusing particularly on epithets. In order to systematically explore the question, a pilot questionnaire study was presented. The results from this experiment suggest that epithets may indeed be interpreted as non-speaker oriented, even in unembedded environments, if the right kind of inferences can be drawn from the context.

Two competing accounts were compared and evaluated against the data. The first approach, a configurational account, attributed non-speaker interpretations to semantic binding from a higher predicate. As non-speaker interpretations are available outside the scope of attitude predicates, the configurational account, as it stands, was deemed insufficient. Attempts to modify this account were explored and ultimately rejected as redundant in light of the second account.

The second approach, a contextual account, attributed non-speaker-oriented readings of perspective to more pragmatic factors. I explored two, potentially compatible, ways to further articulate how the contextual approach cashed out context dependence (Recanati,

2007), including an underspecified judge parameter (Potts, 2007) and a broadly Gricean account of inferring perspectival orientation.

This paper addressed a variety of ways in which a linguistic element could be dependent on its context. I argued that (i) expressive meaning, at least for epithets, is dependent upon the context in ways distinct from genuine indexicals, and (ii) the former kind of context-dependence was to be treated in contextualist terms. The account did not articulate the way in which genuine indexicals depend on the context; it is quite likely that true indexicals are best treated in configurational terms. Clearly, research into the calculation of perspectival information is far from exhausted. Nevertheless, I hope that these initial comments will instigate further investigation into the topic.

References

Amaral, Patricia, Craige Roberts & E. Allyn Smith (2008). Review of *The Logic of Conventional Implicatures* by Chris Potts. *Linguistics and Philosophy* 30, pp. 707–749.

Anand, Pranav (2007). Re-expressing judgment. *Theoretical Linguistics* 33:2, pp. 199–208.

Anand, Pranav & Andrew Nevins (2004). Shifty operators in changing contexts. Young, Robert (ed.), *Proceedings of Semantics and Linguistic Theory 14*, CLC Publications, Ithaca, NY, pp. 20–37.

Aoun, Joseph & Lina Choueiri (2000). Epithets. *Natural Language and Linguistic Theory* 18, pp. 1–39.

Baayen, Harald, Douglas J. Davidson & Douglas M. Bates (2008). Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language* 59, pp. 390–412.

Bach, Kent (1987). *Thought and reference*. Clarendon Press, Oxford.

Cappelen, Herman & Ernie Lepore (2007). *Language turned on itself*. Oxford University Press.

Cinque, Guglielmo (1997). *Adverbs and Functional Heads: a Crosslinguistic Perspective*. Oxford University Press, Oxford.

Cruse, D. A. (1986). *Lexical Semantics*. Cambridge University Press, Cambridge.

Forbes, Graeme (1997). Belief report and speech reports. Künne, Wolfgang, Albert Newen & Martin Anduschus (eds.), *Direct Reference, Indexicality, and Propositional Attitudes*, CSLI Publications, pp. 313–330.

Geurts, Bart & Emar Maier (2005). Quotation in context. de Brabanter, Philippe (ed.), *Hybrid Quotations*, John Benjamins, pp. 109–128.

Glanzberg, Michael (2007). Context, content, and relativism. *Philosophical Studies* 136, pp. 1–29.

Grice, H. Paul (1989). *Studies in the Way of Words*. Harvard University Press, Cambridge, MA.

Harris, Jesse A. & Christopher Potts (2009). Perspective-shifting with appositives and expressives. Presented at the OSU Workshop on Projective Meanings.

Harris, Jesse A. & Christopher Potts (to appear). Predicting perspectival orientation for appositives. *Proceedings from the 45th Annual Meeting of the Chicago Linguistic Society*.

Hintikka, Jaako (1969). Semantics for propositional attitudes. Davis, J. W., D. J. Hockney & W. K. Wilson (eds.), *Philosophical Logic*, Dordrecht: Reidel, pp. 21–45.

Hollabrandse, Bart (2000). *The acquisition of sequence of tense*. Ph.D. thesis, University of Massachusetts Amherst, Amherst, MA.

Huang, Yan (2007). *Pragmatics*. Oxford University Press, Oxford, UK.

Jaeger, T. Florian (2008). Categorical data analysis: Away from ANOVAs (transformation or not) and towards logit mixed models. *Journal of Memory and Language* 59:4, pp. 447–456.

Kaplan, David (1989). Demonstratives. an essay on the semantics, logic, metaphysics, and epistemology of demonstratives and other indexicals. Almog, Joseph, John Perry, Howard K. Wettstein & David Kaplan (eds.), *Themes from Demonstratives*, Oxford University Press, Oxford, chap. 17, pp. 481–563.

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

Karttunen, Lauri & Annie Zaenen (2005). Veridicity. G. Katz, F. Schilder, J. Pustejovsky (ed.), *Annotating, Extracting and Reasoning about Time and Events*, Dagstuhl Seminar Proceedings 05151.

Kratzer, Angelika (1999). Beyond ouch and oops: How descriptive and expressive meaning interact. A comment on David Kaplan's paper, Cornell Conference on Theories of Context Dependency.

Kratzer, Angelika (2009). Modals and conditionals again. To be published by Cambridge University Press.

Lasersohn, Peter (2005). Context dependence, disagreement, and predicates of personal taste. *Linguistics and Philosophy* 28:6, pp. 643–686.

Lasersohn, Peter (2007). Expressives, perspective and presupposition. *Theoretical Linguistics* 33:2, pp. 223–230.

Lasersohn, Peter (2008). Quantification and perspective in relativist semantics. *Philosophical Perspectives* 22, pp. 305–337.

Lewis, David (1980). Index, content, and context. Kanger, S. & S. Öhman (eds.), *Philosophy and Grammar*, Dordrecht: Reidel, pp. 233–49. Reprinted in Lewis 1998.

Löbner, Sebastian (2002). *Understanding Semantics*. Arnold, London.

Percus, Orin (2000). Constraints on some other variables in syntax. *Natural Language Semantics* 8, pp. 173–229.

Potts, Christopher (2005). *The Logic of Conventional Implicatures*. Oxford Studies in Theoretical Linguistics, Oxford University Press.

Potts, Christopher (2007). The expressive dimension. *Theoretical Linguistics* 33:2, pp. 165–197.

Potts, Christopher (to appear). Conventional implicature and expressive content. Maienborn, Claudia, Klaus von Heusinger & Paul Portner (eds.), *Semantics: An Interna-*

tional Handbook of Natural Language Meaning, Mouton de Gruyter, Berlin.

R Development Core Team (2008). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria, URL `http://www.R-project.org/`. ISBN 3-900051-07-0.

Recanati, Francois (2000). *Oratio Obliqua, Oration Recta: An essay on metarepresentation*. MIT Press.

Recanati, Francois (2004a). *Literal meaning*. Cambridge Universiy Press, Cambridge.

Recanati, Francois (2004b). Pragmatics and semantics. Horn, Larry & Gregory Ward (eds.), *The Handbook of Pragmatics*, Blackwell, Oxford, pp. 442–462.

Recanati, Francois (2007). *Perspectival Thought: A Plea for Moderate Relativism*. Oxford University Press, Oxford, UK.

Sauerland, Uli (2007). Beyond unpluggability. *Theoretical Linguistics* 33:2, pp. 231–236.

Schlenker, Philippe (1999). *Propositional Attitudes and Indexicality (A Cross-Categorial Approach)*. Ph.D. thesis, MIT.

Schlenker, Philippe (2003). A plea for monsters. *Lingusitics and Philosophy* 26:1, pp. 29–120.

Schlenker, Philippe (2007). Expressive presuppositions. *Theoretical Linguistics* 33:2, pp. 237–245.

Schlenker, Philippe (to appear). Indexicals and de se reports. von Heusinger, Klaus, Claudia Maienborn & Paul Portner (eds.), *Handbook of Semantics*, Mouton de Gruyter.

Simons, Mandy (2007). Observations on embedding verbs, evidentiality, and presupposition. *Lingua* 117, pp. 1034–1056.

Speas, Margaret (1999). Person and point of view in navajo direct discourse complements. *Proceedings of the West Coast Conference on Formal Linguistics*, Cascadilla Press, Ithaca, vol. 18.

von Stechow, Arnim (2003). Binding by verbs: Tense, person and mood under attitudes. Kadowaki, Makoto & Shigeto Kawahara (eds.), *Proceedings of the 33rd North East Linguistics Society Meeting*, GLSA, Amherst, MA.

Wang, Linton, Brian Reese & Eric McCready (2005). The projection problem of nominal appositives. *Snippets* 10, pp. 13–14.

1. Appendix: Pilot Study Materials

Materials from the questionnaire pilot, in which a single word (Positive/Negative) in the context was manipulated.

1. My friend Sheila said that her history professor gave her a really (high/low) grade. The jerk always favors long papers.
2. My neighbor Maria said that her husband got an (amazing/awful) new job. The clown wasn't on the job market for more than a week.
3. My roommate Glen said that his uncle tells the (funniest/lamest) jokes. The stooge can never get through a single one of them without giggling.
4. My sister Trudy said that her blind date showed up wearing the most (expensive/tasteless) suit. The idiot spent a lot of money to impress her.
5. My buddy Steve said that his son plays the drums very (well/badly). The twerp refuses to take music lessons.
6. My co-worker Miranda said that our boss gave her a very (generous/stingy) raise. The sleaze ball has always treated the pretty ones better.
7. My brother Ken said that his math tutor gave him some (great/terrible) advice. The jerk is always nicer when he's paid in advance.
8. My friend Mike said his housemate threw a (fantastic/horrible) party last weekend. The cretin always invites a lot of people.

A formal semantics for the Singaporean English discourse particle *wàt*[*]

Pasha Siraj

University of Massachusetts Amherst

The sentence-final particle *wàt*, like other discourse particles[1] in Singaporean English (SgE) and other languages, expresses the speaker's attitude regarding one or more propositions in the discourse. A typical and straightforward example of its use is given in (1) (adapted from Smith (1985), n°B1).

(1) Context: Two people trying to find their way from one building to another.

A: This way cannot *la*.	*'C'mon, we can't go by this way!'*
S: The door over there is open ***wàt***.	*'But the door over there is open!'*

In this example, *wàt* seems to signal that S objects to A's claim that a certain route is not passable. S bolsters his objection by pointing out that there is an open door there, and the use of *wàt* adds a strong suggestion that this fact should have been obvious to A. In this context, it also makes S's rejoinder something of a mild rebuke. Roughly, then, the particle *wàt* highlights what the Speaker thinks the Addressee should not have concluded, by pointing out something the Speaker thinks the Addressee should have known or borne in mind. However, consider another typical use of this particle:

[*]I am indebted to Angelika Kratzer and Christopher Potts for first getting me interested in the formalization of discourse particles, for equipping me with many tools (and the backbone) to do so, for saving me from scuttling my own ship, and generally, in their own individual ways, for providing the encouragement and guidance to carry on this research. I am no less grateful to John Kingston for his facilitation, encouragement and valuable comments, and to Christopher Davis for his crucial advice and moral support. I have also benefitted greatly from comments by the participants of the Spring 2008 seminar at UMass on Conversational Inference. ⟨psiraj@linguist.umass.edu⟩

[1]Following Gupta (2006, p.252–3) and Zimmermann (forthcoming), I distinguish discourse *particles* from discourse *markers*. The latter perform a variety of discourse structuring functions like demarcating topics, negotiating turn-taking, and so on. The discourse particles that this paper is concerned with, rather, generally indicate speaker evaluations of the information or knowledge pertaining to a discourse. These have also been called *epistemic particles*, *Modalpartikeln*, *Abtönungspartikeln*, *pragmatic particles*, and so on.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 77-104.
GLSA Publications. Amherst, MA.

(2) Context: Two schoolboys on a bus on their way to play football.

A: That one always come late one.
S: Captain ***wàt***! Sure can come late. (IS n°B5)

In this case, S emphatically agrees with what A has just said, and yet not only is *wàt* still perfectly felicitous in the context, it still carries the force of an objection. (Indeed, as we will see in §1, the major locus of flexibility in the use of *wàt* concerns what it is the particle can be used to object to.) As in example (1), S's use of *wàt* carries a strong suggestion that what S is pointing out should be evident to A, but in this case, the utterance does not have reproachful overtones.

These two contrasting examples highlight a feature that is very characteristic of discourse particles, namely its use in a seemingly disparate variety of contexts and the shifts in nuance that accompany those different contexts—despite the native speaker's intuition that these different uses are somehow related and ultimately issue from a single core meaning. This feature poses a particular analytical challenge. A unified analysis of the particle's meaning should capture what is common to its various uses, but should also provide a systematic account of how the components that vary according to the context do so (or put another way, how the context determines the specific interpretation that the particle has for any given use). The ability to reconcile this very tension is, I submit, one of the virtues of the account I propose here.

In the first section of the paper, I present a thorough catalog of the particle's different uses in order to show that the expression of **objection** is the common thread that runs through its various uses, while the target of the objection (and the source thereof), as well as the manner of its rebuttal, are highly variable. I also run through some of the particle's structural and semantic characteristics which are relevant to the formalization of its meaning.

In the second section, I present the analysis, which consists essentially of three parts. The expression of objection is formalized as a proposition that the Speaker places in his commitment set (as defined by Gunlogson, 2003). Its effect is to put on public record his belief that the contextually relevant propositions are inconsistent. (This in turn may indirectly signal that the Addressee's discourse moves have created impediments to their sharing consistent mutual beliefs, and thus may give rise to a reproachful use of *wàt*.) The target of objection is formalized as a variable over propositions whose value must be supplied by context. Since no restriction is placed by the denotation of *wàt* itself, the source and identity of this value are in principle very flexible. Thirdly the epistemic flavor of 'obviousness' that *wàt* contributes comes from a presupposition that the Speaker's rebuttal is already in the Common Ground. (This derives a felicity condition on *wàt* that generally prohibits its use if the Speaker knows that the Addressee could not have known the rebuttal.)

After presenting the analysis, I point out how it accounts for the generalizations noted in §1 and how, in fact, it sheds light on some initially puzzling observations about when *wàt* can and cannot be used in a reply to a question (§2.4). In the final section, I discuss some prospects for generalizing the analysis to similar discourse particles in other languages.

Preliminaries

Colloquial SgE is a contact variety of English that exhibits extensive substratal influence from Bazaar Malay as well as Southern Chinese languages such as Cantonese (Wu) and Hokkien (Min). It has been classified as a "creoloid" (Platt, 1975) and recognized as comprising a lectal continuum. As such, there are distinct lexical, phonological and syntactic differences with standard varieties of English. These differences are not germane to the analysis of the discourse particles—with the exception of one feature of SgE syntax: the productivity of its elliptical processes.

All the forms of ellipsis possible in standard English are also possible in SgE. Additionally, subjects and objects can be null (Siraj, 2000), and they often are, sometimes resulting in utterances that appear to consist only of a verb (see p. (4) and p. (19i) for an example of a lone auxiliary and main verb respectively). The copular can often also be elided, so that along with the dropping of the subject, a nominal or adjectival predicate can appear overtly on its own. This means that utterances which superficially look sub-clausal may actually be full clauses syntactically and interpreted semantically as propositions. Example (3) contains an adjectival phrase and a nominal selected by a complementizer and a verb that require propositional arguments.

(3) Just because [$_{AP}$ very bright] they all thought [$_{NP}$ spaceship].
'Just because it was very bright, they all thought it was a spaceship.'

The fact that this sentence is grammatical and receives the interpretation that it does shows that the constituents that appear sub-clausal are in fact propositions. This is relevant for showing (§1.2.1) that SgE *wàt* must combine semantically with a proposition even when it appears on the surface to combine with a sub-clausal constituent.

Like the other discourse particles of SgE, *wàt* bears a particular tone (Lim, 2004b) and is strictly sentence-final.[2] This and the other particles were undoubtedly borrowed from the substrate languages. Lim (2007) discusses the probable origins of most of them in detail.

In this paper I quote many of Smith's examples, which I label with "IS" and the original example number. I amend his discourse participant labels to conform to my convention: the person who uses *wàt* is referred to as the Speaker (S), while the other participant is referred to as the Addressee (A). In general when I quote someone else's examples or discussion containing *wàt*, I also regularize the spelling of the particle (which has variously been written as *what*, *wat*, and *wut*).

1. Descriptive generalizations

The first published article on SgE *wàt* is probably by Kwan-Terry (1978), who describes what it conveys as "disapproval or objection such as what one would find in a retort" (p.25).

[2]The tonal characteristics of *wàt* are described impressionistically by Kwan-Terry (1978) and Smith (1985) as well. Smith also devotes a section to carefully showing that the particle *wàt* has a very different distribution from other homophonous elements in SgE (*e.g.* the interrogative pronoun *what*).

This general characterization has basically been echoed in every work since then that has sought to describe or analyze the particle. Wong's (2004) account in the Natural Semantic Metalanguage framework ostensibly attempts to eschew terms like "disapproval" and "objection" while trying to capture that aspect of the particle's meaning; he does not consider the epistemic component. Gupta (2006), on the other hand, characterizes SgE particles as markers of "epistemic modality", and she places them on a scale of assertiveness, with *wàt* at the most assertive end of the scale. She labels it as "contradictory", but otherwise does not concentrate on the objection aspect of the particle's meaning. Wee (2004) observes that "when *wàt* is used, the obvious information also carries the force of a contradiction to something that has previously been asserted" (p.120). Smith (1985) classifies "obvious explanation" as a "co-function" of *wàt*, and considers objection to be its main function.

Smith's characterization is probably the most apt, and indeed his study of *wàt* remains the most comprehensive and accurate published work on this topic that I know of. He quotes Lee (1982, p.90) as follows:

> Particle *wàt* indicates that the speaker objects to something in the context which he or she feels is unjustified. Usually the sentence marked by *wàt* or the following sentence gives the reason why the speaker thinks it is unjustified, but there is no specification of precisely what is considered unjustified.

Smith (p.109–10) goes on to note that "the main difficulty with the invariant function of *wàt* is to determine what is being considered unjustified. [...] I shall refer to this as the ANCHOR for *wàt*. It would seem that any action or thought which the speaker attributes to the addressee or a third party may be an anchor for *wàt*."

I adopt the term ANCHOR to refer to that which the Speaker objects to, and suggest the term **REBUTTAL** to refer to the proposition that "gives the reason why the speaker thinks [the ANCHOR] is unjustified". The ANCHOR is often what the Addressee says or implies, and the REBUTTAL (the '*wàt* utterance') is what the Speaker says in response.

1.1 Uses

In the following sections I show that the ANCHOR for *wàt* can vary greatly in explicitness, source and content. I begin with examples in which the ANCHOR is maximally explicit (a proposition that the Addressee utters), then move on to other examples in which the ANCHOR is progressively further removed in source and content from an interlocutor's explicit utterances. All the examples show a *wàt* utterance used to rebut the ANCHOR. (I defer discussion of the use of *wàt* in response to questions to §2.4.)

1.1.1 Simple disavowal of *q*

In examples like these, the ANCHOR is the proposition q that A has just explicitly uttered using a declarative, and the REBUTTAL by S is simply $\neg q$.

(4) Context: Two people trying to find their way from one building to another.
A: That way can not *la*.

S: Can *wàt*. (IS n°B1)

The polarity of the ANCHOR is immaterial, so the reverse of (4) is possible as well:

(5) Context: Two people trying to find their way from one building to another.

A: This way also can.
S: This way cannot *wàt*.

One observation worth noting about these types of replies using *wàt* is that they really seem to require some sort of follow-up, either linguistic (*e.g*. *There, the entrance is cordoned off!*) or otherwise (*e.g*. by S showing the way).

1.1.2 Rebuttal of *q* with *p*

In examples like these, the ANCHOR is again the proposition *q* that A has just explicitly uttered using a declarative, but the REBUTTAL by S is a proposition *p* that S suggests appears to be inconsistent with *q*. This is a more common use of *wàt*.

(6) Context: A notices S about to use a phone that A thinks is broken.

A: That phone doesn't work.
S: I just managed to place a call $^{??}$(*wàt*).

At this point it must be emphasized that the sense of objection that arises in examples like (6) stem genuinely from the use of *wàt* and do not simply come about by more general processes of pragmatic inference. This is seen from the fact that discourses like (6) become infelicitous if *wàt* is omitted (and no parallel strategy is used). It is significant that in colloquial American English, analogs to (6) are only natural if a particle like *but* or *well* is used, or a particular intonational contour, or both.

(7) Context: A notices S about to use a phone that A thinks is broken.

A: That phone doesn't work.
i. S: $^{??}$I just managed to place a call$^{H*L^{-}L\%}$.
cf. S: (But) I just managed to place a call$^{H*L^{-}H\%}$.

Example (7i), which has the fall to L^{-}L% boundary tones of neutral declaratives in AmE, sounds oddly like a non sequitur even though the content of the sentence is clearly relevant to the preceding utterance. It becomes acceptable if the particle *but* is used, or the L^{-}H% contour, or both.

1.1.3 Rebutting an inference

In a context in which some proposition *r* has become known, and A thinks "If *r* then *q*", A may avow *q*. In such a case, S may use *wàt* to object not to *q* per se, but to A's conclusion that *q* holds because *r* holds.

(8) Context: Discussion of a student who is going overseas for one month and missing classes.

A: He'll never pass the third year.
S: It's only for one month *wàt*. (IS n°B4)

In this example, it is not clear whether S objects to *q* itself (*He will not pass the third year*), or *q because r* (*He will not pass the third year because he is going overseas for one month*). But with slightly different replies, it is possible to make it clear that S is agnostic to *q* but objects to *q because r* (9), or even agrees that *q* but nevertheless objects to *q because r* (10).

(9) A: He'll never pass the third year.
S: Maybe so, but it's only for one month *wàt*.

(10) A: He'll never pass the third year.
S: Ya, I also think he won', but not cos of the trip *lǎ*. It's only for one month *wàt*.

1.1.4 Rebutting a presupposition, implicature or other suggested proposition

The ANCHOR for *wàt* need not be the proposition that A explicitly utters. It may be a presupposition (11), implicature (12, 13) or some proposition that A appears to be suggesting (14). In such cases, S rebuts the proposition that is presupposed, implicated or suggested, rather than the one that is explicitly uttered.

(11) A: Beng cheated on the test again.
S: This is the first time *wàt*.

In this example, S agrees that Beng has cheated on the contextually salient test, but he objects to A's presupposition that Beng has cheated before. The use of *wàt* in reaction to a presupposition does not indicate surprise or ignorance on the part of the Speaker toward the presupposed proposition, nor does it suggest that the Speaker thinks that the proposition's veracity is undetermined. Rather, it signals the Speaker's strong conviction in the contradiction of the proposition. In that sense, its use is not identical to that of the "wait a minute" type of response.

In example (12), A's reply implicates that he cannot or will not go for the picnic, and this is the proposition that S objects to.

(12) S: Are you going to the picnic later?
A: I have a lot of work *lǎ*.
S: But you promised to go *wàt*.

Similarly, in (13), A's exclamation implicates that (he thinks) S has not boiled the soup for two hours. What S objects to using *wàt* is this implicature (rather than the statement about what he was supposed to do).

(13) Context: A opens the soup pot and sees it is still full; it does not appear to have boiled down.

A: You're supposed to boil the soup for two hours!
S: Two hours *wàt*!

Example (14) shows that the ANCHOR for *wàt* can be something like the interlocutor's main point or theme, which the hearer has to distil from a stretch of specific supporting propositions. It may thus be somewhat vague or difficult to paraphrase exactly. (In this case it is probably something like, *The tutorial will go badly for A*.)

(14) Context: Two students discussing a course. (IS n°A1)

S: Panicking is it?

A: No, I don't know whether is there any tutorial or not because I din't get any tutorial sheet (1.5) But the thing is : : what I-I'm afraid is (#) I usually don't get it anyway, you see?

S: Oh, I see : : But if you're with Michael it won't be so bad, *wàt*.

Generalizing from these cases, one observes the same strategy at work when *wàt* is used in a reply to a locution that is not declarative (*i.e*. a locution from which S has to identify an implicit proposition). (15) is a case where A's use of a conditional implicates his belief that the thing under discussion may not be a real example, and it is this implicature that S objects to with *wàt*.

(15) Context: Discussion between the writer [A] and a Singaporean colleague [S] of some examples of the usage of *wàt* which she has supplied.

A: If this is a real example=
S: =It IS *wàt*. (IS n°B7)

In example (16) below, A's use of a rhetorical question implies that he thinks that he cannot go out because it is raining. Like the examples in §1.1.3, S may object to the simplex proposition that A cannot go out (in which case a simple disavowal might suffice), or to A's inference that he cannot go out because it is raining.

(16) A: Raining how to go out?
S: Can *wàt*./You got umbrella *wàt*.

In §2.4, I discuss in detail the use of *wàt* in replies to questions, but we can prefigure that discussion by noting the following. Questions do not in themselves denote propositions, so one would expect that *wàt* cannot be used to object to the content of an interrogative itself; but any proposition that could somehow be implied by a (use of a) question could potentially be a target.

1.1.5 Objecting to the speech act

The preceding uses of *wàt* have all responded to the propositional content under discussion, but this is not always the case. The particle can be used to object to something that the use of a speech act implies. There are two general types of cases. In the first, S responds to a remark (a declarative) by A that S not only agrees with, but thinks should go without saying. In such cases, the ANCHOR is A's presumption that proposition *q* is somehow remarkable or newsworthy. S's REBUTTAL does not contradict *q* itself, but vitiates A's metalinguistic presumption. Example (2) above demonstrates this use, as does the following:

(17) Context: A and S are watching the news together when the election results are announced.

A: See, the PAP won the election again.
S: Ya *lɔ́*! The voters don' trust the opposition *wàt*.

S's use of the particle *lɔ́* indicates that he not only agrees with what A has just said but thinks that the situation described was inevitable. As such, his use of *wàt* in the second sentence could not be in objection to the propositional content itself (which both participants are in agreement on), but to A's presumption in uttering his remark that this even needed to be said.

The second type is the use of *wàt* to object to a request or command (or more accurately, a proposition that a use of a request or command presumes). In example (18), A uses an interrogative that has the force of a request. One of its attendant presumptions is that there are no pins already on the notice board. This is the ANCHOR for S's use of *wàt*. Of course, there are other presumptions that accompany a request that S could have rebutted had the context been different (*e.g.* that S had pins to give out, *etc.*).

(18) Context: a student wants to post a notice on the notice board.

A [student]: Can I have some pins ah?
S [secretary]: Notice board got pins *wàt*. (IS n°B2)

As it happens, this particular context and discourse makes the epistemic dimension of *wàt* especially salient. As Smith remarks, "the secretary brands the student's request as unjustified, since there are thumb tacks available at the notice board. There is in addition the implication that the student should know this and therefore should not have felt it necessary to ask in the first place" (p.111).

The following example shows how *wàt* can and cannot be used in a reply to an imperative. To the extent that an injunction carries with it presumptions that an action has not been or needs to be carried out, such presumptions can serve as the ANCHOR for *wàt*. Since the imperative cannot presume that S will or will not carry out the command, S's refusal (or acquiescence) cannot serve as the ANCHOR for *wàt*.

(19) A: Go and wash the car!
i. S: Already wash *wàt*!/It's not dirty *wàt*.
cf. S: No I won' (#*wàt*).

1.1.6 Objecting to the implication of a non-linguistic act

In all the examples so far, the ANCHOR of *wàt* has been a proposition explicitly uttered by the Addressee or at least one generated by an utterance of the Addressee. It is possible, however, for *wàt* to be used to object to something implied by a non-linguistic act of the Addressee. Smith describes such examples as an objection to a viewpoint or to the Addressee's "judgement of the situation". In the example below, S presumably attributes to A something like the proposition *The file A has just handed to S is from the Literature division*, which S objects to.

(20) Background: The Department of English Language and Literature keeps separate records on its two sub-divisions.
Context: A literature lecturer [S] requests a file from the secretary [A], who gives it to him. He flips through it.

S (virtual monotone) : This is all language *wàt*.
A (great surprise, high pitch): Is it? (IS n°B3)

1.1.7 Rebutting a third party

The ANCHOR of *wàt* may even be a proposition—linguistically generated or otherwise—attributed to a third party rather than a discourse participant. This typically happens when the Speaker is recounting another exchange that contains a proposition that he objects to. Unsurprisingly it is more characteristic of monologic discourse genres like oratory or informal writing, when there is no immediate Addressee or the Addressee is expected not to respond.

(21) Context: In the 2006 election, the incumbent party (PAP) accused an opposition candidate of dishonesty when he neglected to submit an election document.

S: "So the PAP and their newspaper the Strait Time company all whack him say he not honest man, say Worker Party fucked up. [...] Forget to fill his form only *wàt*!"[3]

In example (21), the blogger S is objecting to the imputation that the failure of the candidate in question to submit an election form is an indication of dishonesty. In this case, the source of the imputation is not the Addressee (the reader of the blog) but someone else S is paraphrasing.

In example (22), the source of the ANCHOR (whoever put up the sign) may not even be known to the interlocutors. Additionally, the ANCHOR is generated by a non-linguistic signifier.

(22) Context: A and S are walking in an urban area devoid of trees. They pass a pictographic sign that warns of falling durians. Both of them see the sign.

S (to A): Here got no durian trees *wàt*.

A special case in which *wàt* has a third-party ANCHOR occurs when the Speaker anticipates a proposition that he objects to. Smith calls this the "prophylactic" use of *wàt*, and describes it as follows: "A speaker who anticipates being questioned on what he is saying may use *wàt* to try to protect his/her [sic] position. The effect is to brand the audience's doubts or objections as unjustified in advance" (p.113).

Two simpler examples from Platt (1987, p.399) are given below. (23) could felicitously be uttered by S to A as they exit the theater if S already had reason to believe that A might have a negative reaction to the show. Similarly, (24) would be felicitous if S had a suspicion that A was asking about the restaurant because A was harboring doubts about going there.

[3] http://rockson.blogspot.com (posted 1 May 2006, retrieved 15 Mar 2008)

(23) Not bad *wàt*, the show?

(24) A: Have you been to the H (restaurant)?
S: Yes, the food there not bad *wàt* – can try *la*.

1.1.8 Summary

As the preceding sections have shown, the ANCHOR for *wàt* can be a proposition that is explicitly uttered or one that is presupposed, implicated, presumed or otherwise indirectly implied. The ANCHOR can arise from something the Addressee has said or done, or it may arise from something said or done by someone outside the immediate communicative context (and who may even be unknown or imagined). It may relate to the propositional content under discussion, or it may be meta-communicative (relating to the discourse moves themselves).

What is common to all these uses is the Speaker's objection to the ANCHOR. This objection, the REBUTTAL, is what hosts the particle *wàt*. It can take the form of a simple disavowal, or more commonly, it can point out a proposition that the Speaker asserts is incompatible with the ANCHOR. In cases where the Speaker appears to be agreeing with the Addressee (*e.g.* (2) above), this is because the REBUTTAL is not targeted at the proposition that the Addressee has just explicitly uttered (which the Speaker may in fact agree with), but at an implicit proposition that that utterance has induced.

Also common to all the uses is the epistemic component, namely the Speaker's suggestion that the REBUTTAL should have been obvious to the Addressee.[4] How strongly this aspect of the particle's meaning comes through in a particular utterance seems to vary with the context—but not in an unpredictable way. Cases in which the sense of 'obviousness' is strongest, *e.g.* (16) or (18), tend to have contexts in which the situation described by the REBUTTAL should be readily apparent to the Addressee because it is perceptually evident in the conversational environment or because it is a fact about the Addressee himself. Conversely, cases in which it is weakest, *e.g.* (14) or (17), tend to have contexts in which the Addressee needs to have made an inference or kept in mind some fact that is not part of the immediate conversational environment. This dimension of variability is clearly not part of the semantics of the particle itself but comes about by a much more general kind of pragmatic reasoning.

A consequence of suggesting that the REBUTTAL is obvious is the suggestion that the ANCHOR is misguided, which may give rise to a reproachful use of *wàt*. Again, the strength of this effect is modulated by contextual, extralinguistic factors. A particularly strong rebuke, as in (18), can arise when a person in authority rebuffs a request. The absence of a rebuke can occur when the Speaker is trying to allay the Addressee's anxieties (14) or more generally persuade the Addressee of something (24). This co-function of *wàt* is thus not properly a part of its semantics.

[4] Aside from native-speaker intuitions about the particle's meaning, more concrete evidence that this is the case comes from a restriction on its felicitous use which I discuss in §1.2.5.

1.2 Characteristics

1.2.1 Only combines with (matrix) propositions

As the preceding sections have intimated, the particle *wàt* takes a proposition as its immediate semantic argument. Syntactically, this fits with the observation that the particle can only be used in a declarative sentence.

It is important to note in this connection that since various kinds of ellipsis occur productively in SgE, *wàt* can occur in an utterance that superficially appears sub-clausal but is nevertheless interpreted as a semantic proposition. For example, in (13) (repeated below), S's reply means something like *It* has *been two hours!*. In (25), S's reply is a proposition *There's no square here*.

(13) Context: A opens the soup pot and sees it is still full; it does not appear to have boiled down.

A: You're supposed to boil the soup for two hours!
S: Two hours *wàt*!

(25) Context: A task in which [S] is required to select a picture matching A's description.

A (describing a diamond shape): Got like one square but not square.
S: No square here *wàt*. (IS n°A12)

Given this requirement that *wàt* combine with a proposition, it is unsurprising that *wàt* cannot be used in an interrogative (26) or imperative (27), since these locutions do not denote propositions.

(26) A: You washed the car is it?
S: Who else would do it (**wàt*)? *cf.* No one else would do it *wàt*.

(27) A: What did Brenda say?
S: Go and ask her yourself (**wàt*)! *cf.* You can go and ask her yourself *wàt*!

It should be pointed out, however, that this is probably not a purely semantic restriction, but partly a syntactic one. (26) shows that it is generally possibly to retort with a rhetorical question (*i.e.* a syntactic interrogative with declarative force). However, even though the utterance covertly asserts a proposition, it cannot host *wàt*, and nothing in the semantic account (§2.2) rules out *wàt* taking this covert proposition as its argument.[5]

Indeed, there is another piece of evidence that suggests that the syntax does place restrictions on what *wàt* may compose with. There is a very strong prohibition against *wàt* being embedded, syntactically or semantically. Example (28) is simply ungrammatical.[6]

[5] As a side note, this restriction would greatly complicate an account that analyzes the particle as an illocutionary operator, even though the unembeddability and speaker-dependence of *wàt* might tempt one to give such an account.

[6] This string is possible only if there is an intonational break before *two weeks ago—i.e.* if the adjunct is really a coda to the preceding clause and not integrated into it. Sentences like these and (23) are not exceptions to the rule that *wàt* must be sentence-final, for the material that follows the particle has the status of an afterthought (as Smith (1985) has noted). In any case, even when *wàt* has the position it does in (28), it must still scope over *Sally found out that he will quit*, and not the embedded clause alone.

(28) *Sally found out [that he will quit *wàt*] two weeks ago.

In (29i) the string-final position of *wàt* is in theory consistent with it being in the matrix or embedded clause, and the context makes salient and plausible an interpretation whereby *wàt* is registering either the Subject or the Speaker's objection to a belief about the Subject being crazy (*i.e.* the REBUTTAL would be *Rudy is not crazy*). In fact, the only possible interpretation is one in which *wàt* is not embedded, but takes the whole sentence as the REBUTTAL, conveying only the Speaker's objection to some supposition about the Subject's beliefs, rather than to the fact of whether or not the Subject is crazy. This distinction is highlighted in (29ii) by the infelicity of *wàt*.

(29) Context: Many people think Rudy is crazy, though he himself does not, so he constantly has to defend his sanity.

i. S: Rudy$_i$ thinks [he$_i$'s not crazy] *wàt*.

ii. A: Did you hear? Rudy was dancing in the fountain again today.
S: Ya, I think [he's crazy] (#*wàt*).
cf. S: He's crazy *wàt*.

In (29ii) the embedded proposition is a plausible REBUTTAL for the Speaker; if it stands in its own matrix clause, it can host *wàt* and felicitously follow A's remark (this would be an example of *wàt* used to object to A's presumption that his remark is newsworthy (§1.1.5)). Thus, if *wàt* can embed, then S's utterance in (29ii) should be possible with this interpretation. However, (29ii) cannot have this reading; instead, the particle must still scope over the whole sentence, expressing an objection pertaining to S's beliefs rather than to Rudy's state of mind per se. Since S's beliefs are not relevant to whether Rudy was dancing in the fountain or not, the utterance is infelicitous. That *wàt* is responsible for this infelicity is clear from the fact that the utterance itself is felicitous without *wàt*.

1.2.2 Does not alter the truth conditions of its propositional arguments

Unlike, say, a modal, the particle *wàt* does not affect how the truth of the proposition it takes is evaluated. In other words, in an utterance *p wàt*, the truth conditions of *p* are not altered by its occurrence with *wàt*. An interlocutor may object (or admit) to *p* in the same way regardless of whether *wàt* is used. For example, if someone replies to the question *Who ate the cake?* with *Brenda ate it #wàt*, one can still judge the answer to be true or false despite the infelicity of using *wàt*. More generally, the meaning contributed by *wàt* is independent of the content of the proposition it occurs with, a characteristic that is most evident from its lack of interaction with epistemic modal auxiliaries or adverbs.

1.2.3 Does not interact with epistemic modal auxiliaries or adverbs

Even though the meaning of *wàt* has an epistemic component, it does not alter the interpretation of any epistemic element in the proposition it combines with, nor is it modalized by any such epistemic element. For example, if we speak loosely of its 'force', it is neither weakened by a weak modal, nor does it strengthen a weak modal. It may co-occur with

any epistemic adverb or verb (as well as negations thereof), but it always 'scopes' over the whole proposition:

(30) Might rain today *wàt*.
≈ '(It's obvious) it might rain today.'
≠ 'It will/might rain today (and it might be obvious).'

(31) Maybe she's on a diet *wàt*.
≈ '(It's obvious) she may be on a diet.'
≠ '(It may be obvious) she is/may be on a diet.'

1.2.4 Cannot be used in out-of-the-blue contexts

Wàt cannot be used in an utterance that initiates a discourse; it must be licensed by an issue that has already become salient. After all, if *wàt* is used to register an objection to a proposition, there must be a proposition to object to in the discourse. For example, if a person bumps into an old friend after a long absence, he could not initiate a conversation by saying, *You lost a lot of weight #wàt*, even if this fact were obvious to both persons. Some relevant issue has to be raised first (*e.g.* if the Addressee asks *Why you never recognize me at first?*), which provides the ANCHOR for the Speaker's objection.

One may then wonder about prophylactic uses of *wàt* such as (23) (repeated here):

(23) Context: S and A are exiting the theater when S opens the conversation.
S: Not bad *wàt*, the show?

It is crucial to note that the relevant notion of discourse in such examples is not co-extensive with the temporal boundaries of particular conversational events. In (23), an utterance with *wàt* opens the conversation, but the felicity of *wàt* requires that the participants share a Common Ground in which the quality of the show in question is already an issue (in other words, one might think of this conversation as the continuation of a pre-existing discourse). Thus, cases like (23) are not counterexamples to the generalization that *wàt* cannot be used out of the blue.

1.2.5 Rebuttal must be epistemically 'accessible' to the Addressee

As noted in §1.1.8, the particle often contributes a suggestion that the Speaker's REBUTTAL should be obvious to the Addressee. In fact, there is a felicity condition that prohibits the use of *wàt* if the Speaker knows that the Addressee could not have known the REBUTTAL beforehand (or easily accommodated it due to something conspicuous in the immediate context). For example, in (32), S cannot reply with *wàt* because in the context, A could not have known beforehand or inferred from discernible evidence that S's car is shiny because it is new (and not because it has just been professionally polished, for instance).

(32) Context: A, a total stranger, walks by as S is getting into his shiny new Ferrari.
A: *Wâ*, your car so shiny *ǎ*!
S: Just bought (#*wàt*)/(*mā*)!

Insofar as *wàt* can be used in a context like this, it is used in a deliberately ornery way, as a means for the Speaker to suggest that he is not interested in continuing that (line of) conversation. In other words, the Speaker is exploiting the felicity condition just as one can exploit a Gricean Maxim to generate a conversational implicature. So to the extent that such uses are possible, they are not counterexamples to the epistemic generalization, but are more like the exception that proves the rule.

The fact that the REBUTTAL *can* be accommodated under the right conditions, however, is why the particle is frequently used by a Speaker to remind the Addressee of something the Addressee appears to have forgotten, or to draw the attention of the Addressee to something that the Addressee appears not to notice in the immediate context (and which is immediately verifiable by the Addressee), so the Speaker's contribution can, in some sense, be informative.

2. Analysis

2.1 Commitment sets

A crucial piece of the analysis proposed for *wàt* relies on Gunlogson's (2003) notion of a Common Ground (CG) constitutive of interlocutors' commitment sets (which may be updated differently by a locution).[7] I review the relevant details in this section.

Gunlogson builds on a Stalnakerian conception of the CG (33), which can be given an equivalent expression as a **context set** (34). Importantly, a mutual belief is one that is not only shared by all participants but recognized by all participants to be shared.

(33) CG of a discourse = $\{p \in \wp(W) : p$ is a mutual belief of the participants in the discourse $\}$

(34) context set of a discourse = $\{w \in W :$ the mutual beliefs of the discourse participants are true of $w\}$

From the notion of a mutual belief, Gunlogson defines what it means to be a public belief (35) (where A and B are participants in the discourse).

(35) p is a public belief of A iff 'A believes p' is a mutual belief of A and B
p is a public belief of B iff 'B believes p' is a mutual belief of A and B

With the notion of a public belief, one can define the commitment set (cs) for each discourse participant (36) and in turn construe the discourse context as an ordered pair of the commitment sets. The context set as defined in (34) is recoverable as $cs_A \cup cs_B$.

(36) Let a discourse context $C_{\{A,B\}}$ be $\langle cs_A, cs_B \rangle$, where:
cs_A of $C_{\{A,B\}} = \{w \in W :$ the propositions representing A's public beliefs are all true in $w\}$

[7] See also Davis (2008) for an analysis of the Japanese sentence-final particle *yo* that takes Gunlogson's (2003) model as a starting point.

cs_B of $C_{\{A,B\}} = \{w \in W$: the propositions representing B's public beliefs are all true in $w\}$

In essence, the cs for participant X represents all his public beliefs (*i.e.* those propositions that every participant believes X believes). The utility of bisecting the discourse context in this way is that it allows for an utterance, whose meaning is its context change potential, to effect an update to an individual cs. In particular, Gunlogson proposes that a falling declarative effects an update to the Speaker's cs but not the Addressee's (37) (*i.e.* it makes a proposition a public belief of the Speaker but not the Addressee). And since the particle *wàt* is only used in (falling) declaratives, this proposal can be adopted for utterances with *wàt*.

(37) $C + \downarrow S_{decl} = C'$ such that:
   a. $cs_{Spkr}(C') = cs_{Spkr}(C) + S_{decl}$
   b. $cs_{Addr}(C') = cs_{Addr}(C)$

These are the specific formal devices from Gunlogson (2003) that are required for defining the meaning of *wàt*. However, to appreciate how it derives the pragmatic effects of *wàt*, it is useful to review some ways in which Gunlogson's proposal allows one to characterize propositions vis-à-vis the discourse context. Given the notion of a participant's discourse commitment (*i.e.* public belief), a proposition p can be characterized, relative to a discourse context, as **controversial** (38), and in turn, the notion of a discourse context being **biased** (39) toward p can be defined.

(38) p is controversial in C iff $W - p$ is a commitment of at least one discourse participant but is not a joint commitment, p is not a joint commitment in C, and C is not empty

(39) C is biased towards p iff $W - p$ is controversial in C and p is not controversial in C

For example, given a context C and two interlocutors A and S, if A makes public a belief that *It is raining*, but S does not hold this as a public belief, then *It is not raining* is controversial. Now if in C *It is not raining* is not a public belief of S (and A), then *It is raining* is not controversial in C. Given that *It is raining* is not controversial in C but its negation is, C is said to be biased toward *It is raining*.

Finally, a context C' can be considered **accessible** to C if it involves a reduction of each interlocutor's cs to a non-empty subset (this is what it means for an addition to a cs to be consistent with the interlocutor's existing commitments).

Thus, it can be seen that if a context C is biased towards a proposition p, then there is no accessible context C' in which $\neg p$ could become a joint commitment without one of the interlocutors retracting the commitment p (and thus revising his cs in a way that does not involve monotonic reduction). So in any discourse situation in which it is considered desirable for the participants to increase their shared beliefs, a controversial proposition is an impediment to mutuality if it must be weighed against the competing desire of each participant to make only consistent updates to his own cs. In §2.3, I discuss specifically how this allows the particle *wàt* to signal objection.

2.2 Denotation

The denotation proposed for *wàt* is as follows:

(40) $\lambda p\, \lambda q\, \lambda\langle \mathrm{cs_A}, \mathrm{cs_S}\rangle [\mathrm{cs_A} \cap \mathrm{cs_S} \subseteq p]\ .\ \langle \mathrm{cs_A},\ \mathrm{cs_S} + (\lambda w\ .\ \neg(p(w) \wedge q(w)))\rangle$

The particle takes as its first (and only syntactically represented) argument the proposition p, which I have been calling the REBUTTAL. This takes care of its requirement for a propositional host (§1.2.1). Furthermore, since it takes a whole proposition, this derives the fact that *wàt* does not alter the truth conditions of its propositional argument (§1.2.2), nor does it interact with the epistemic elements (if any) within said proposition (§1.2.3).

Its second argument, the proposition q, is the ANCHOR, which must be supplied by the context. This mandatory argument is why *wàt* cannot be used out of the blue (§1.2.4), when the context could supply no value for q. Since the denotation itself does not otherwise impose any restrictions on q, it should have all the degrees of freedom (explicitness, source and content) noted in §1.1.8.

The denotation places a presupposition on the CG, namely that the REBUTTAL p be entailed by $\mathrm{cs_A} \cap \mathrm{cs_S}$. This is what derives the felicity condition in §1.2.5 and is what contributes the epistemic flavor of 'obviousness' that the particle has. After all, something that is in the CG should in some sense be obvious to both participants.

Finally, *wàt* asserts a proposition that p and q, the REBUTTAL and ANCHOR, cannot both hold (which is the sense in which they are 'inconsistent').[8] Of course, since *wàt* simultaneously presupposes p, the force of this assertion is really directed at q. As the assertion is a declarative, by (37), it makes this statement a public belief of the Speaker.[9] As an example, consider (16) again (repeated below).

(16) A: Raining how to go out?
S: You got umbrella *wàt*.

The propositions relevant for this discourse are given in (41), and the semantic composition below.

(41) r = It is raining.
q = A can't go out.
$q*$ = q because r

[8] If the assertion that *wàt* makes indeed represents the endpoint of semantic interpretation of an utterance, as (40) suggests, then the particle has a very direct and exclusive role in shaping the context, using the propositional arguments it takes. This means that if it were to take as its first argument not the proposition corresponding to the whole utterance but a sub-proposition, then there would remain a part of the utterance (the supra-proposition) that is discursively vacuous, that makes no contribution to the context. That this surely does not happen in non-pathological discourses might go some way to making sense of why *wàt* robustly cannot be embedded, but must 'scope' over an entire utterance (a fact which might otherwise be given a syntactic explanation, as in §1.2.1).

[9] The fact that an utterance with *wàt* must update the Speaker's cs might help us understand why the objection expressed by the particle can only be the Speaker's and not someone else's. To the extent that the perspective encoded by *wàt* is displaceable (*e.g.* in a direct quotation), this is presumably because the relevant discourse roles are specially defined (*e.g.* by the environment of the quotation).

p = A has an umbrella.
$p \rightarrow \neg q*$ $\Rightarrow$ $\neg(p \wedge q*)$

$$
\begin{aligned}
[\![\text{ You got umbrella } \textit{wàt}.]\!] &= [\![\textit{wàt}]\!]([\![\text{ You got umbrella }]\!]) \\
&= [\lambda p\, \lambda q\, \lambda\langle \mathrm{cs_A}, \mathrm{cs_S}\rangle [\mathrm{cs_A} \cap \mathrm{cs_S} \subseteq p] \,.\, \langle \mathrm{cs_A}, \\
&\quad \mathrm{cs_S} + (\lambda w \,.\, \neg(p(w) \wedge q(w)))\rangle](\lambda v \,.\, \text{A has an umbrella in } v) \\
&= \lambda q\, \lambda\langle \mathrm{cs_A}, \mathrm{cs_S}\rangle [\mathrm{cs_A} \cap \mathrm{cs_S} \subseteq (\lambda v \,.\, \text{A has an umbrella in } v)] \,. \\
&\quad \langle \mathrm{cs_A},\ \mathrm{cs_S} + (\lambda w \,.\, \neg((\text{A has an umbrella in } w) \wedge q(w)))\rangle \\
&= \lambda\langle \mathrm{cs_A}, \mathrm{cs_S}\rangle [\mathrm{cs_A} \cap \mathrm{cs_S} \subseteq (\lambda v \,.\, \text{A has an umbrella in } v)] \,. \\
&\quad \langle \mathrm{cs_A},\ \mathrm{cs_S} + (\lambda w \,.\, \neg((\text{A has an umbrella in } w) \wedge \\
&\qquad (\text{A can't go out in } w \text{ because it is raining in } w)))\rangle
\end{aligned}
$$

Say r is mutually believed because it is manifest in the environment, and p is entailed by $\mathrm{cs_A} \cap \mathrm{cs_S}$ because A's umbrella is lying in plain sight. A's utterance places q and $q*$ in $\mathrm{cs_A}$, making these two propositions open to objection. S's use of *wàt* then allows him to object to $q*$ by presupposing p while asserting $p \rightarrow \neg q*$, therefore entailing $\neg q*$ (and thus possibly also $\neg q$). If $q* \supseteq \mathrm{cs_A}$ and $\neg q* \supseteq \mathrm{cs_S}$, then the context cannot be resolved on the issue of $q*/\neg q*$ unless one of the interlocutors revises his public beliefs.

The sense of obviousness derives from the presupposition, supported by the context, that p is known to A, and thus $\neg q*$ should have been deducible by A. The danger that S's use of *wàt* highlights is thus more serious than unresolvedness—it indicates that if A endorsed the proposition $\neg(p \wedge q*)$ as well, then A would have contradictory public beliefs ($q*$ and $\neg q*$). This in turn would mean that the CG could not become resolved on $q*/\neg q*$ no matter what S publicly believes.[10]

In this scenario, the force of S's utterance is directed at A because it so happens that A's utterance places the ANCHOR in $\mathrm{cs_A}$. However, when the ANCHOR is attributed to a third-party (§1.1.7) (*i.e.* when none of the actual discourse participants have committed to the ANCHOR), what does the assertion that the ANCHOR and REBUTTAL are inconsistent have to do with $\langle \mathrm{cs_A}, \mathrm{cs_S}\rangle$?

There are several possibilities. For examples such as (21), perhaps the discourse participants knowingly update the CG with the ANCHOR in order to set up a dialectic, and subsequently discard the ANCHOR in favor of the REBUTTAL.[11]

Alternatively, a Speaker may assume that the Addressee has not yet committed to the ANCHOR, but being mindful of the possibility of a subsequent commitment, the Speaker preemptively uses *wàt* to discourage this (22, 23). The reason this strategy has greater rhetorical utility than simply asserting $\neg q$ is that it suggests that the Addressee already has motivation to reject q by virtue of presupposing p.

[10] In that sense, one could suggest a stronger version of the analysis by positing that the proposition $\neg(p \wedge q)$ is also presupposed to be in $\mathrm{cs_A}$, so that a use of *wàt* is guaranteed to point out a contradiction in A's discourse commitments. I discuss the issues surrounding presupposition and assertion in §2.5.

[11] Or else one might posit a hypothetical discourse participant who can be attributed beliefs, where the CG is an n-tuple $\langle \mathrm{cs_A}, \mathrm{cs_S}, \mathrm{cs_X}, \ldots\rangle$.

For an example in which the objection is not to the propositional content explicitly under discussion, consider (2) again.

(2) A: That one always come late one.
S: Captain *wàt*! Sure can come late.

Once again, the first argument of *wàt*, the REBUTTAL, is the proposition corresponding to its syntactic host (*That one is the captain*), which is presupposed to be a mutual belief of both participants. What *wàt* asserts is that this is inconsistent with some proposition q, the ANCHOR. Here, q is a presumption of A's, which might be paraphrased as *It is surprising/unjustified that that one comes late*; crucially it is not the proposition *That one comes late*, which S's utterance makes clear he fully agrees with. By highlighting the mutual belief p and pointing out that $\neg(p \wedge q)$, S expresses his objection to q.

2.3 The source of the Speaker's objection

To be more precise about how the note of objection comes about, consider the shape of the discourse context when a Speaker would use *wàt*. When the Addressee commits to a proposition q that the Speaker believes is inconsistent with another proposition p that is already in cs_S, S cannot ratify q in order to align his beliefs with A's without simultaneously retracting p, or else resulting in an empty cs_S. However, if S sincerely believes that p is in cs_A as well, then retracting p from his own cs may ultimately be futile, because as long as A commits to q without also retracting p, then cs_A may well end up empty, and the goal of increasing their mutual beliefs would remain unattainable. From S's perspective then, for him to revise his own cs would not only compromise his goal of making only consistent updates and yet not facilitate increasing their mutual beliefs, but it would be equally inconsistent and equally inimical to mutuality for A to commit to q; hence the best option would seem to be for A to retract q and affirm p, thereby making the least number of inconsistent moves overall while maintaining a mutual belief. (In §2.6 I discuss what happens when the Speaker is mistaken about the discourse context.)

This explains why the use of *wàt* has the rhetorical effect of goading the Addressee into revising his discourse commitment and implying that the Speaker will not compromise on his own commitment. This is, in effect, what it means for a use of *wàt* to object to something an interlocutor has said or implied. What is interesting is that the objection arises from what the particle indicates about the shape of the discourse context (together with assumptions about what makes a good discourse), and thus behaves like a pragmatic effect; the objection is not written directly into the denotation of the particle (*e.g.* "(given some q) the Speaker objects to q").

Given what *wàt* does assert, we can now also make sense of the observation in §1.1.1, namely that simple disavowals using *wàt* really seem to require some sort of follow-up, either linguistic or otherwise. The simple disavowal is a particular instantiation of the assertion $\neg(p \wedge q)$, namely one in which $p = \neg q$, and hence the assertion is $\neg(\neg q \wedge q)$. Since this is a tautology and not a contingent fact, there is a sense it which it is uninformative in arbitrating between q and $\neg q$. This is why it behooves the Speaker to provide further evidence that the Addressee should retract q in favor of $\neg q$. In a discourse context

in which one interlocutor has committed to q and the other to $\neg q$, and both are equally keen to make only consistent updates to their commitment sets, there is no incentive for either interlocutor to revise his cs unless there is an independent r which is disjoint with q or $\neg q$ and thus may result in an empty cs if committed to. This r is the Speaker's follow-up to the initial disavowal.

2.4 Replies to questions

The components of the denotation given in (40) help to shed light on an otherwise puzzling set of patterns in the use of *wàt* in response to questions. Answers to wh-questions, *e.g.* (42)–(44), can never host *wàt*. Instead, the particle can only be used in a rejoinder to the question (as opposed to an answer that resolves the question).[12] In such cases, what the Speaker is objecting to is the asking of the question itself, or rather, a proposition that the speech act presumes, such as the Addressee's profession of ignorance, or A's presumption that S is in possession of the answer, and so on. In other words, when A uses a question as a request for information, S may object to the question in the same way as one might deflect other kinds of requests.[13]

(42) A: Who ate the cake?
S: Brenda ate it (#*wàt*). *cf.* I wasn't around to see *wàt*.

(43) A: What you cook for dinner?
S: Mutton soup (#*wàt*). *cf.* You should be able to guess *wàt*!

(44) A: When must we leave *ǎ*?
S: We must leave at three o'clock (#*wàt*).*cf.* I told you already *wàt*!

The same observation holds for neutral polar questions in SgE (45). The particle is always possible in a rejoinder to the question but not in a resolving answer to the question.[14]

(45) A: Did Brenda eat the cake *ǎ*?/or not?
S: She did ($^{??}$*wàt*). *cf.* You can go and ask her yourself *wàt*.

What is interesting is that an answer to a biased question can host *wàt*. For example in (46i), S could object to the bias expressed by the question (*It is likely that r*)[15] and rebut with $\neg r$ *wàt*, or S could object to A's residual doubt (*It is possible that* $\neg r$) and thus rebut with *r wàt*. (Of course, as with neutral questions, S may use *wàt* in a rejoinder, as in 46ii.)

[12] A systematic exception to this generalization is provided by *why/how come* questions, whose answers can be accompanied by *wàt*. Further investigation is required in order to account for this.

[13] I thank Jesse Harris (p.c.) for first pointing out to me cases like these.

[14] The answer in (45) gets question marks because even though it is definitely marked, it is perhaps possible in a context in which the Speaker thinks the answer really should be so obvious to the Addressee that the fact that he still asks the question makes S begin to doubt whether the answer he presumes really is correct. In such a case, the use of *wàt* in fact lends the utterance a tinge of puzzlement, which suggests that S uses it specifically to exploit the presupposition that p is in the CG, as a way of inviting a challenge, and thus getting A to specify why he does not already subscribe to the answer that S thinks the evidence suggests.

[15] In order not to get into the details of what biased questions mean, let us suppose that this is an adequate paraphrase.

(46) A: Here got tiger *à*/is it/*mɛ́*?
i. S: Got *wàt*./Don't have *wàt*.
ii. S: You saw one already *wàt*.

What crucially sets biased questions apart from neutral questions is the fact that biased questions make available propositions that the Speaker can object to. To be precise, the answer to a biased question can serve as a REBUTTAL because the Speaker can assert its inconsistency with the question's bias or the Addressee's doubt.

On the other hand, neutral questions by their very nature do not assert any propositions and therefore do not make available any propositions to object to. The general presumptions associated with asking a question can be rebutted, but the resolving answers to the question cannot serve as appropriate REBUTTALs to these presumptions since it is hardly meaningful to assert that the content of an answer is inconsistent with, say, the Addressee's profession of ignorance.

Since answers to neutral questions represents one of the two main environments or situations when *wàt* cannot be used felicitously (the other being exemplified by example (32) above), it should receive a principled explanation by any account of the particle's meaning. The preceding discussion has shown how the neutral question context falls short of the requirements of the particle, as formalized in (40).

Before closing this section, two other kinds of questions deserve passing mention. We have already seen in §1.1.4 (16) that rhetorical questions can be followed by a rejoinder that contains *wàt* since it behaves essentially like a declarative. Example (47) provides a rhetorical use of *how* (the normal use of *how* to ask for a method patterns like other neutral content questions).

(47) Context: It has arisen that A needs to go to the National Stadium.

A: How am I going to go to the stadium?
S: Can take [bus number] fourteen *wàt*. (IS n°B6)

Example (48) shows a phatic question used to solicit agreement. Given that it is mutually known that A is seeking agreement rather than information, S's use of *wàt* to signal that the affirmative is obvious makes S's objection to the question particularly pointed (and thus rather uncooperative and abrupt).

(48) A: He came late again today *hɔ̃*?
S: Ya (#*wàt*).

2.5 Presupposition and assertion

At this point, it would be instructive to consider carefully the ramifications of analyzing the meaning of *wàt* as including a presuppositional component. If the presupposition imposed by the particle is of the classic sort (such as that found in factive predicates, clefts, and so on), then all things being equal, one should expect it to have at least three properties: (i) in certain constructions it should project; (ii) under certain conditions it should *fail* to project; and (iii) it should be accommodatable.

Unfortunately, (i) and (ii) are difficult—if not impossible—to test with the particle *wàt*. A clause projects its presupposition when it is embedded under negation, a modal, in an *either... or* construction, in an *if... then* conditional, and so on. What all these constructions have in common, of course, is the embedding of the presupposition-bearing clause within a larger syntactic or semantic environment. As discussed above (§1.2.1), *wàt* is resistant to embedding. Negation (p. n°5) and modals (§1.2.3) are always interpreted within the scope of the particle, and because it is ungrammatical for the particle to be syntactically embedded, it cannot occur *within* an *either... or* (49i) or *if... then* sentence.

(49) A: Raining how to go out?

i. S: *Either you can use umbrella *wàt*, or you can take taxi.

cf. S: [Either you can use umbrella, or you can take taxi] *wàt*.

ii. S: *If you have umbrella, then [you can go out *wàt*].

cf. S: [If you have umbrella, then you can go out] *wàt*.

If *wàt* occurs at the end of such a sentence, it cannot take scope over just the consequent, but must take scope over the whole sentence. For instance, in (49ii), S's reply cannot be interpreted as making a claim that A *can* go out, which is what one would expect if *wàt* scopes over just the clause *you can go out*; rather, S's reply can only be interpreted as making a claim about the conditions (*i.e.* having an umbrella) under which A could go out.

The contexts in which projection occurs are also ones in which the **assertion** of the clause bearing a presupposition is obviated, so one would expect that the assertion contributed by *wàt* should be obviated in such contexts. However, as before, the strict unembeddability of the particle makes this prediction impossible to test.

Now, for the sake of argument, if it is assumed that the presupposition of *wàt* does indeed project, then one would expect projection to be curbed in some contexts. There seem to be two main strategies: embedding under a propositional attitude verb, or preemptively signaling (whether explicitly or by implicature) that the state of affairs described by the presupposition does not (necessarily) hold. The first strategy runs afoul of the particle's unembeddability. The second strategy is also problematic to test. Given that the presupposition p of *wàt* also happens to be the utterance that *wàt* attaches to, a speaker who utters or suggests $\neg p$ and then utters p *wàt* is being self-contradictory. Furthermore, the assertion of *wàt* relies on the speaker subscribing to p, so even if one could somehow cancel the presuppositional component of the particle's meaning by suggesting $\neg p$, this would be problematic for the assertion of the particle. A hypothetical example of this sort would be bound to fail.

This leaves the third property of presuppositions—its ability to be accommodated. I have in fact suggested in §1.2.5 that the presupposition of *wàt can* be accommodated under the right conditions.

Now, one might question why *wàt* cannot more generally (or even always) be accommodated easily. For example, the use of a definite description to open a discourse creates a presupposition that is often accommodated without a hitch. Why then would a pliable hearer not assent to the use of *wàt* to open a discourse? In this particular case, the problem is not a presupposition failure, but a violation of the requirement that *wàt* have an

ANCHOR to rebut (§1.2.4). What this example shows is that one must be careful in diagnosing infelicitous uses of *wàt*—not all of such cases will result from a presupposition failure. In turn, one must be cautious in drawing conclusions about how 'easy' or 'difficult' it is for the presupposition of *wàt* to be accommodated, based on particular infelicitous uses.

Indeed, it seems to me that the ease with which a presupposition is accommodated is not entirely a function of linguistic factors. As an example, imagine the following scenario. You and your colleague Marie are making small talk at the department potluck. Both of you have never ever discussed with each other any matters relating to anyone's cooking abilities, or the facilities or circumstances surrounding anyone's cooking. Just then, Jill walks in carrying the cake she made for the potluck. Marie remarks to you (*sotto voce*), "I see Jill managed to make a cake." Even if you know nothing about Jill or her cake-making circumstances, you are probably quite amenable to accommodating the presupposition that there was some difficulty involved.

Now imagine the same scenario, but instead of Jill walking in, you unveil the cake that you yourself had made and brought. If, in this situation, Marie were to say to you, "I see you managed to make a cake," would you be equally amenable to accommodating the presupposition? Even if you had in fact had difficulty making the cake, and even if it turned out that Marie had had privileged knowledge of your activities, would it not seem presumptuous of her to make this presupposition, given that you had never discussed that or related matters with her before? Linguistically, these two examples contain the same type of presupposition trigger, but one's reactions to the presupposition seem to depend on non-linguistic features of the context.

To return to the particle *wàt*, I suggested in §1.2.5 that the kinds of situations in which *wàt* is more readily accommodated tend to be ones where the REBUTTAL itself is readily verified by the Addressee, for instance when the Speaker literally points out something that the Addressee can see but has not noticed, or when the Speaker reminds the Addressee of something the Addressee has momentarily forgotten but can recall if reminded of. (This is the reason for referring to a broader notion of 'epistemic accessibility' instead of 'knowledge'.) Conversely, in example (32, p.) of a presupposition failure, I was careful to set up a context in which the REBUTTAL employed by the Speaker is in principle unknowable by the Addressee.

To bring out this distinction more clearly, consider the following example.

(50) Context: A enters the kitchen and blunders around in search of leftover cake, not realizing that there is some on the table because S has just wrapped it in foil and spangles. A did not witness the wrapping, or know beforehand or expect that S would wrap the cake in such a manner or even at all.

A: No more cake already *à*?
S (unwrapping the foil and pointing): Here got *wàt*.

According to my intuitions, this use of *wàt* is possible—even though A could not have known prior to the pointing event that there was cake in the foil—if A could see what S was pointing to. In such a situation, A can quite easily choose to accommodate the presupposition.

If, on the other hand, A were *blind*, then even S's pointing would not render this use of *wàt* felicitous. (At best, S would be exploiting the particle to convey impatience, or would be displaying an extremely callous nature.) Accommodation of the presupposition does not seem possible here.

This suggests that accommodation of the presupposition of *wàt* is a systematic function of epistemic accessibility, but this is a feature of real-world situations rather than linguistic representations, and thus its variability is not a good argument against the presuppositional nature of the epistemic meaning of the particle.

Now that I have argued quite strenuously for the presuppositional component of *wàt*, one might wonder whether the component that I analyze as the assertion of *wàt* is also presuppositional in nature. It would, of course, be ideal if one could apply the projection tests to an utterance with *wàt* to see when and which of the contributions of *wàt* are inherited.

For instance, the fact that *wàt* cannot appear in an *if* clause (which inherits presuppositions but waives assertions) might be suggestive of the fact that a *wàt* utterance must contribute an assertion (so its use in an *if* clause is bad because it would be vacuous). But since *wàt* is independently known not to be syntactically embeddable, its exclusion from an *if* clause could simply reflect a syntactic restriction rather than a semantic one. Hence this test is not conclusive.

Failing that, other considerations must inform whether the objection component of *wàt* is an assertion or presupposition. If it is indeed a presupposition, and other aspects of the analysis remain unchanged, then one consequence is that a *wàt* utterance is wholly presuppositional, and contributes no assertions. Specifically, the proposition $\neg(p \wedge q)$ is presupposed to be entailed by $\mathrm{cs}_{\mathrm{A}} \cap \mathrm{cs}_{\mathrm{S}}$. Under the view that the meaning of a sentence is its context change potential, I suppose this means that a *wàt* utterance is one that effects a vacuous update to the CG. This does not a priori seem a problem, and may even be independently necessary (*e.g.* see Gunlogson's (2003, p.44) discussion of her notion of Informativity). However, it would appear to make an extra prediction that the current analysis does not. It predicts a fourth logically possible way for a hearer to challenge the *wàt* utterance—namely, to challenge the Speaker that $\neg(p \wedge q)$ is presupposed to be in CG *without* challenging the proposition $\neg(p \wedge q)$ itself (§2.6.2), and without challenging p (§2.6.3) or the presupposition that p (§2.6.1).

In §2.6 I discuss more fully the issue of how a *wàt* utterance may be challenged. For the moment, to close the discussion on presuppositional and assertoric meaning, I note in connection with the prediction outlined above that I cannot come up with an example of this type of challenge that is clearly distinct from a challenge of the proposition $\neg(p \wedge q)$ itself. Weighing this difficulty against the possible advantage (fn.10, p.) of analyzing the objection of *wàt* as a presupposition, I leave the question open.

2.6 When an utterance with *wàt* is challenged

There are uses of *wàt* that are felicitous but nonetheless betray a mistaken assessment of the context by the Speaker. Since interlocutors typically do not begin a conversation by exhaustively explicating each other's discourse commitments, they will rely on assumptions

about those commitments, and hence may be mistaken about them. Thus there is a sense in which the requirements placed on the context by the particle are in practise relative to a Speaker's evaluation of the context; a use of *wàt* is felicitous as long as it obeys those requirements to the best of the Speaker's knowledge. To be completely accurate, then, one might propose an intensionalized version of the denotation of *wàt*, as follows. The essential elements of the analysis remain unchanged.

(51) $[\![\ wàt\ ]\!]^w = \lambda p\ \lambda q\ \lambda\langle cs^w_A, cs^w_S\rangle[cs^w_A \cap cs^w_S \subseteq p]\ .\ \langle cs^w_A,\ cs^w_S + (\lambda v\ .\ \neg(p(v) \wedge q(v)))\rangle$
if $w \in \{s \in W$: the propositions representing S's knowledge are true in $s\}$

Where the Speaker has been mistaken about the context, it does not vitiate his use of the particle, but merely opens that use to challenge by the interlocutor. The analysis proposed here correctly predicts the three ways in which the Speaker's utterance may be challenged.

2.6.1 Challenging the presupposition that the rebuttal is in the CG

In the following example, A's retort does not challenge the REBUTTAL itself (the fact that all the cake is finished) but indicates that he takes exception to S's assumption that it is known and is obvious that there is no cake left.

(52) Context: Both A and S know that if there isn't any cake in the fridge, then there's no cake left anywhere else in the house. A is peering into the fridge.

A: The cake is all finished already.
S: Ya *wàt*.
A: [ǂ], how should I know!?

2.6.2 Challenging the claim that the rebuttal and anchor are inconsistent

In the following example, A again does not disagree with the REBUTTAL (*i.e.* that he has an umbrella), but challenges the assertion of *wàt* itself by pointing out some further fact that shows that the ANCHOR (*A cannot go out because it is raining*) is in fact consistent with the REBUTTAL.

(53) A: Raining how to go out?
S: You got umbrella *wàt*.
A: Ya, but it's so heavy even use umbrella also sure get wet.

Notice that for the Addressee to simply contradict the assertion of *wàt*, he could just state $\neg\neg(p \wedge q)$ (*i.e.* $p \wedge q$). That speakers do not seem to do this, but typically bring up some new proposition in support, is entirely expected, given that the (in)consistency of the REBUTTAL and ANCHOR is a contingent fact. If the Speaker already has a strong opinion about the inconsistency, then the Addressee would have a better chance of convincing him otherwise if new information were brought to bear on the contentious issue.

2.6.3 Challenging the truth of the rebuttal

Finally, as the following example shows, it is possible for A to challenge the truth of the REBUTTAL itself. Presumably, challenging its truth (and not just its presence) is one way of reacting to a presupposition.

(54) A: Raining how to go out?
S: You got umbrella *wàt*.
A: No, this is not my umbrella!

2.6.4 Discussion

One issue to be noted in connection with the three examples is the following. Impressionistically, it is somewhat easier and more usual to do 2.6.3 than 2.6.1 or 2.6.2. One might consider it strange that the assertion of *wàt* is harder to target than its presupposition. On the other hand, this is not so strange if one bears in mind that, by being overt, the REBUTTAL becomes part of the propositional content under discussion and thus accessible for further comment, whereas the presupposition that the REBUTTAL is in the CG or the assertion that it is inconsistent with the ANCHOR are meta-communicative signals, which by their very nature are not up for explicit discussion unless special efforts are made to draw attention to them.

3. Prospects

To summarize, the analysis proposed here gives a pragmatic account of the objection and epistemic meanings of the particle. The ways in which the denotation of *wàt* interacts with the discourse context correctly capture the wide range of its felicitous uses while ruling out the infelicitous ones. The account also derives certain structural and semantic characteristics of the particle.

A logical next step would be to see if this (kind of) analysis extends to other discourse particles, and thus if it has theoretical and crosslinguistic generality. SgE *wàt* is particularly relevant in that it appears to have close analogs in several other languages.

Smith (1985) notes that Hokkien has a low-tone sentence-final particle *ma* that is used in exactly the same way as SgE *wàt*; indeed he opines that SgE *wàt* was calqued on this very particle. Mandarin also has a low(-falling) sentence-final particle *ma* (romanized by some authors as *me*). Chappell (1991, p.47) describes two uses of this particle, the first expressing "that the entire proposition is obvious or self-evident from the preceding discussion or from their shared cultural knowledge", and the second expressing "disagreement, possibly combined with indignation or impatience at the hearer's opposite point of view". These are reminiscent of the epistemic and objection meanings of *wàt*.

Of the languages that have not influenced SgE via contact, German and Russian have similar particles. German *doch* is employed in many of the same contexts that *wàt* is used in. Doherty (1987, p.106) describes it as pertaining to "the speaker's assumption about the hearer's evaluation of *p*, which he considers to be (possibly) opposite to his own".

The use of Russian *že* in affirmative sentences is vividly paraphrased by Hagstrom & McCoy (2003) as, "You are wrong! And more than that, you are capable of arriving at the correct conclusion yourself, but nevertheless you seem to be sticking to the wrong conclusion." Indeed, their formal description (55) has two components analogous to that of SgE *wàt*.

(55) $[\![\check{z}e]\!](p) = p$, presupposes that

the hearer believes $\neg p$, and that
the hearer has enough information to have concluded p.

These striking crosslinguistic parallels cry out for an explanation for why these meanings cluster together and get grammaticized in otherwise unrelated languages.

Of course, one considerable challenge that this enterprise faces is accounting for the different properties that these particles do exhibit. For instance, German *doch* can appear in embedded clauses and Russian *že* can appear in interrogatives, whereas SgE *wàt* can do neither. Subtler differences in their permissible contexts of use no doubt also exist. Ideally, a uniform semantics for these particles (if this is possible) would still allow enough flexibility for such language-particular properties to be accommodated.

Another issue that deserves careful further exploration is the relation between the objection and epistemic components of the particles' meanings. In my analysis, these are formally separate from each other (though they work in concert to orchestrate the pragmatic effects of the particle), so that in principle one could be posited without the other. An as-yet informal but suggestive observation that may support this type of analysis is the existence of discourse particles that appear to comprise only one of these components.

For instance, the SgE particle *mā* has been described by Wee (2004) as expressing that a proposition is obvious without expressing any note of contradiction.[16] Thus *mā* can be used, as in (56), to make a gentler version of example (2).

(56) A: That one always come late *wân*.
S: Captain *mā*! Sure can come late.

Example (57), modeled on (16), shows that it cannot be used in a context that strictly calls for an objection.

(57) A: Raining how to go out?
S: You got umbrella #*mā*.

Unfortunately, a fuller characterization of *mā* is more complicated, and cannot simply consist of the epistemic retriction observed for *wàt*. Example (32), repeated here, shows that *mā* can be used in a context in which the proposition it modifies is not epistemically accessible to the Addressee. The notion of 'obviousness' in operation here is different from that in operation for *wàt*.

(32) Context: A, a total stranger, walks by as S is getting into his shiny new Ferrari.

[16] Its meaning/use is so similar to *wàt* that Gupta (2006) mistakenly lumps them together, though there are contexts for which it is clear only one or the other is felicitous.

A: *Wâ*, your car so shiny *ǎ*!
S: Just bought (#*wàt*)/(*mā*)!

I close by proposing that, in spite of these challenges, it is still too premature, given our nascent understanding of discourse particles, to begin to doubt that they form a natural semantic class in themselves (as Zimmermann (forthcoming) suggests in his overview article). Rather, there are still ample avenues for further theoretical and typological investigation of this question.

References

Chappell, Hilary (1991). Strategies for the assertion of obviousness and disagreement in Mandarin: a semantic study of the modal particle *me*. *Australian Journal of Linguistics* 11:1, pp. 39–65.

Davis, Christopher (2008). Decisions, dynamics, and the Japanese particle *yo*. manuscript.

Doherty, Monika (1987). *Epistemic Meaning*, vol. 21 of *Springer Series in Language and Communication*. Springer-Verlag, Berlin.

Gunlogson, Christine (2003). *True to Form: Rising and Falling Declaratives as Questions in English*. Outstanding Dissertations in Linguistics, Routledge, New York & London.

Gupta, Anthea Fraser (2006). Epistemic modalities and the discourse particles of Singapore. Fischer, Kerstin (ed.), *Approaches to Discourse Particles*, Elsevier, Amsterdam, vol. I of *Studies in Pragmatics*, pp. 244–263.

Hagstrom, Paul & Svetlana McCoy (2003). Presuppositions, wh-questions, and discourse particles: Russian *že*. Browne, Wayles, Ji-Yung Kim, Barbara H. Partee & Robert A. Rothstein (eds.), *Formal Approaches to Slavic Linguistics (FASL)*, 11, Michigan Slavic Publications, Ann Arbor, pp. 201–218.

Kwan-Terry, Anna (1978). The meaning and source of the "la" and the "what" particles in Singapore English. *RELC Journal* 9:2, pp. 22–36.

Lee, Phaik See (1982). *A study of the use of some particles in informal Malaysian English*. Master's thesis, University of Malaya.

Lim, Lisa (ed.) (2004a). *Singapore English: A Grammatical Description*, vol. G33 of *Varieties of English Around the World*. John Benjamins, Amsterdam & Philadelphia.

Lim, Lisa (2004b). Sounding Singaporean. Lim (2004a), pp. 19–56.

Lim, Lisa (2007). Mergers and acquisitions: on the ages and origins of Singapore English particles. *World Englishes* 26:4, pp. 446–484.

Platt, John (1975). The Singapore English speech continuum and its basilect "Singlish" as a "creoloid". *Anthropological Linguistics* 17, pp. 363–374.

Platt, John (1987). Communicative functions of particles in Singapore English. Steele, Ross & Terry Threadgold (eds.), *Language Topics: Essays in Honour of Michael Halliday*, John Benjamins, Amsterdam & Philadelphia, vol. 1, pp. 391–401.

Siraj, Pasha (2000). Topic structures and null arguments in Singaporean English. Manuscript, Johns Hopkins University.

Smith, Ian (1985). Multilingualism and diffusion: a case study from Singapore English. *Indian Journal of Applied Linguistics* XI:2, pp. 105–128.

Wee, Lionel (2004). Reduplication and discourse particles. Lim (2004a), pp. 105–126.

Wong, Jock (2004). The particles of Singapore English: a semantic and cultural interpretation. *Journal of Pragmatics* 36, pp. 739–793.

Zimmermann, Malte (forthcoming). Discourse particles. Maienborn, Claudia, Klaus von Heusinger & Paul Portner (eds.), *Semantics: An International Handbook of Natural Language Meaning*, Walter de Gruyter, Berlin & New York.

The relevance of focus: The case of *let alone* reopened*

Maziar Toosarvandani

University of California, Berkeley

1. Introduction

Within the Gricean approach to pragmatics, it is commonly held that the principles of cooperative conversation only apply to the meaning of an utterance. With the exception of the maxim of Manner, which I set aside, the conversational maxims only make reference to '*what* is said' in an utterance, not '*how* it is said'. The first maxim of Quantity, for instance, states: 'Make your contribution as informative as is required (for the current purposes of the exchange)' (Grice, 1975, 45). Whether an utterance is informative or not will have to do with its meaning, not its form. Thus, when speakers flout a maxim, the conversational implicature that is thereby generated has the property Grice (1975, 57f.) calls NONDETACHABILITY: the same conversational implicature should arise from any of the alternative ways of saying the same thing. In other words, the calculation of a conversational implicature does not take into account the form of an utterance.

There are some cases, though, where it seems as if the pragmatics might be sensitive to form. The additional meaning component of indirect speech acts (as in the famous *Can you pass the salt?*, a question that has the force of a request) and neg-raising predicates (which allow an embedded clause understanding for matrix clause negation) can, in principle, be generated as a conversational implicature from the strictly literal meaning of these utterances, but this implicature would have to somehow recognize the form of these utterances since it disappears if a synonymous expression is used. But, as Morgan (1978) argues for indirect speech acts and Horn & Bayer (1984) argue for neg-raising predicates, the conversational implicatures in these cases can be analyzed as having been short-circuited, so that they are triggered automatically without need for calculation.[1] A short-circuited implicature differs from an idiom like *kick the bucket* since it exists, as Morgan (p. 270f.) puts

*I thank Andrew Garrett, Anastasia Giannakidou, Hannah Haynie, Michael Houser, Russell Lee-Goldman, Jason Merchant, Line Mikkelsen, Chris Potts, and audiences at CLS 44, SALT 18 at the University of Massachusetts, Amherst, and the Berkeley Syntax & Semantics Circle for their thoughtful questions and suggestions.

[1] In a kindred, though not identical, proposal, Bach & Harnish (1979, 171–202) invoke the 'standardization' of conversational implicatures.

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 105-123.
GLSA Publications. Amherst, MA.

it, not '*in spite of* its original meaning. But. . .precisely *because of* its literal meaning;. . .it is a matter of convention that one says it (and means it, or at least purports to mean it) under certain circumstances, for certain purposes.' The relevant conventions are not the usual CONVENTIONS OF LANGUAGE that give rise to the literal meaning of a sentence, but rather what Searle (1975, 76) calls the CONVENTIONS OF USAGE—those conventions that govern how a sentence, along with its literal meaning, can be used for a certain purpose.

It is hypothesized, then, that a lexical item—a piece of form—cannot impose specific pragmatic requirements on the sentence in which it occurs *independently of the interpretation of that sentence*.[2] This follows, again, from the very nature of the maxims, which only refer to the meaning of an utterance (its relevance, its informativeness, its truth or falsity). This aspect of the Gricean program has not, however, gone unchallenged. Most notably, scholars working within Construction Grammar (Fillmore, 1988, Kay & Fillmore, 1999) have posited the existence of 'constructions' that directly link linguistic form with knowledge of how that form must be used. One of the constructions most celebrated within this tradition is *let alone*, illustrated in (1).

(1) A: Has Oswald climbed Mt. Everest?

B: Oswald hasn't climbed the Berkeley hills, **let alone** Mt. Everest.

In their classic 1988 paper, Fillmore, Kay & O'Connor argue that *let alone* conventionally encodes information about how the sentence in which it occurs can interact with the principles of cooperative conversation. A sentence containing *let alone*, they propose, is used to avoid a clash between the maxims of Quantity and Relevance (or Relation). Specifically, it allows the speaker to be relevant to the issue under discussion, which in (1) involves whether Oswald climbed Mt. Everest, while simultaneously obeying the first maxim of Quantity (which enjoins conversational participants to make their contribution as informative as required) by expressing the proposition corresponding to the full clause preceding *let alone*—here, that Oswald hasn't climbed the Berkeley hills. In making this proposal, Fillmore et al. explicitly abandon (p. 501f.) the hypothesis that the Gricean maxims are blind, so to speak, to the form of an utterance.

In this paper, I reexamine whether *let alone* really requires us to renounce the traditional Gricean conception of the maxims. I take a close look at the pragmatics of *let alone*, using the question-under-discussion framework of Roberts (1996, 2004) to model its effect on the discourse context. In the end, I conclude that we do not, at least not on the basis of evidence from *let alone*, need to posit the existence of direct mappings between lexical items, or 'constructions', and pragmatic instructions about how the sentences in which they occur can be used. My argument has two parts. First, using naturally-occuring data drawn from the internet and the British National Corpus, I challenge Fillmore et al.'s generalization that a *let alone* sentence is always relevant to a conversational issue corresponding

[2]Chierchia (2004) argues that some conversational implicatures, specifically those based on scales (arising from the maxim of Quantity) are computed by the grammar and triggered by specific lexical items. This position still conforms to this hypothesis, as Chierchia removes scalar implicatures from the domain of pragmatics altogether.

to the constituent following *let alone*, i.e. *Mt. Everest* in (1).[3] Both *the Berkeley hills* and *Mt. Everest* must be relevant, at the least, to the question under discussion. And, second, I argue that the constraint *let alone* imposes on the context is in fact quite a bit stronger than relevance. A *let alone* sentence must be congruent to the question under discussion—a requirement that is imposed by the obligatory foci on *the Berkeley hills* and *Mt. Everest*. The direct interaction envisioned by Fillmore et al. between linguistic form and Gricean pragmatics thus reduces, I contend, to *let alone*'s association with focus.

To start, let us first consider the semantics of *let alone*. In this paper, I follow Fillmore et al. in analyzing the main contribution of a *let alone* sentence, the at-issue entailment, as the conjunction of two propositions.[4] Thus, the *let alone* sentence in (1), repeated as (2) below, can be translated as (3).

(2) Oswald hasn't climb the Berkeley hills, let alone Mt. Everest.

(3) At-issue entailment:
$\lambda w[\neg \textbf{climb}_w(\textbf{the-berkeley-hills})(\textbf{oswald}) \wedge \neg \textbf{climb}_w(\textbf{mt-everest})(\textbf{oswald})]$

Going into the syntax of this sentence in detail would take us too far off track, but I should mention that the fragment following *let alone* is plausibly derived from an underlying full clause by gapping.[5] It can thus straightforwardly express a proposition that differs from the first conjunct solely in the identity of the internal argument.

In addition to the at-issue entailment in (3), a *let alone* sentence also comes along with a presupposition.[6] The first conjunct is presupposed to be lower on a contextually-salient scale than the second conjunct, as shown in (4).[7]

(4) Presupposition:
$\lambda w[\neg \textbf{climb}_w(\textbf{the-berkeley-hills})(\textbf{oswald})] < \lambda w[\neg \textbf{climb}_w(\textbf{mt-everest})(\textbf{oswald})]$

In an out-of-the-blue context, this scale might be likelihood: it is less likely that Oswald hasn't climbed the Berkeley hills, since they are so low and hence easy to climb, than it is that Oswald hasn't climbed Mt. Everest. The scalar relationship between *let alone*'s two

[3]The British National Corpus (version 2) is distributed by Oxford University Computing Services on behalf of the BNC Consortium; all rights in the texts cited are reserved. Examples are annotated with a three character code identifying the text of origin followed by the line number within that text. Internet data is accompanied by the source URL.

[4]In work elsewhere (Toosarvandani, to appear), I give a different semantics for *let alone*, one in which it does not express the conjunction of two propositions. I follow Fillmore et al.'s account here, not only for simplicity, but also to give our competing pragmatic accounts a level semantic playing field.

[5]Evidence for this syntactic analysis comes from a number of properties *let alone* shares with more canonical cases of gapping, including the possibility of multiple fragments and sensitivity to island constraints.

[6]I also argue in Toosarvandani, to appear that this part of *let alone*'s meaning has the status of a 'background entailment'. The difference to a presupposition is not germane here.

[7]Fillmore et al. state this presupposition slightly differently: the first conjunct must be *more informative in a scalar model* than the second conjunct. A SCALAR MODEL is a set of propositions ordered by the context on which a primitive 'more informative' relation can be defined (see also Kay 1990). It is possible, however, to state the relationship between *let alone*'s two conjuncts in terms of a contextually-dependent scale, with the informational asymmetry between them deriving from pragmatic enrichment.

conjuncts also leads to inferences from the first conjunct to the second. Given the difference in likelihood between them, if Oswald has not climbed the Berkeley hills, we can infer that he has not climbed Mt. Everest. Of course, this is not, strictly speaking, an entailment since it is easy to come up with countermodels. If Oswald is an expert mountaineer from Nepal who has never been to North America, then Oswald will not have climbed the Berkeley hills, though he may very well have ascended Mt. Everest.[8]

2. *Let alone* as a 'construction'

With a basic semantics for *let alone* in hand, we can now move on to Fillmore et al.'s claim that *let alone* states, as a conventional part of its lexical entry, how it interacts with the Gricean maxims. Before actually looking at a *let alone* sentence, though, consider the exchange in (5).

(5) A: Has Oswald climbed Mt. Everest?
B: Oswald hasn't climbed the Berkeley hills.

The intuition here is that B does not quite answer A's question, since B's utterance is somehow not quite relevant. Assuming that B is not opting out of the Cooperative Principle, this means that B violates the maxim of Relevance, i.e. 'Be relevant.' But as Grice notes himself (p. 46), this statement of the maxim of Relevance, because of its terseness, is quite vague. A more precise way of capturing the intuitive violation of Relevance in (5) is offered by the question-under-discussion framework of Roberts (1996, 2004).

The fundamental goal of discourse, under this view, is to answer the big question *What is the way things are?*, a goal participants work towards by having a discourse strategy comprised of a set of questions that are more manageable to answer. These questions, which have been accepted by discourse participants as answerable, though not yet answered, are contained in the QUESTION–UNDER–DISCUSSION STACK, a set of questions ordered by when they were accepted onto the stack. When a new question is accepted, it is added to the top of the stack. When a question is answered, or determined to be unanswerable, it is popped off the stack. The topmost question is the (IMMEDIATE) QUESTION UNDER DISCUSSION.

A short example (from Roberts 1996, 12): Assume a model with two individuals, Hilary and Robin, and two foods, bagels and tofu. We can imagine the discourse in (6), in which all of the questions have been accepted into the question-under-discussion stack.

[8]That is not to say that *let alone*'s two conjuncts can never be related by logical entailment (a proposition p ENTAILS a proposition q iff $p \subseteq q$):

(i) I challenge Mr. Hutton to produce hard copy of how 'each leaflet made clear in one form or another, that it was not a substitute for individuals taking proper advice about their own position.' I maintain that such advice was not given in **any leaflet, let alone all**.
(http://www.telegraph.co.uk/money/main.jhtml?xml=/money/2006/07/08/cmpen08.xml)

Assuming that *any* expresses existential quantification, in every situation where such advice was not given in at least one leaflet, such advice was not given in all leaflets.

(6) Q1: Who ate what?
  Q1a: What did Hilary eat?
    Q1a$_i$: Did Hilary eat bagels?
      Yes.
    Q1a$_{ii}$: Did Hilary eat tofu?
      Yes.
  Q1b: What did Robin eat?
    Q1b$_i$: Did Robin eat bagels?
      No.
    Q1b$_{ii}$: Did Robin eat tofu?
      Yes.

While the questions in the stack are ordered by precedence, this ordering is related, in Roberts's model, to the questions' informativeness relative to one another. The complete answer to a question located after another question in the stack will entail a partial answer to the preceding question.[9] The entire discourse in (6) thus ends up being a strategy to answer Q1, since a complete answer to each of the subquestions provides a partial answer to Q1. Answering both Q1b$_i$ and Q1b$_{ii}$ provides a complete answer to Q1b. And answering both Q1a and Q1b yields a complete answer to Q1, the superquestion *Who ate what?*

We can now define what it means to be relevant in terms of the question-under-discussion framework:

(7) The utterance of an assertion α is RELEVANT to the question under discussion Q iff α introduces a partial answer to Q. (after Roberts 1996, 16)

The utterance of an assertion is relevant just in case it introduces a partial answer to the question under discussion.[10] In order to understand what it means to be a partial answer, we first need a semantics for questions. I adopt the semantics of Groenendijk & Stokhof (1984), for whom the intension of a question is a relation between worlds. When a question is added to the Common Ground, it establishes a partition on the context set, each cell of which corresponds to a complete and exhaustive answer to the question. The concept of a partial answer can be defined in terms of this partition on the context set, as in (8).[11]

(8) A proposition p is a PARTIAL ANSWER to a question Q iff
p is equal to the union of at least one of cells in the partition on the context set created by Q.

[9] Technically, Roberts states that the complete answer to a question will *contextually* entail a partial answer to a preceding question. This slight modification, which is necessary to account for indirect answers, is not relevant here.

[10] Roberts also defines a notion of relevance for questions (p. 16), but we will be dealing here only with assertions.

[11] A proposition p is a COMPLETE ANSWER to a question Q iff p is equal to (exactly) one of the cells in the partition on the context set created by Q. All complete answers are also partial answers.

Since each cell in a partition constitutes a complete and exhaustive answer to the question, the union of any number of them will be a partial answer.

Returning now to the discourse in (5), the meanings of A's question and B's answer are given in (9).

(9) A: Has Oswald climbed Mt. Everest? $\rightsquigarrow$
$\lambda w \lambda w' [\mathbf{climb}_w(\mathbf{mt\text{-}everest})(\mathbf{oswald}) = \mathbf{climb}_{w'}(\mathbf{mt\text{-}everest})(\mathbf{oswald})]$

B: Oswald hasn't climbed the Berkeley hills. $\rightsquigarrow$
$\lambda w [\neg \mathbf{climb}_w(\mathbf{the\text{-}berkeley\text{-}hills})(\mathbf{oswald})]$

B's answer is not relevant, since it does not constitute a partial answer to the question under discussion, i.e. A's question. This point can be made visually by looking at the effect of the discourse in (9) on a concrete model, such as the one in (10).

(10) a. $D_e = \{$Oswald, Max, Mt. Everest, the Berkeley hills$\}$
b. $D_s = \{w_1, \ldots, w_{10}\}$
c. $[\![\mathbf{climb}(\mathbf{mt\text{-}everest})(\mathbf{oswald})]\!] = \{w_6, w_7, w_9, w_{10}\}$
d. $[\![\mathbf{climb}(\mathbf{the\text{-}berkeley\text{-}hills})(\mathbf{oswald})]\!] = \{w_3, w_4, w_9, w_{10}\}$
e. $[\![\mathbf{climb}(\mathbf{mt\text{-}everest})(\mathbf{max})]\!] = \{w_5, w_7, w_8, w_{10}\}$
f. $[\![\mathbf{climb}(\mathbf{the\text{-}berkeley\text{-}hills})(\mathbf{max})]\!] = \{w_2, w_4, w_8, w_{10}\}$

(11)
$$\left\{ \begin{array}{c} \text{c} \\ \left\{ \begin{array}{l} w_1, w_2, w_3, w_4, w_5, \\ w_6, w_7, w_8, w_9, w_{10} \end{array} \right\} \end{array} \right.$$
$$\left. \begin{array}{c} \text{+ (9A)} \\ \left\{ \begin{array}{l} \left\{ \begin{array}{l} w_6, w_7, w_9, w_{10} \end{array} \right\}, \\ \left\{ \begin{array}{l} w_1, w_2, w_3, \\ w_4, w_5, w_8 \end{array} \right\} \end{array} \right\} \end{array} \right.$$

As shown in (11), prior to the addition of the question, the context set (written c) contains the entire domain of worlds, D_s. Adding the question in (9) creates a partition of two cells on the context set: one containing w_6, w_7, w_9, and w_{10}, where Oswald climbs Mt. Everest, the other containing the remaining six worlds, in which he does not (though he may climb other mountains). Now, if we try to add B's assertion from (9), it is not a partial answer to the question since it does not eliminate at least one entire cell. The proposition that Oswald has not climbed the Berkeley hills is the complement of the set in (10d), i.e. $\{w_1, w_2, w_5, w_6, w_7, w_8\}$, which is not equal to the union of any of the cells in (11). B's utterance thus fails to be relevant.

Just because B violates the maxim of Relevance in the dialogue in (9), however, does not mean that B will have misled A by not first opting out of cooperative conversation. As in Grice's south of France example (p. 51f.), the hearer may be faced with a violation of Relevance and try to explain it by supposing that it follows from a clash between Relevance and some other maxim and that the speaker was forced to choose one over the other. It is easy to imagine a context for the dialogue in (9) where this would happen. Say A and B both participate in a mountain climbing club whose members attempt mountains in increasing

order of difficulty. Starting with the Berkeley hills, they then climb a few other mountains before finally ascending Mt. Everest. In such a context, the clash would arise between Relevance and the first maxim of Quantity, since by saying that Oswald has not climbed the Berkeley hills, B also answers A's question (the only way for Oswald to have climbed Mt. Everest is for him to have first climbed the Berkeley hills). That is, while B's utterance may not be *directly* relevant to A's question, it is *indirectly* relevant since it is more informative than answering (straightforwardly) *Oswald hasn't climbed Mt. Everest*. The reasoning that would produce such a clash would go as follows: 1) B is not opting out in (9). 2) B has violated the maxim of Relevance (in the sense developed above). 3) This observation can only be explained by supposing that B is aware that to be more directly relevant would be to violate the first maxim of Quantity by being less informative. The demands of Relevance are subordinated, in this context, to those of Quantity.

Fillmore et al. argue that what *let alone* does is to mediate precisely this clash between Relevance and Quantity. Consider the dialogue in (12).

(12) A: Has Oswald climbed Mt. Everest? $\rightsquigarrow$
$\lambda w \lambda w' [\textbf{climb}_w(\textbf{mt-everest})(\textbf{oswald}) = \textbf{climb}_{w'}(\textbf{mt-everest})(\textbf{oswald})]$

B: Oswald hasn't climbed the Berkeley hills, let alone Mt. Everest. $\rightsquigarrow$
$\lambda w [\neg \textbf{climb}_w(\textbf{the-berkeley-hills})(\textbf{oswald}) \wedge \neg \textbf{climb}_w(\textbf{mt-everest})(\textbf{oswald})]$

B's assertion using *let alone* in (12) subsumes the informational contribution of the plain assertion in (9): they both say that Oswald hasn't climbed the Berkeley hills. According to Fillmore et al., there is no possibility of it inducing a violation of Relevance, however, since a *let alone* sentence includes the second conjunct, which it marks as being directly relevant to the question under discussion. Their statement of *let alone*'s pragmatic contribution (p. 532) is worth quoting in its entirety:

> (a) By way of the raising of what we may call the CONTEXT PROPOSITION, the immediately preceding context has created conditions under which a speech act represented by the weaker [second conjunct] is an appropriate or relevant response.
>
> (b) The weaker [second conjunct] of the *let alone* sentence specifically accepts or rejects the context proposition.
>
> (c) In either case, the speaker, while committing himself emphatically to the [second conjunct], indicates that limiting himself to it would not be cooperative, since there is something even more informative to be said: the stronger [first conjunct]. Thus the *let alone* construction, with its two parts, can be seen as having the function of meeting simultaneous and conflicting demands of Relevance and Quantity.

Their notion of a 'context proposition' translates rather straightforwardly into the question-under-discussion framework as a polar question under discussion, here *Has Oswald climbed Mt. Everest?*. What *let alone* does, then, is to require an immediate question under discussion that is answered by the second conjunct. This enables the speaker to satisfy Relevance.

At the same time, a *let alone* sentence also conveys a more informative statement, the first conjunct, thereby satisfying the first maxim of Quantity. By using *let alone*, a speaker is able to simultaneously satisfy both maxims. Without *let alone*, if the speaker uttered just the first conjunct, they might potentially violate Relevance.

The only thing that has to be conventionally encoded as part of *let alone*'s lexical entry is its relation to the immediate question under discussion. This pragmatic requirement can be stated as in (13).

(13) Pragmatic requirement of an assertion α *let alone* β:
β must be relevant to the question under discussion; α need not be relevant to the question under discussion.

The informational asymmetry between the two conjuncts, mentioned in subclause (c) above, does not have to be included here. If, by *let alone*'s presupposition discussed in §**??**, the first conjunct is lower on a contextually-salient scale such as likelihood, then it should be possible, in the right context, to infer the second conjunct from the first.

Given the discussion in the introduction, (13) is unexpected, since, if it is a conventional property of *let alone*, it would force the second conjunct β and not the first conjunct α to be relevant to the question under discussion *regardless of what* α *and* β *meant*. In other words, the pragmatic requirement in (13) is arbitrary and it does not follow from the meaning of the *let alone* sentence: we could easily imagine a lexical item *let alone*′ that requires its first conjunct, but not its second conjunct, to be relevant to the immediate question under discussion. Thus, under the Fillmore et al. 1988 account, *let alone* would differ in this respect from both indirect speech acts and neg-raising predicates, which are used in a certain way in virtue of their literal meaning.

The requirement in (13)—that a *let alone* sentence should only ever occur in a context where the question under discussion is answered by the second conjunct—should be closely examined, though, using naturally-occuring data. I do this in the next section.

3. Examining Fillmore et al.'s generalization

As Fillmore et al. predict, *let alone* does often occur in contexts where the immediate question under discussion is answered by the second conjunct, as in the following:

(14) You'd have thought your Brian could have found you somewhere a bit more comfortable, interposed Mrs. Harper, seeing her opportunity of introducing Brian to his disadvantage, 'he must know a few folk, it's not only money that counts…' and her voice trailed away, as she simultaneously managed to imply that Brian had the Town Hall in the palm of his hand, and that he had enough money to buy his father a comfortable bungalow in a nice suburb whenever he felt like it. Shirley watched Fred return Mrs. Harper's grease-smeared, red-nosed gaze: affable, broad, patient, he stared at her, and wiped his mouth on his table napkin. She could see his decision not to bother to try to explain that Brian hardly knew anybody in Northam Town Hall, and that **Brian's salary as Head of Humanities at an Adult Education College hardly rose to paying his own mortgage, let alone to buying a house for his aging father**. (FB0 1086)

The *let alone* sentence here occurs in a discussion about whether Brian has the money to buy a house for his aging father, an issue that was raised by Mrs. Harper's comment. The question-under-discussion stack for the discourse in (14), just before the *let alone* sentence is proffered, looks like (15).

(15) Q1: What does Brian's salary rise to?
Q1a: Does Brian's salary rise to buying a house for his aging father?

The immediate question under discussion is the polar question Q1a, which asks whether Brian's salary is enough to buy a house for his father. There is a higher superquestion, the wh-question Q1, that is partially answered by an answer to Q1a.

Looking now at the first conjunct of the *let alone* sentence in (14)—that Brian can hardly pay his own mortgage—it does not, as we saw in the previous section, directly address the immediate question under discussion. Instead, it is the answer to another polar question, *Does Brian's salary rise to paying his own mortgage?* Assuming that the two conjuncts of a *let alone* sentence are added to the context incrementally, when the *let alone* sentence is asserted, this question will have to be added to the top of the question-under-discussion stack:

(15′) Q1: What does Brian's salary rise to?
Q1a: Does Brian's salary rise to buying a house for his aging father?
Q1b: Does Brian's salary rise to paying his own mortgage?

But the new immediate question under discussion in (15′), Q1b, is not completely unrelated to Q1a. The complete answer to both these questions entail partial answers to the wh-superquestion Q1.

While Fillmore et al. require Q1a to be the question under discussion when the *let alone* sentence is used, there is nothing in the question-under-discussion framework itself that forces this. Given the order of the two *let alone* conjuncts, it should be entirely possible for the question-under-discussion stack to already look like (15′) by the time the *let alone* sentence is uttered, with the immediate question under discussion corresponding to the first conjunct. This is exactly what we find:

(16) Several commentators have claimed that on this expedition Gould's party was the first ever to reach the great western bend of the Murray overland from Adelaide. But we cannot be certain that Gould even got as far as the river at all. He himself says he 'spent five weeks entirely in the bush in the interior, partly on the ranges and partly on the belts of the Murray.' Although he had a magnificent view from the top of the Mount Lofty range of the Murray River, winding its course across the flats through a belt of dense dwarf eucalypti, **there is no mention of his ever having reached its banks, let alone the remote western bend 100 miles away.** (HRB 1133)

At the beginning of the paragraph, the author introduces the issue of how far Gould and his party got towards the western bend of the Murray River, and then goes on to discuss whether they even reached the banks of the river (presumably, they would have followed

the river to their destination). Thus, by the time the *let alone* sentence is used, the first conjunct—that there is no mention of Gould's having reached the banks of the Murray river—corresponds to the immediate question under discussion:

(17) Q1: What did Gould reach?

Q1a: Did Gould reach the western bend of the Murray River?

Q1b: Did Gould reach the banks of the Murray River?

This type of example is crucial for evaluating Fillmore et al.'s account, since it is exactly what they predict should not occur, according to the pragmatic requirement in (13): the question under discussion at the moment the *let alone* sentence is uttered corresponds to the first conjunct, not the second conjunct. So let us look at another case of the same type:

(18) Thus although the laws of 1861 succeeded in turning serfs into smallholders, the methods they employed were heavily biased in the gentry's favor. Because peasants had to pay back the sums of money which the government advanced on their behalf at 6 per cent interest over forty-nine years, it was to be a long time before their freedom was complete. . .It looks, then, as if the reformers had laboured in vain. A severe critic of the statutes of 1861 might respond to the question 'Why did Alexander II free the serfs?' by saying that he failed to do so. Without going quite so far, historians have indeed been critical. Academician Druzhinin held that the object of the framers of the statutes was 'to retain in the hands of the gentry estate the maximum quantity of land and to facilitate the gentry's transition to more profitable farming based on free labour by providing them with the essential capital and reserves of the necessary manpower.' In two closely argued and provocative essays Alfred Rieber claimed that the object of the emancipation was not even to benefit **the gentry (let alone the peasantry)**, but rather to put the principal institutions of the autocracy, the treasury and the army, in a position to recover from the ravages of the Crimean War. (HY7 1179)

The overarching question this paragraph addresses is *Who was the object of the emancipation to benefit?* The first part of the paragraph asks whether it was to benefit the peasants, while the second half considers the idea that it was for the gentry that Alexander II freed the serfs. By the time the author comes to the *let alone* sentence, the question-under-discussion stack thus looks like (19).

(19) Q1: Who was the object of the emancipation to benefit?
Q1a: Was the object of the emancipation to benefit the peasantry?
Q1b: Was the object of the emancipation to benefit the gentry?

The immediate question under discussion, raised by the author's consideration of Druzhinin's views, corresponds to the first conjunct—that the object of the emancipation was to benefit the gentry. In both this case and the immediately preceding one, the second conjunct addresses a higher domain goal, an issue that was raised prior to the immediate question under discussion.

Even though in all of the scenarios the question-under-discussion stack looks different before the *let alone* sentence is proffered, its use triggers the addition of additional questions that render them all essentially identical in structure. In (15′), (17), and (19), the first conjunct answers a polar question that is preceded on the stack by the polar question answered by the second conjunct. This follows directly from the order of the two conjuncts in the *let alone* sentence: since the first conjunct will be added to the Common Ground before the second conjunct (Heim, 1983, 177), the polar question corresponding to the first conjunct is preceded by the one corresponding to the second conjunct.[12]

This account of the pragmatics of *let alone*—which does not impose a requirement on what the question under discussion can be, but rather treats it as derivative of the order of the conjuncts in a *let alone* sentence—predicts that it should be possible for neither of the polar questions be raised explicitly. This is exactly what we find:

(20) A difficult man to know; perhaps shy, possibly arrogant. A meticulous man, with a compelling need for orderliness, distancing himself from anything which might threaten the harmonious life he was striving to create. When and how did he unwind? And with whom? It was hard to imagine him having **a casual chat with anyone, let alone a more intimate relationship**. (HWP 2459)

At the moment the *let alone* sentence is proffered, the immediate question under discussion is the wh-question *How did he unwind?* (ignoring, for convenience, the intervening question *And with whom?*). It thus is located at the top of the question-under-discussion stack:

(21) Q1: How did he unwind?

The *let alone* sentence again triggers the addition of two polar question corresponding to the two conjuncts:

[12] While the two polar questions are ordered by precedence with respect to each other, Roberts places an additional condition on the question-under-discussion stack relating precedence and informativity (p. 11). For all Q and Q' in the the question-under-discussion stack, if $Q < Q'$ (if Q precedes Q'), then the complete answer to Q' contextually entails a partial answer to Q. The problem here is that, while Q1a precedes Q1b, a complete answer to Q1b does not *necessarily* contextually entail a partial answer to Q1a. Only a negative answer to Q1b (that the object of the emancipation was not to benefit the gentry) entails a partial answer to Q1a. A positive answer to Q1b (that the object of the emancipation was to benefit the gentry) does not comprise any sort of answer to Q1a.

(21′) Q1: How did he unwind?
Q1a: Did he unwind by having a more intimate relationship?
Q1b: Did he unwind by having a casual chat with anyone?

What has stayed constant in the structure of all the discourses we have examined so far is the presence of a wh-superquestion, which dominates some number of polar subquestions.

This generalization about the types of discourse contexts *let alone* occurs in reflects an important aspect of the first maxim of Quantity, which, again, Grice states (p. 45) as: 'Make your contribution as informative *as is required (for the current purposes of the exchange)* [emphasis added].' As Horn (2001, 195) observes, the last part essentially builds Relevance into Quantity. An utterance is only overinformative or underinformative relative to the conversational issue at hand. Thus, when Fillmore et al. say that *let alone* allows the speaker to make a more informative utterance, this does not mean it is more informative in the abstract. There are after all innumerable propositions that are more informative than the second conjunct. Just slotting one in, as in (22), is not possible.

(22) A: What has Oswald climbed? $\rightsquigarrow$
$\lambda w \lambda w'[\lambda x[\mathbf{climb}_w(x)(\mathbf{oswald})] = \lambda x[\mathbf{climb}_{w'}(x)(\mathbf{oswald})]]$
B: #Nobody has climbed Mt. Everest, let alone Oswald. $\rightsquigarrow$
$\lambda w[\neg\exists x(\mathbf{climb}_w(\mathbf{mt\text{-}everest})(x)) \wedge \neg\mathbf{climb}_w(\mathbf{mt\text{-}everest})(\mathbf{oswald})]$

The proposition that nobody climbed Mt. Everest unilaterally entails that Oswald did not climb Mt. Everest, which satisfies *let alone* scalar presupposition. The sentence is still infelicitous in this context, however, since the first conjunct is not relevant to the question under discussion. Using the same model as in (10), the question *What has Oswald climbed?* creates a partition of four cells on the context set:

(23)
$$\left\{ \begin{array}{c} w_1, w_2, w_3, w_4, w_5, \\ w_6, w_7, w_8, w_9, w_{10} \end{array} \right\}$$
c

$$\left\{ \begin{array}{c} \{w_3, w_4\}, \{w_6, w_7\}, \\ \{w_9, w_{10}\}, \\ \{\ w_1, w_2, w_5, w_8\ \} \end{array} \right\}$$
+ (22A)

Either Oswald has only climbed the Berkeley hills (w_3 and w_4), he has only climbed Mt. Everest (w_6 and w_7), he has climbed both (w_9 and w_{10}), or he has climbed neither (the remainder of the context set). The first conjunct of the answer in (23), that nobody has climbed Mt. Everest, is true only in the worlds in $\{w_1, w_2, w_3, w_4\}$, a set that is not equal to the union of any of the cells in (23).

While Fillmore et al.'s analysis predicts that only *let alone*'s second conjunct must be relevant to the question under discussion, the correct generalization seems to be that both conjuncts must address the same wh-question, which may or may not dominate polar questions when the *let alone* sentence is proffered. There is no need to include this as a pragmatic component of *let alone*'s lexical entry, I propose, since once we take into account

the focus structure of a *let alone* sentence, both conjuncts will automatically be relevant to the same wh-question.

4. The role of focus

A prominent feature of every sentence with *let alone* is the presence of a pair of foci. Consider, for instance, the sentence we have been looking at:

(24) Oswald hasn't climbed [the Berkeley HILLS]$_F$, let alone [Mt. EVerest]$_F$.

Let alone is flanked by two falling pitch accents (Jackendoff's (1972, 258–265) Accent A or Pierrehumbert's (1980) H* pitch accent), one on the fragment following *let alone*, which I will call the REMNANT, the other on the corresponding constituent of the preceding clause, the CORRELATE. These intonational contours mark the correlate and remnant as being in focus, the extent of which is marked by square brackets and a subscripted 'F'.

Both of the foci accompanying *let alone* must be present. In the felicitous sentence in (25), pitch accents occur on both the correlate *flowers* and the remnant *chocolates*.

(25) Q: What did Oswald get for Susan? Did Oswald get [FLOwers]$_F$ or [CHOcolates]$_F$ for Susan?

A: Oswald didn't get [FLOwers]$_F$, let alone [CHOcolates]$_F$, for Susan.

(26) Q: Who got flowers or chocolates for Susan? Did [OSwald]$_F$ get flowers or chocolates for Susan?

A: #[OSwald]$_F$ didn't get flowers, let alone chocolates, for Susan.

Moving the nuclear pitch accent onto the subject, as in (26), results in infelicity. This infelicity is a product of the focus structure, since the logically equivalent statement [*Oswald*]$_F$ *didn't get flowers or chocolates for Susan* (by De Morgan's law) is a perfectly felicitously answer to the question in (26).

The obligatoriness of the foci accompanying *let alone* is plausibly related to the phenomenon of ASSOCIATION WITH FOCUS. Expressions like *only* and *even* also restrict the focus structures of the sentences in which they occur: they require the presence of a focus somewhere in their scope. When *even* is, for instance, adjoined in (27) to the DP direct object, the nuclear pitch accent falls on the head noun *consulate*.[13]

(27) A: What type of representation does France have in Iraq?

B: France doesn't have even [a CONsulate]$_F$ in Iraq.

(28) A: What countries have consulates in Iraq?

B: #[FRANCE]$_F$ doesn't have even a consulate in Iraq.

[13] I use DP-adjoined *even* here since the VP-adjoined version behaves, as Jackendoff (1972, 248) observes, peculiarly, allowing the pitch accent to fall on the subject, e.g. [*OSwald*]$_F$ *hasn't even climbed the Berkeley hills*. This sets it apart it from other focus-sensitive expressions, such as *only* and *just* (p. 250).

The segmentally-identical string in (28) is infelicitous, however, because the nuclear pitch accent is located on the subject, which does not fall within the scope of *even*. Because of this dependency, the focus in (27) is said to be 'associated' with *even*.[14]

What do the two foci associated with *let alone* do? Just as with other foci, they serve to structure the discourse by enforcing question-answer congruence (Halliday, 1967, 207f.). Consider the question in (29), which contains a wh-phrase in subject position.

(29) Q: Who took the chair?
A1: $[\text{SAlly}]_{\text{F}}$ took the chair.
A2: #Sally took $[\text{the CHAIR}]_{\text{F}}$.

The two answers in (29) are truth-conditionally identical, serving as partial, if not complete, answers to the question. We can thus say that both are COHERENT answers. But only the first answer is felicitous since it is CONGRUENT to the question: it has a focus in the same position as the wh-phrase of the question, in subject position. The second answer, in contrast, has a focus on the direct object, and it is accordingly incongruent.

Roberts (1996) argues that question-answer congruence should be enforced by a presupposition of focus:

(30) Presupposition of an assertion α containing a focus:
α is congruent to the question under discussion at the time α is uttered.

(after Roberts 1996, 24)

An assertion containing a focus presupposes that it is congruent to the question under discussion. It is intuitively clear what it means to be congruent—the focus must correspond to the wh-phrase of the question—but a formal definition of congruence is also possible using Rooth's (1985, 1992) ALTERNATIVE SEMANTICS for focus, which parallels Hamblin's (1973) semantics for questions. Rooth proposes that, alongside a sentence's ordinary semantic value, there exists a focus semantic value, consisting of the set containing the ordinary value and all the alternatives to it that are derived by making a substitution in the position of the focus. The focus value of the sentence in (24) would accordingly be the set of propositions of the form 'Oswald hasn't climbed x', as in (31). (I write the function that gives such focus meanings as *ALT*.)

(31) $ALT(\text{Oswald hasn't climbed } [\text{the Berkeley HILLS}]_{\text{F}}, \text{ let alone } [\text{Mt. EVerest}]_{\text{F}}) =$
$\lambda p \exists x(p = \lambda w[\neg \mathbf{climb}_w(x)(\mathbf{oswald})])$

[14] Partee (1991, 21) notes a class of counterexamples to this generalization that have since come to be discussed under the rubric of SECOND OCCURRENCE FOCUS. Under certain discourse contexts, a focus associated with an expression like *even* does not bear the nuclear pitch accent, a fact that early on was taken to mean that the presence of the associated focus is optional. But Beaver, Clark, Flemming, Jaeger & Wolters (2007) show, replicating earlier work, that these foci do indeed receive a more prominent realization than the surrounding nonfocal material. While there is no significant pitch excursion, they exhibit both increased energy (they are louder) and increased duration. Beaver & Clark (2008, 142–181) in addition argue that it is possible to test for the presence of a focus using a trio of tests: ellipsis, extraction, and the distribution of reduced pronouns.

It might not be immediately obvious why this should be the focus value of the sentence in (24). Taking first just the full clause preceding *let alone*, *ALT* would return the set of propositions in (31), each of which differs just in the identity of the internal argument. Since the focussed fragment following *let alone* always stands in the same relation to the surrounding sentence as the first focussed constituents—since, in other words, the remnant and correlate always bear the same syntactic function—its focus value will be identical to what is given in (31).

The Roothian focus value in (31), before being used to calculate question-answer congruence, must be converted into an expression that can be compared to the meaning of a question, which in the Groenendijk & Stokhof's semantics I adopt here is a relation between possible worlds. Heim (1994) provides a way of strengthening Hamblin-style question meanings into Groenendijk & Stokhof-style meanings (her *answer*$_2$). Applying this to the focus value in (31), we get the expression in (32), a relation between possible worlds.[15]

(32) $answer_2(ALT(\text{Oswald hasn't climbed } [\text{the Berkeley HILLS}]_F, \text{ let alone } [\text{Mt. EVerest}]_F)) =$
$\lambda w \lambda w'[\lambda x[\neg \mathbf{climb}_w(x)(\mathbf{oswald})] = \lambda x[\neg \mathbf{climb}_{w'}(x)(\mathbf{oswald})]]$

With a focus value in hand for the sentence in (32) that is of the same type as a question, we can define congruence between an assertion and a question in the following way:

(33) An assertion α is CONGRUENT to a question Q iff
$answer_2(ALT(\alpha)) = Q$.

The assertion in (32) will thus be congruent to a question just in case its focus value, suitably strengthened with Heim's *answer*$_2$, is equal to the meaning of the question.

With the notion of congruence just defined, the presupposition of focus in (30) requires that, at the time the *let alone* sentence in (32) is uttered, it will have to be congruent to one of two possible questions under discussion. The first is given in (34).

(34) What has Oswald climbed? $\rightsquigarrow$
$\lambda w \lambda w'[\lambda x[\mathbf{climb}_w(x)(\mathbf{oswald})] = \lambda x[\mathbf{climb}_{w'}(x)(\mathbf{oswald})]]$

Even though the question meaning in (34) and the focus value in (32) differ in their polarity (positive for the former and negative for the latter), they are equivalent, satisfying the definition of congruence in (33). Since each of the cells created by a wh-question corresponds

[15] More specifically, *answer*$_2$ is the function in (i), where $\mathscr{P}$ is a variable over sets of propositions ($\langle\langle s,t\rangle,t\rangle$). When applied to the Roothian alternatives of the sentence in (31), it gives the expression in (ii).

(i) $answer_2 = \lambda \mathscr{P} \lambda w \lambda w'[\cap\{p \mid \mathscr{P}(p) \wedge p(w)\} = \cap\{p \mid \mathscr{P}(p) \wedge p(w')\}]$

(ii) $answer_2(ALT(\text{Oswald hasn't climbed } [\text{the Berkeley HILLS}]_F, \text{ let alone } [\text{Mt. EVerest}]_F)) =$
$\lambda w \lambda w'[\cap\{p \mid \exists x(p = \lambda w''[\neg \mathbf{climb}_{w''}(x)(\mathbf{oswald})]) \wedge p(w)\} =$
$\cap\{p \mid \exists x(p = \lambda w''[\neg \mathbf{climb}_{w''}(x)(\mathbf{oswald})]) \wedge p(w')\}]$

This is not yet a Groenendijk & Stokhof-style denotation. Beck & Rullman (1999, 269f.) prove that (ii) is equivalent to the expression in (iii), which is what is given in (32).

(iii) $\lambda w \lambda w'[\lambda x[\neg \mathbf{climb}_w(x)(\mathbf{oswald})] = \lambda x[\neg \mathbf{climb}_{w'}(x)(\mathbf{oswald})]]$

This expression can now be compared to the meaning of a question.

to an exhaustive answer, negative and positive questions have exactly the same meaning (Groenendijk & Stokhof, 1984, 279f.).[16] Because of this equivalence, we also expect that the focus presupposition of the sentence in (24) should be satisfied by a negative question under discussion, as indeed it is:

(35) A: What hasn't Oswald climbed? Hasn't he climbed Mt. Everest?
B: Oswald hasn't climbed [the Berkeley HILLS]$_{\mathrm{F}}$, let alone [Mt. EVerest]$_{\mathrm{F}}$.

By establishing congruence to the wh-question under discussion in (34), the pair of foci associated with *let alone* also ensure that both of *let alone*'s conjuncts are relevant to it. As illustrated in (29), an assertion can be relevant to the question under discussion while still being incongruent. But the reverse situation, where a sentence is congruent but irrelevant, is impossible. By definition, an assertion is always a focus alternative to itself. If then, by the presupposition of focus, an assertion's focus value is equal to the meaning of the question under discussion, then the assertion will also constitute a partial answer to the question under discussion, and will therefore, by the definition of relevance in (7), be relevant to it. To illustrate, take the exchange we have been looking at:

(36) A: What has Oswald climbed? $\rightsquigarrow$
$\lambda w \lambda w'[\lambda x[\mathbf{climb}_w(x)(\mathbf{oswald})] = \lambda x[\mathbf{climb}_{w'}(x)(\mathbf{oswald})]]$
B: Oswald hasn't climbed [the Berkeley HILLS]$_{\mathrm{F}}$, let alone [Mt. EVerest]$_{\mathrm{F}}$. $\rightsquigarrow$
$\lambda w[\neg\mathbf{climb}_w(\mathbf{the\text{-}berkeley\text{-}hills})(\mathbf{oswald}) \wedge \neg\mathbf{climb}_w(\mathbf{mt\text{-}everest})(\mathbf{oswald})]$

By the discussion above, B's *let alone* sentence in (36) is congruent to A's question with the wh-phrase in object position. To assess whether it is also relevant to the question, consider the effect of the question on the context set. As in (23), the question establishes a partition of four cells:

(37)
$$\underset{\mathrm{c}}{\left\{\begin{array}{c} w_1, w_2, w_3, w_4, w_5, \\ w_6, w_7, w_8, w_9, w_{10} \end{array}\right\}} \quad \underset{+\ (36\mathrm{A})}{\left\{\begin{array}{c} \{w_3, w_4\}, \{w_6, w_7\}, \\ \{w_9, w_{10}\}, \\ \{\ w_1, w_2, w_5, w_8\ \} \end{array}\right\}}$$

It can be seen that both the first conjunct, equal to the set $\{w_1, w_2, w_5, w_6, w_7, w_8\}$, and the second conjunct, equal to the set $\{w_1, w_2, w_3, w_4, w_5, w_8\}$, comprise partial answers to the question since they are each equal to the union of exactly two partitions. They are thus both relevant to the question.

In the end, *let alone*'s apparent sensitivity to Relevance comes down to nothing more than obligatory association with two foci on the correlate and remnant. These foci

[16] This is an advantage of using the Groenendijk & Stokhof system for deriving question-answer congruence, as Beaver & Clark (2008, 45 fn. 2) note. Under a Hamblin semantics for questions, a positive answer is not congruent to a negative question.

presuppose that the *let alone* sentence is congruent to the corresponding wh-question under discussion. An assertion that is congruent to a question also introduces a partial answer to it, ensuring that both conjuncts of a *let alone* sentence will always be relevant to the same wh-question under discussion. Under this view of *let alone*, it is not particularly special in any way, except that it requires the presence of a pair of foci, a property of numerous other natural language expressions.

5. Conclusion

Through a detailed study of the pragmatics of *let alone*, I hope to have shown that it is not necessary, as Fillmore et al. claim, to recognize conventional mappings between linguistic form and use. The pragmatic effect of a *let alone* sentence—in particular, how in certain contexts it appears to mediate the conflicting demands of the maxims of Relevance and Quantity—can be derived from its semantics and conventional association with a pair of foci. It remains to be seen to what degree this type of analysis can be extended to other purported 'constructions' that include a conventionalized pragmatic component, such as the *What's X doing Y?* construction (Kay & Fillmore, 1999) and the *Just because. . .doesn't mean. . .* construction (Bender & Kathol, 2001).

More broadly, we can view focus as a grammatical mechanism for ensuring Relevance: when an assertion satisfies the presupposition of focus, it is perforce also relevant to the question under discussion. But, as Roberts (1996, 27) observes, the presupposition of focus does not just duplicate the effect of Relevance, it does more. Just as with other presuppositions, it can be exploited, so that, even if the goals of a conversation have not been stated explicitly, hearers can use the presupposition of focus to accommodate the goals assumed by the speaker. Thus, while *let alone* may not directly encode pragmatic knowledge in the way envisioned by Fillmore et al., through its association with a pair of foci, it nonetheless interacts with, and is able to shape, the discourse context in which it appears.

References

Bach, Kent & Robert M. Harnish (1979). *Linguistic Communication and Speech Acts*. MIT Press, Cambridge, MA.

Beaver, David, Brady Zack Clark, Edward Flemming, T. Florian Jaeger & Maria Wolters (2007). When semantics meets phonetics: Acoustical studies of second-occurrence focus. *Language* 83, pp. 245–276.

Beaver, David I. & Brady Z. Clark (2008). *Sense and Sensitivity: How Focus Determines Meaning*. Wiley-Blackwell, Oxford.

Beck, Sigrid & Hotze Rullman (1999). A flexible approach to exhaustivity in questions. *Natural Language Semantics* 7, pp. 249–298.

Bender, Emily M. & Andreas Kathol (2001). Constructional effects of *Just because. . .doesn't mean. . .*. Chang, Charles, Michael J. Houser, Yuni Kim, David Mortensen, Mischa Park-Doob & Maziar Toosarvandani (eds.), *Proceedings of*

the Twenty-Seventh Annual Meeting of the Berkeley Linguistics Society, General Session and Parasession on Gesture and Language, Berkeley Linguistics Society, Berkeley, CA, pp. 13–25.

Chierchia, Gennaro (2004). Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. Belletti, Andriana (ed.), *Structures and Beyond: The Cartography of Syntactic Structures, Volume 3*, Oxford University Press, Oxford, pp. 39–103.

Fillmore, Charles J. (1988). The mechanisms of 'Construction Grammar'. Axmaker, Shelley, Annie Jaisser & Helen Singmaster (eds.), *Proceedings of the Fourteenth Annual Meeting of the Berkeley Lingusitics Society, General Session and Parasession on Grammaticalization*, Berkeley Linguistics Society, Berkeley, CA, pp. 35–55.

Fillmore, Charles J., Paul Kay & Mary Catherine O'Connor (1988). Regularity and idiomaticity in grammatical constructions: The case of *let alone*. *Language* 64, pp. 501–538.

Grice, H. P. (1975). Logic and conversation. Cole, Peter & Jerry L. Morgan (eds.), *Speech Acts*, Academic Press, New York, vol. 3 of *Syntax and Semantics*, pp. 41–58.

Groenendijk, Jeroen & Martin Stokhof (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph.D. thesis, University of Amsterdam.

Halliday, M. A. K. (1967). Notes on transitivity and theme in English, part 2. *Journal of Linguistics* 3, pp. 177–274.

Hamblin, C. L. (1973). Questions in Montague English. *Foundations of Language* 10, pp. 41–53.

Heim, Irene (1983). File change semantics and the familiarity theory of definiteness. Bäuerle, Raine, Christoph Schwarze & Arnim von Stechow (eds.), *Meaning, Use, and the Interpretation of Language*, pp. 164–190.

Heim, Irene (1994). Interrogative semantics and Karttunen's semantics for *know*. Buchalla, Rhonna & Anita Mittwoch (eds.), *IATL 1: The Proceedings of the Ninth Annual Conference and of the Workshop on Discourse*, Akademon, Jerusalem, pp. 128–144.

Horn, Laurence R. (2001). *A Natural History of Negation*. CSLI, Stanford, CA, 2nd edn.

Horn, Laurence R. & Samuel Bayer (1984). Short-circuited implicature: A negative contribution. *Linguistics and Philosophy* 7, pp. 397–414.

Jackendoff, Ray S. (1972). *Semantic Interpretation in Generative Grammar*. MIT Press, Cambridge, MA.

Kay, Paul (1990). Even. *Linguistics and Philosophy* 13, pp. 59–111.

Kay, Paul & Charles J. Fillmore (1999). Grammatical constructions and linguistic generalizations: The *What's X doing Y?* construction. *Language* 75, pp. 1–33.

Morgan, J. L. (1978). Two types of convention in indirect speech acts. Cole, Peter (ed.), *Pragmatics*, Academic Press, New York, vol. 9 of *Syntax and Semantics*, pp. 261–280.

Partee, Barbara H. (1991). Topic, focus, and quantification. Moore, Steve & Adam Wyner (eds.), *Proceedings from Semantics and Linguistic Theory I*, Cornell University,

Ithaca, NY, pp. 159–187.

Pierrehumbert, Janet (1980). *The Phonology and Phonetics of English Intonation*. Ph.D. thesis, Massachusetts Institute of Technology.

Roberts, Craige (1996). Information structure in discourse: Towards an integrated formal theory of pragmatics. *OSU Working Papers in Linguistics* 49, pp. 91–136, URL http://ling.osu.edu/~croberts/infostr.pdf.

Roberts, Craige (2004). Context in dynamic interpretation. Horn, Laurence R. & Gregory Ward (eds.), *Handbook of Contemporary Pragmatic Theory*, Blackwell, Oxford, pp. 197–220.

Rooth, Mats (1985). *Association with Focus*. Ph.D. thesis, University of Massachusetts, Amherst.

Rooth, Mats (1992). A theory of focus interpretation. *Natural Language Semantics* 1, pp. 75–116.

Searle, John R. (1975). Indirect speech acts. Cole, Peter & Jerry L. Morgan (eds.), *Speech Acts*, Academic Press, New York, vol. 3 of *Syntax and Semantics*, pp. 59–82.

Toosarvandani, Maziar (To appear). Scalar reasoning and the semantics of *let alone*. *Papers from the Forty-Fourth Regional Meeting of the Chicago Linguistic Society*, Chicago Linguistic Society, Chicago.

When to Ask an Inner Negation Polar Question*

Martin Walkow

University of Massachusetts Amherst

1. Introduction

Inner negation polar questions (INPQ, Ladd, 1981) are polar questions where the negation *-n't* is fronted with the auxiliary, and which license negative polarity items (NPI) (for differences between INPQs and other polar questions with and without negation see Section 2). Bob's question in (1) is an example.

(1) (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS.)
Bob: I'd like to take you guys out to dinner while I'm here – we'd have time to go somewhere around here before the evening session tonight, don't you think?
Kathleen: I guess, but there's not really any place to go to in Hyde Park.
Bob: Oh really, isn't there any vegetarian restaurant around here?
Kathleen: No, about all we can get is hamburgers and souvlaki.
(adapted from Ladd, 1981, 164)

All fronted negation polar questions betray an expectation of the questioner that the positive answer is true (Romero & Han, 2004), i.e. in (1) that there are vegetarian restaurants. I will call this property *bias* (see Section 2.1). It has been observed in several places (Büring & Gunlogson, 2000, Romero & Han, 2004) that INPQs are possible only when there is a contradiction between the bias and some information in the common ground. In (1), between Kathleen's statement and the bias of Bob's INPQ. Without such contradictory information in the context, INPQs are odd, as illustrated in (2).

(2) A: Where do you want to go for dinner tonight?
INPQ: #Isn't there any vegetarian restaurant around here?
PPQ: Is there a vegetarian restaurant around here?
(adapted[1] from Büring & Gunlogson, 2000, 10)

*I would like to thank Chris Potts and Rajesh Bhatt for their support with the work presented here. Part of the work was supported by NSF grant No. BCS-0642752.

[1](2) and some other examples from Büring and Gunlogson are adapted because they use questions with *no*. Such questions are acceptable in contexts without contradiction too (see Section 2.1). Only INPQs are strictly subject to condition in (3) (see Reese, 2007, Sec. 4.2.2).

María Biezma & Jesse A. Harris (eds.): UMOP 39: Papers in Pragmatics, 125-146.
GLSA Publications. Amherst, MA.

While positive polar questions (PPQ) are possible in such contexts INPQs are not. Büring & Gunlogson (2000) describe the dependency of INPQs on this contradictory information in terms the relation between the questioned proposition and *contextual evidence* as in (3) (see Section 2.3).

(3) Evidence Condition on INPQ[2] ¬p?:
There is compelling contextual evidence *against* p.
(Büring & Gunlogson, 2000, 10)

Put differently, an INPQ ?¬p is felicitous, if there is compelling contextual evidence for ¬p. This finding is quite surprising: it suggests that INPQs are acceptable only when the issue they address has already been settled. Normally, when an issue is settled, further questioning is odd.

The contradiction between contextual information and bias is also a cornerstone of Romero & Han's (2004) account of the pragmatics of INPQs. They argue that fronted negation polar question, INPQs and others, are metaconversational questions that manage what should become part of the common ground. Such metaconversational moves, they argue, are only licensed when the consistency of the common ground is at stake, which in turn is the case when there is a contradiction between some information in the context and the questioner's beliefs. Their account is built around the assumption that the metaconversational properties of fronted negation polar questions arise from an additional operator VERUM (after Höhle, 1992). VERUM turns these questions into questions about degrees of certainty about their underlying propositions (see Section 5 for more detailed discussion). The seeming oddity of INPQs' questioning an already settled issue is avoided by making them gatekeepers for what should be allowed into the common ground in the first place.

This paper investigates the relation between INPQs and the contextual evidence more closely and shows that INPQs are questions about the contextual evidence, and that the acceptability of INPQs is sensitive to indeterminacy about the contextual evidence. INPQs become less acceptable, the less indeterminacy there is about how the contextual evidence resolves the issue under discussion. Put differently, the contextual evidence must not be too compelling. Building on work by von Fintel & Gillies (2007) on epistemic modals, I argue that indeterminate contextual evidence introduces multiple propositions into the context that can be taken up in replies. INPQs are such replies and determine question partitions that differentiate the multiple propositions that have been introduced by the indeterminate contextual evidence. In this system, the degree to which the contextual evidence is indeterminate delimits the space of possible worlds that can be partitioned by an INPQ. This simultaneously captures the dependency between indeterminacy and the possibility of INPQs and the fact that INPQs are questions about the contextual evidence. The account implements in a different way Romero & Han's intuition that INPQs manage the common ground. INPQs are keyed into indeterminacy about the contextual evidence and help reduce it. The overall argument is that important aspects of the pragmatics of INPQs can be captured by examining their relation to the contextual evidence more closely and treating them

[2]Büring & Gunlogson use the term 'INPQ' to encompass both what I call INPQs and polar questions with unfronted negation or negative quantifiers. Examples (4) and (5), Sec. 2.1, show that these are not dependent on contextual evidence, meaning that (3) holds true only of what I call INPQs here.

as normal polar questions semantically. However, I will argue that the account here does not provide an answer for why INPQs are inherently biased. Section 5 discusses how these findings relate to the VERUM-account of INPQs.

The remainder of this paper is organized as follows: Section 2 provides a more detailed discussion of the properties of INPQs and the differences between them, other kinds of negative polar questions and PPQs. Section 3 presents new observations relating to the sensitivity of INPQs to contextual indeterminacy. Section 4 presents a way of formally capturing the effect of indeterminacy on the context, building on work by von Fintel & Gillies (2007) on epistemic modals. Section 5 discusses how the proposal here relates to the account of NPQs in Romero & Han (2004).

Finally, a terminological remark: I will use the term NPQ to refer to any kind of polar question containing any form of negation, although only *not*, *n't* and *no* will be used in examples here. I will refer to NPQs with fronted negation (INPQs and outer negation polar questions (ONPQ), see Section 2.2) collectively as *fronted negation* NPQs. Other NPQs will be referred to collectively as *unfronted negation* NPQs or UNPQs. The usage of 'INPQ' here differs from that in Büring & Gunlogson (2000), who use the term to refer to fronted negation NPQs that license NPIs (INPQs in the sense used here), as well as UNPQs.

2. Negation in Polar Questions: The bigger picture and more detail

This section lays out in more detail the relevant data about INPQs and shows how they differ from both PPQs and other kinds of NPQs. Most of the data (except Section 2.4) are taken from existing literature and appear here only to provide a clear demarcation between INPQs and other polar questions. No exhaustive discussion or classification is attempted. Section 2.1 illustrates the special status of fronted negation polar question as opposed to polar questions with other forms of negation. Section 2.2 discusses Ladd's ambiguity, setting INPQs apart from ONPQs. Section 2.3 presents Büring and Gunlogson's observations about INPQs and contextual evidence in more detail. Section 2.4 shows that INPQs are tied to inquiring about the contextual evidence the presence of which they are sensitive to.

2.1 The Effect of the Position of Negation in Polar Questions

The central property that sets fronted negation polar questions apart from other polar questions with negation is that the former always betray an expectation by the speaker that the positive proposition underlying the question is true (see Romero & Han, 2004, 610). I will call this property *bias*. Other polar questions can acquire bias (see e.g. Reese, 2007, Chapter 5), but can also lack it. This difference between fronted negation NPQs and ones where *not* isn't fronted is illustrated in (4).

(4) Scenario: The speaker is organizing a party and she is in charge of supplying all the non-alcoholic beverages for teetotalers. The speaker is going through a list of people that are invited. She has no previous belief or expectation about their drinking habits.

A: Jane and Mary do not drink.

S: OK. What about John? Does he not drink (either)?

S′: # OK. What about John? Doesn't he drink (either)?

(Romero & Han, 2004, 610)

In a context where the questioner has no prior expectations about the answer, the fronted negation polar question (S′) is odd, whereas the question with unfronted *not* (S) is acceptable. A similar observation holds for questions containing the negative quantifier *no*.

(5) S hates both Pat and Jane and their friends. The prospect of an excursion without them pleases S. S does not have any previous belief about whether any one of them is coming or not.

A: Pat is not coming.

S_1: Great! Is no one else coming (either)? That would be the best!!!

S_2: # Great! Isn't Jane coming (either)[3]? That would be the best!!!

(Romero & Han, 2004, 613, adapted)

Again, a UNPQ, here with *no*, can be unbiased and coherent, while a fronted negation NPQ is incoherent.

Examples (4) and (5) show that two different factors determine the choice of question form: One determines the choice between NPQ and PPQ, a second determines the choice between using a biased, fronted negation NPQ vs an unbiased UNPQ. Bolinger (1978) and, following him, van Rooij & Šafářová (2003) and Romero & Han (2004) suggest that the choice between a PPQ $?p$ and an NPQ $?\neg p$ is determined by which proposition is more useful given the current goals of the conversation. Romero & Han (2004) call this the *intent of a question*. I assume that something along these lines is correct. The second factor at work in (4)-(5) determines whether a biased or an unbiased NPQ is used. Romero & Han (2004) give an account what determines this choice, which will be discussed in Section 5.

Taken together, these observations argue against deriving the special properties of fronted negation NPQs only by appeal to the pragmatics of querying a negative proposition (e.g. van Rooij & Šafářová, 2003, Reese, 2006).

2.2 Ladd's Ambiguity

Ladd (1981) observes that fronted negation polar questions are ambiguous between two readings which he calls *inner negation* and *outer negation* readings, hence *inner negation polar question* and *outer negation polar question* (ONPQ). This paper is only concerned with the INPQ one, but I take some time here to illustrate both readings, show that they are different, and how in an individual case one can tell which reading one is looking at.

Ladd (1981) observes that the two readings of fronted negation polar questions can be disambiguated by polarity items (PI). NPIs disambiguate them towards the INPQ-reading, positive polarity items (PPI) disambiguate them towards *outer negation*-reading. The major differences are illustrated in (1), repeated here, vs (6). I give both examples with

[3]Most speakers don't find *either* acceptable in INPQs (see Hartung, 2006, 2007).

a as well as a PI to show that the two readings are independently available, and that the PIs merely disambiguate and don't themselves give rise to the two readings.

(1) (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS.)
Bob: I'd like to take you guys out to dinner while I'm here – we'd have time to go somewhere around here before the evening session tonight, don't you think?
Kathleen: I guess, but there's not really any place to go to in Hyde Park.
Bob: Oh really, isn't there (*a*/ *any*) vegetarian restaurant around here?
Kathleen: No, about all we can get is hamburgers and souvlaki.
(adapted from Ladd, 1981, 164)

Any disambiguates the question towards an INPQ-reading. I give the example with *a*, Ladd's original, as well as *any* to show that INPQ-readings are not dependent on the presence of polarity items. The INPQ probes Kathleen's statement as to whether it includes any and all vegetarian restaurants that there might be. Bob's question is about the negative proposition underlying the question: *there isn't any vegetarian restaurant*. The addressee of an INPQ is usually committed to this negative proposition, and INPQs signal the questioner's expectation that the positive proposition underlying the question is true (*bias*).

An ONPQ-reading can be brought out by a different continuation and the PPI *some*:

(6) (Situation: Bob is visiting Kathleen and Jeff in Chicago while attending CLS.)
Bob: I'd like to take you guys out to dinner while I'm here – we'd have time to go somewhere around here before the evening session tonight, don't you think?
Kathleen: I guess, but there's not really any place to go to in Hyde Park.
Bob: Oh really, isn't there (*a*/*some*) vegetarian restaurant around here? I thought I saw one on the way from the train.
Kathleen: Well, there is THAT place, but they are not very good.

The relation between Bob's ONPQ and Kathleen's assertion is different here from the INPQ example above. Instead of checking the scope of Kathleen's claim, Bob objects to it. Bob is asking whether there *is* a restaurant, not whether there *isn't*. His question is about a positive proposition. This difference in which proposition is questioned has another effect: while INPQs question a proposition that the addressee is in some sense responsible for (the contextual evidence), ONPQs put up for question a proposition that the questioner is committed to. Similar to the INPQ in (1), the ONPQ betrays Bob's belief that this positive proposition is true.

Further differences between INPQs and ONPQs will be shown in the discussion of contextual evidence in the next section. Throughout this paper, I will use PIs to disambiguate fronted negation NPQs. No attempt will be made to account for Ladd's ambiguity here.

2.3 Contextual Evidence

Section 1 introduced Büring & Gunlogson's observation that INPQs are sensitive to the presence of a particular kind of *contextual evidence*, to be understood as follows:

(7) Contextual Evidence:
Evidence that has just become mutually available to the participants in the current discourse situation. (Büring & Gunlogson, 2000, 7)

In order to license INPQs, Büring & Gunlogson argue that contextual evidence has to be *compelling* in the following sense:

(8) Compelling:
a. Evidence *for* p is compelling if, considered in isolation, it would allow the participants to assume p (i.e. the evidence could reasonably be considered to justify the inference that p)
b. Evidence *against* p is compelling evidence for the opposite of p, W-p.
(Büring & Gunlogson, 2000, 7)

Example (2) already showed that an INPQ $?\neg\phi$ is bad in contexts that are open with respect to ϕ, while a PPQs is acceptable. ONPQs pattern with PPQs in these contexts, *Isn't there some vegetarian restaurant around here?* is also acceptable in (2). Example (9) shows that both INPQs and ONPQs are acceptable in contexts that contain evidence for $\neg\phi$, while PPQs aren't.

(9) A: There is no way Peter is gonna get a job in the sales department. Connections are more important than anything else to get in there.
ONPQ: Doesn't Peter know someone in sales?
INPQ: Doesn't Peter know anyone in sales?
PPQ: #Does Peter know people in sales?

Only PPQs are felicitous in contexts where there is evidence for ϕ as shown in (10).

(10) I bet we can find any type of restaurant you can think of in this city. Make your choice!
INPQ: #Isn't there any vegetarian restaurant around here?
ONPQ: #Isn't there some vegetarian restaurant around here?
PPQ: Is there a vegertarian restaurant around here?
(adapted from Büring & Gunlogson, 2000, 10)

The whole distribution is shown in Table 1. The important part here is the INPQ column: an INPQ $?\neg\phi$ is only felicitous in a context where there is compelling evidence for $\neg\phi$. Sections 2.4 and 3 will investigate the relation between contextual evidence and INPQs further, and show that while the general dependence holds up, the evidence must not be compelling.

2.4 The Relation between INPQs and Contextual Evidence

Section 2.3 showed that INPQs depend for their felicity on the presence of contextual evidence of a particular kind. In this section, I will show that INPQs are questions about this evidence.

	Ex.:	INPQ	ONPQ	PPQ
biased against ϕ:	(9)	✓	✓	#
neutral wrt. ϕ:	(2)	#	✓	✓
biased toward ϕ:	(10)	#	#	✓

Table 1: Distribution of question types by contextual evidence (Büring & Gunlogson, 2000, 11)

With respect to examples (1) vs (6) we saw that there is a difference between INPQs and ONPQs with respect to how they relate to assertions preceding them. While ONPQs voice objections to them, INPQs are requests for more detailed elaboration. A similar difference can be shown between PPQs and INPQs in contexts where the question being asked changes what is under discussion:

(11) A enters the linguistics department's main office and asks the secretary:

A: I'm looking for a TA to help me with my assignment for Linguistics 101.

S: I think there are no grad students around today.

PPQ: Are there any professors around?

INPQ_1: #Aren't there any professors around?

INPQ_2: Isn't there anyone at all?

The PPQ is a coherent followup to S's claim. The student accepts that there are no graduate students around and starts looking for other options. The INPQ_1 on the other hand, cannot be used for such a change of topic. INPQ_2 shows that the context does allow INPQs, and that they do something quite different from PPQs. There seem to be two ways in which INPQ_2 can be understood. One is as exploring how definitive S's assertion is. One could expect responses like *Well ... one of the undergraduate graders is there* or *You can go and check, their offices are down the hall.* In this reading, INPQ_2 addresses the scope of S's assertion, similar to Bob's INPQ in (1). Another reading is that the student uses INPQ_2 to object to the way S interpreted his initial utterance. He was not really looking for a TA as such, but for someone to help him. What is at issue here is whether S was saying that there is no one but the grad students who could fulfill this task. A different way of asking this question would be *Isn't there anyone else?* In the end, this second reading can do something quite similar to the PPQ, but it does it by taking issue with S's assertion.

Example (11) shows that INPQs are not only sensitive to the presence of contextual evidence, but are questions about that evidence.

3. The Role of Indeterminacy

We have seen so far that an INPQ $?\neg p$ is dependent on the presence of contextual evidence for $\neg p$. This section show that this evidence has to be indeterminate about how exactly it settles the issue under discussion in order to allow INPQs. The more definitely the evidence settles the issue, the less acceptable INPQs become.

One way the relevant indeterminacy can arise is when the utterance that provides the contextual evidence contains some form of quantification where the relevant domain of quantification is unclear to the questioner using an INPQ. This can be quantification over individuals as in (1), times as in (12), or worlds as in (13).

(12) A: I always cook. I generally don't take kindly to food that other people have prepared.

B: Don't you ever go to a restaurant?

(13) A: Sorry, I don't think I'll be able to pick you up from the airport.

B: Ahh... Can't you do it at all?

In each case, the contextual evidence introduces a form of quantification that is taken up in the INPQ. Often this goes along with some amount of hedging. Phrases like *not really* in (1), *I generally don't* and *I don't think I'll be able* in (12) and (13) introduce additional uncertainty about what exactly is being asserted. The INPQ in these contexts explores exactly how big a part of the domain the initial claim was intended to be about.

When it is clear what is being asserted, INPQs degrade. Example (14) is a variant of (13). What is at stake in both contexts is whether A can pick up B from the airport. A's hedging in (13) allows the INPQ, and A could felicitously be followed up for example with an offer that involved B waiting for some time before the pick up. In (14), where it is clear that by no stretch could A manage to pick B up, the INPQ is odd.

(14) B: Will you pick me up from the airport tomorrow?

A: Sorry, I can't. I'll be out of town until next week.

B: #Ahh... Can't you do it at all?

Similarly, in (15), there is no room left to doubt what A is saying. If acceptable at all, the INPQ is facetious. Again, a little change to the context makes it more acceptable. If A had said *OK, seems like everyone is in*, the INPQ would be more acceptable.

(15) A and B are checking the passenger list of an airplane before leaving.

A: OK, I have checked three times. Everyone who is on the the list is on the plane.

B: #Isn't anyone left in the waiting area?

Examples (14) and (15) show that to allow INPQs, the contextual evidence must not settle the question. There has to be some amount of indeterminacy about it. The close relation between INPQs and the contextual evidence that we saw in the preceding section can now be understood as a dependency between INPQs and the indeterminacy introduced by the contextual evidence. What INPQs do in these contexts is address this indeterminacy and try to reduce it.

In the examples so far, indeterminacy arises from from aspect of linguistic form, overt hedging, or different ways of restricting domains of quantification. This is not necessary though, the indeterminacy relevant for licensing INPQs can also arise from the relation of the contextual evidence to some other piece of information, such as (16).

(16) Peter is planning a trip to which he invited among other people Paul, John and Mary. John and Mary are a couple. They go everywhere together. Paul wants to go on the trip with Peter and he hates both John and Mary.

Peter: John isn't coming on the trip.

Paul: Hurra! Isn't Mary coming either? That would be the best![4]

Peter's utterance is not in and of itself underdetermined as to whether or not John is coming for the trip. There is no hedging either. Given that John and Mary usually go everywhere together, it does beg the question though whether John's absence also means that Mary will be absent. The indeterminacy addressed by the INPQ is about whether Peter's statement allows the inference that Mary is not coming either. Without the dependence between John's and Mary's presence, the INPQ deteriorates, compare (5).

The generalization that arises from these observations is that the contextual evidence must not fully settle the issue it addresses. Only if there is indeterminacy about it, is there a possibility for questioning. This resolves the potential oddity of (3) that INPQs appear only to be felicitous when the issues they address are already settled. Quite the opposite is the case: when the issue is settled, e.g. (15), INPQs are odd as one would expect. Only when there is indeterminacy about the contextual evidence can INPQs be issued. INPQs appear to be specialized to resolve indeterminacy that arose from an issue being incompletely resolved.

This dependency between indeterminacy and questionability can be accounted for in terms of the availability of semantic answers in a partition semantics for polar questions (Groenendijk & Stokhof, 1984). If the contextual evidence for $\neg p$ settled the issue at hand, all p-worlds would be excluded and a question $?\neg p$, could not determine a partition between p and $\neg p$-worlds. The partition would contain only one cell comprising the $\neg p$-worlds. The cells in the question partition determine the semantic answers to the question, a question in such a context would only have one answer, which is already entailed by the common ground. If on the other hand the contextual evidence is indeterminate, at least some p-worlds are still live possibilities, the more the greater the degree of indeterminacy. As a result, a question $?\neg p$ can determine a 'normal' partition with two cells separating p vs. $\neg p$ worlds, and also two semantic answers. That the logical space of the partition of the INPQ is determined by the degree of indeterminacy of the evidence also derives the fact that INPQs are questions about the contextual evidence (see Sec. 2.4). Answers to them settle the interpretation of the evidence. The relation between indeterminate contextual evidence, INPQs and the answers to them also captures Romero & Han's observation that INPQs help manage the common ground, but in a different way. Under the perspective developed here, INPQs help reduce indeterminacy about what exactly the contextual evidence contributes to the common ground. Section 4 will show how a proposal along these lines can be cashed out in a formal way.

The observations so far do not provide an account of the content of the epistemic bias. A possible explanation for epistemic bias towards *yes*-answers in INPQs is that a

[4]This kind of example is not equally acceptable to all speakers. Some find it infelicitous, others unexceptional. I don't understand the cause of this variability.

speaker who is already inclined towards a *no*-answer would have no reason to probe the available evidence any further. This is essentially saying that speakers are only ever interested in resolving indeterminacy if the existing evidence contradicts what they expect. It seems, however, that a naturally suspicious questioner should be able to question evidence even in this context. Similarly, in a discourse situation where there are high stakes, for example in a courtroom, such questioning should be possible.

Another hypothesis could be that INPQs always aim to undermine or weaken the contextual evidence. After all, in most of the examples so far, a *yes*-answer to the INPQ meant that the addressee of the INPQ would have to weaken their original claim. In (1) for example, a *yes*-answer by Kathleen would entail that her original assertion was in some sense too strong. Example (16) is evidence that such an explanation does not hold in general. A *yes*-answer by Peter would mean that his original assertion was too weak, that the stronger assertion that John and Mary are not coming was warranted. It seems then that the content of the epistemic bias does not follow from aspects of the discourse context, and remains to be explained by other factors.

4. Modeling Indeterminacy

The preceding section established that INPQs are sensitive to indeterminacy of the contextual evidence. This section develops a way of capturing the influence of indeterminacy on the context that will allow an account of the relation between indeterminacy and questionability. The account builds on the proposal by von Fintel & Gillies (2007) about epistemic modals.

von Fintel & Gillies (2007) develop an account of epistemic modals that relies heavily on indeterminacy and accounts for some phenomena that find parallels in the use of INPQs. I will briefly outline the central problem and solution of von Fintel & Gillies' account and show the similarities with INPQs. It should be stressed from the outset that I am not trying to extend or validate von von Fintel & Gillies' account of epistemic modals. Instead, I will make use of their account of the impact of indeterminacy on the context to capture aspects of a different phenomenon, INPQs.

The problem that von Fintel & Gillies (2007) address is whose epistemic state contributes to the modal base of *might* in the different responses to the assertion in (17a). The two prominent possibilities are just Alex's and Alex's as well as Billy's.

(17) Alex is aiding Billy in the search for her keys:

a. Alex: You might have left them in the car.

b. Billy: You're right. Let me check.

c. Billy: No, I still had them when we came into the house.

(von Fintel & Gillies, 2007, 11-12, composite of their (18)-(20))

If only Alex' epistemic state were relevant for determining the modal base of Alex' assertion, both of Billy's responses, (17b) and (17c), would be assertions about Alex' epistemic state. He would be asserting or denying that there is a world in Alex' epistemic state where the keys are in the car. This is implausible, as Billy has little justification to deny or assert

that Alex considers some state of affairs possible. If on the other hand both Alex and Billy's epistemic states are relevant for the modal base of *might*, Alex' initial assertion would be about Bill's epistemic state, creating the same problem.

The solution von Fintel and Gillies suggest is that (17a) proffers that it is compatible with the epistemic state of some group of people that the keys are in the car. In effect, Alex does not introduce a single proposition into the discourse, but several, each differentiated from the others by a different choice for the group of people that are relevant for determining the modal base of *might*. When using an epistemic modal statement that introduces such a multiplicity of propositions, a speaker, von Fintel and Gillies argue, has to be able to felicitously assert at least one of them. Alex' contribution in (17) can then be represented as in (18a). Here and further on, I will represent the contribution of underdetermined assertions as sets of semantic representations of propositions.

(18) Alex is aiding Billy in the search for her keys:

a. Alex: You might have left them in the car.

$$= \left\{ \begin{array}{c} \text{might}_{(\text{Alex})}[\text{leave(Billy, keys, in(car))}] \\ \text{might}_{(\text{Alex+Billy})}[\text{leave(Billy, keys, in(car))}] \\ \vdots \end{array} \right\}$$

b. Billy: You're right. Let me check.

c. Billy: No, I still had them when we came into the house.

Both of Billy's responses above take issue with the *Alex+Billy*-reading; b. asserts it, c. denies it. Which of the proffered propositions Alex is committed to is open when she utters (18a), but we have seen above that it would be unusual if she actually intended the proposition that Billy reacts to. Despite this misalignment between Alex' likely intent and the proposition that Billy's utterances in (18b) and (18c) take up, the discourse is fully coherent.

The idea that I will take over from von Fintel and Gillies is to represent the effect of an underdetermined assertion as introducing a set of propositions into the discourse that other discourse participants can subsequently address. The different propositions come about by fixing context dependent aspects of utterances, for example domains of quantification as we saw with respect to (1)/(12)-(13), in different ways.

An account of how multiple propositions are introduced by underdetermined utterances can be built around Kaplan's (1978) distinction between *character* and *content*. The *character* is a function that maps contexts into *contents*, where *contents* are propositions. Adapting Kaplan's notation a little, one can represent the context as a parameter of the interpretation function: $[\![\cdot]\!]^c$. The character of a formula ϕ, can then be represented by abstraction over this parameter: $\lambda c.[\![\phi]\!]^c$. The content of ϕ in a particular context c_i is $[\![\phi]\!]^{c_i}$. Kaplan introduces the character/content-distinction to capture the context dependence of deictic expressions such as *here*, *now* or *I*. To assign different interpretation to these deictica depending on the identity of the speaker, and the time and place of the utterance, the context parameter includes an agent (the speaker of a sentence), a time, a position and a world. Interpreting the character of a formula that contains deictic expressions with respect to different contexts yields different contents.

The mapping from character to content gives rise to multiple propositions when there is uncertainty about the properties of the context. In (1), Bob might be uncertain about what kinds of restaurants are under discussion, in (16), Paul might be unclear about whether John's absence implies Mary's absence. Resolving contextual parameters in different ways and using them to map characters to contents gives rise to a structure similar to (18a).

The following subsections lay out in detail how the apparatus delivers multiple contents for one character based on implicit domain restriction (Sec. 4.1) and cases like (16) where indeterminacy arises from factors outside linguistic form (Sec. 4.2).

4.1 Implicit Domain Restriction

Implicit domain restriction has been argued (e.g. von Fintel (1994), Stanley (2000), Stanley & Szabó (2000)) to happen via covert variables inside quantifier phrases, and that these variables can be interpreted deictically. That is, they fall into the same category as those aspects of interpretation that become fixed in the mapping from character to content. The context will need to contain more information that an agent, time, position and world to assign interpretations to domain restriction variables, but since the focus of this paper is not on the nature of domain restriction, I leave these issues aside.

For illustration, consider example (19) with the domains in (20) for *no one*. A could entertain three different choices for the domain of *no one*: people that were especially invited, the neighbors, all of the above plus the usual suspects. Depending on which restriction for *no one* is chosen, B is taken to introduce different propositions into the discourse, which may in turn have different truth values.

(19) B had a party last night. A couldn't come and has not heard from anyone how the party went. A and B meet for the first time since the party.
A: How did the party go?
B: Oh, horrible! No one came!
A: Really?! Didn't anyone show up?

(20) a. { x | x is a invited guest}
b. { x | x is a invited guest or neighbor}
c. { x | x is a invited guest or neighbor or pathological partygoer}

Let's limit our attention to the domains in (20) and how they end up restricting the domain of *no one*. As for notation, take $[\![\phi]\!]^{c[v\mapsto\{a,b,c\}]}$ to mean the set of possible worlds that make ϕ true when the variable v that is assigned its meaning by the context is interpreted as the set {a, b, c}. During the discussion of (19), I will refer to the domain restriction variable on *no one* as ρ. In formulae, the contribution of a domain restriction variable v on an existential quantifier is represented as $\exists x \in v[...]$. We can then represent B's contribution in (19) as the set in (21).

(21) $$\left\{ \begin{array}{l} [\![\neg\exists x \in \rho\,[\text{show-up}(x)]]\!]^{c[\rho\mapsto(20a)]}, \\ [\![\neg\exists x \in \rho\,[\text{show-up}(x)]]\!]^{c[\rho\mapsto(20b)]}, \\ [\![\neg\exists x \in \rho\,[\text{show-up}(x)]]\!]^{c[\rho\mapsto(20c)]} \end{array} \right\}$$

	w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8
show-up(in crowd)	1	0	0	1	1	0	1	0
show-up(neighbors)	1	1	0	0	1	1	0	0
show-up(p-p-g)	1	1	1	0	0	0	1	0

(a) The context prior to (21)

	w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8
show-up(in crowd)	1	0	0	1	1	0	1	0
show-up(neighbors)	1	1	0	0	1	1	0	0
show-up(p-p-g)	1	1	1	0	0	0	1	0

(b) $[\![\neg\exists x \in \rho[\text{show-up(x)}]]\!]^{c[\rho\mapsto(20a)]}$

	w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8
show-up(in crowd)	1	0	0	1	1	0	1	0
show-up(neighbors)	1	1	0	0	1	1	0	0
show-up(p-p-g)	1	1	1	0	0	0	1	0

(c) $[\![\neg\exists x \in \rho[\text{show-up(x)}]]\!]^{c[\rho\mapsto(20b)]}$

	w_1	w_2	w_3	w_4	w_5	w_6	w_7	w_8
show-up(in crowd)	1	0	0	1	1	0	1	0
show-up(neighbors)	1	1	0	0	1	1	0	0
show-up(p-p-g)	1	1	1	0	0	0	1	0

(d) $[\![\neg\exists x \in \rho[\text{show-up(x)}]]\!]^{c[\rho\mapsto(20c)]}$

Table 2: The propositions in (21) and the prior context

In Kaplanian terms, the set in (21) is the set of contents that the character $\lambda c.[\![\neg\exists x \in \rho[show-up(x)]]\!]^c$ can be mapped to in a context that allows the domain restrictions in (20) for *no one*. The effect of indeterminacy under this conception is that discourse contributions can be resolved in multiple ways and introduce multiple propositions with potentially different truth values. Analogous to a speaker having to be able to assert one of the propositions that she proffers using an epistemic modal, in the face of an underdetermined assertion like (21), an addressee would assume that the speaker is able to assert at least one of these different propositions. The purpose of the INPQ is to find out which one that is.

The figures in Table 2 might make more intuitive what is happening in (21). Let's assume that the context of (19) prior to B's utterance is as in Table 2(a). World w_1 is where all three groups of people (invited guests, neighbors, pathological party goers) showed up, w_2 where only neighbors and pathological party goers did, w_8 is where the host was there alone and so on. All combinations of people showing up or not showing up are live possibilities. The different choices of domains in (20) for interpreting the the character of B's utterance in (19) eliminate different sets of worlds from this initial state. Choosing the smallest domain, (20a.), results in the elimination of all worlds where the invited guests showed up. This is shown in Table 2(b) (shading indicates that a world is no longer a possibility). Choices of successively larger domains result in the elimination of more worlds, as can be seen in in 2(c) and 2(d). The set of propositions in (21) is the set containing 2(b)-(d) and could alternatively be represented as in (22), using the worlds from Table 2.

(22) $\left\{\begin{array}{ll} \text{Tab. 2(b):} & \{w_2, w_3, w_6, w_8\}, \\ \text{Tab. 2(c):} & \{w_3, w_8\}, \\ \text{Tab. 2(d):} & \{w_8\} \end{array}\right\}$

While all of the members of (22) exclude the worlds where the in-crowd showed up (i.e. w_1, w_4, w_5, w_7), they vary with respect to whether anyone else did, that is whether w_2, w_3, w_6 are excluded or not. The issues whether the neighbors or the pathological party goers showed up are still open to questioning. w_8, complete failure of the party, is a possibility under all of these choices.

What is the effect of A's INPQ in a context where the propositions in (22) are available? Assume that A's INPQ in (19) is interpreted with respect to the domain in (20c). Assuming a partition semantics for questions, the resulting question meaning is a partition between worlds where no one at all came (Table 2(d)) and worlds where at least someone did. This is shown in (23).

(23) Partition of *Didn't anyone show up?* in (19):

$\neg p$	p
w_8	w_2, w_3, w_6

The $\neg p$-cell of the partition identifies one of the propositions in (22): $\{w_8\}$. The p-cell contains three worlds which entail other propositions in (22). Both a *yes*- or a *no*-answer to the INPQ would consequently reduce the amount of indeterminacy in the context. A *no*-answer reduces (21) to a single proposition, it is in a sense the most informative answer. A *yes*-answer reduces indeterminacy, for one thing, by ruling out 2(d) and by the same token also causes a refinement of 2(b) and 2(c). Both of these propositions have to be updated to exclude w_8. Importantly, the INPQ can only determine a partition because the different proposition in (22) are still live possibilities. If the issue of who showed up was already settled to any one of the worlds shown in the columns of Table 2, the question would not determine a partition.

Similar to the responses to assertions containing *might* in (18), the proposition taken up in the INPQ in (19)/(23), *no one at all came*, is probably not the one intended by A. Most likely they did not mean to say that they were literally sitting there alone. Just as in the modal cases, this misalignment between the likely intent of the assertion and the proposition that is taken up does not cause a disruption of the flow of discourse.

The dependence between the indeterminacy and the question partition we just saw captures the observation in the preceding section that the contextual evidence has to be indeterminate in some way and that the INPQ addresses the indeterminacy about the evidence. Crucial to this argument is the assumption that INPQs determine partitions just like any other polar question.

4.2 Indeterminacy and Standards of Justification

The account in Section 4 of how indeterminacy arises relies heavily on the fact that there is a piece of linguistic form, domain restriction variables, that could be resolved in different ways. Example (16), repeated below, introduced a context where this was not plausibly

the case. In this Section, I will show the account developed above extends to this kind of indeterminacy.

(16) Peter is planning a trip to which he invited among other people Paul, John and Mary. John and Mary are a couple. They go everywhere together. Whenever one shows up the other does too. Paul wants to go on the trip with Peter and he hates both John and Mary.

Peter: John isn't coming on the trip.

Paul: Hurra! Isn't Mary coming either? That would be the best!

The indeterminacy here arises from the potential conclusion that Mary isn't coming, given that (i) John and Mary go everywhere together, and (ii) John isn't coming. Put differently, the indeterminacy is about whether some piece of information warrants some inference. Barker & Taranto (2002) and Barker (2006) develop a notion of *degrees of justification* that provides an account of the indeterminacy in (16) in the terms of the preceding section.

Barker & Taranto (2002) and Barker (2006) discuss *clarity*-assertions like (24). *Clarity*-assertions raise the following issue: if it is clear that Abby is a doctor, why can you still assert (24), given that assertions of obvious things are usually odd?

(24) It is clear that Abby is a doctor.

Barker (2006) gives an account in terms of an epistemic notion of vagueness based on uncertainty about which worlds are in the common ground and which are not. Once the content of the common ground is uncertain, it also becomes uncertain what the common ground entails. To bridle this uncertainty, Barker & Taranto introduce the notion of *degrees of justification*. Interlocutors tacitly establish standards for when a body of evidence is good enough to assume that a proposition is true or false for the purposes of the current conversation. These standards vary from context to context. When negotiating a court case, standards for what counts as sufficient to allow an inference will be higher than when people are just bantering. Under this view, what is asserted in (24) is that, given the available evidence, the proposition *Abby is a doctor* counts as *clear* given the standard of justification in this context, where *clear* describes a relation between a proposition and some point or interval on the scale of standards of justification.

Standards of justification are treated like contextual standards of gradable adjectives: (i) they are context dependent and (ii) vague. Barker (2002) argues that the contextual standards for gradable adjectives are part of the discourse context. Barker & Taranto assume the same for standards of justification.[5] Just like contextual standards of adjectives, standards of justification are vague. In any given context, one cannot usually determine the exact cutoff point where someone or something starts counting as tall or expensive. Between the clear talls and non-talls, there is an area where people are less certain. The same

[5]Kennedy (2007) argues against a treatment of standards of comparison as indexes on contexts. Instead, he proposes a treatment in the same terms as covert domain restriction, elaborating the proposal in Stanley (2002). If standards of justification were analyzed in this way, the analysis here would still cover examples like (16). Standards of justification could be treated in the same way as domain restriction variables on quantifiers.

holds for standards of justification: seeing Abby orchestrate nurses in a hospital and undertake examinations on patients will usually suffice to make someone endorse (24), just seeing her in a lab coat with a stethoscope may or may not be enough to endorse (24).

Once vague, context dependent standards of justification are adopted, (16) can be reined in with the picture of indeterminacy developed earlier. The indeterminacy in (16) is about whether, given the current standard of justification, the information that John isn't coming allows us to conclude that Mary isn't coming, given that they usually go everywhere together. Under lenient standards of justification, the fact that John isn't coming is sufficient for assuming that Mary isn't coming either. Under stricter standards, this will be insufficient grounds for making this assumption. Since the standard of justification is part of the context c, different choices of c yield contents for $\lambda c.[\![$John isn't coming on the trip$]\!]^c$ that either do or do not support the conclusion that Mary isn't coming. Once this mechanism is in place, it provides contexts where the propositions underlying INPQs are indeterminate and can be felicitously questioned.

In conclusion, the account of indeterminacy developed in Section 4.1 extends to cases where the indeterminacy does not arise from aspects of linguistic form.

5. Romero & Han (2004)

Romero & Han (2004) develop an account of NPQs that encompasses not only both INPQs and ONPQs, but also extends to questions with epistemic adverbs and emphatic stress. I will limit my discussion to the core aspects of their account of Ladd's ambiguity and bias.

Romero & Han's central proposal for NPQs with fronted negation is that the fronting of negation contributes the operator VERUM in (25) that turns NPQs into questions about degrees of certainty.

(25) $[\![\text{VERUM}_i]\!]^{g x/i} = \lambda p_{\langle s,t\rangle}.\lambda w.\forall w' \in \text{Epi}_x(\text{w})[\forall w'' \in \text{Conv}_x(w')[p \in \text{CG}_{w''}]$
(Romero & Han, 2004, 627)

Roughly, 'VERUM p' means that in all epistemic alternatives to w for a contextually determined individual x (in questions usually the addressee), all worlds where x reaches their conversational goals have p in the common ground. Romero & Han call VERUM a discourse epistemic operator, a modal operator about what is in the common ground. I will follow Romero & Han's use of FOR-SURE-CG$_x$ as an abbreviation for (25) in formulae.

Ladd's ambiguity is treated as a scope ambiguity between VERUM and negation, which in turn gives rise to different question partitions for INPQs and ONPQs:

(26) INPQ: Didn't Jane come **either**?
   a. LF: [$_{CP}$ Q VERUM [not [$_{IP}$ Jane is coming] either]
   b. Partition:

FOR-SURE-CG$_x\neg p$	$\neg$FOR-SURE-CG$_x\neg p$

   (Romero & Han, 2004, 635)

(27) ONPQ: Didn't Jane come **too**?
   a. LF: [$_{CP}$ Q not [VERUM [$_{IP}$ Jane is coming too]]]

b. Partition:

$\neg$FOR-SURE-CG$_x p$	FOR-SURE-CG$_x p$

(Romero & Han, 2004, 636-7)

In INPQs, negation takes scope under VERUM, which gives rise to a partition between worlds where x is absolutely sure that $\neg p$ is in the common ground, versus those where they are less than absolutely sure that $\neg p$ is in the common ground. In ONPQs on the other hand, negation takes scope above VERUM. When calculating the question partition, the law of double negation has the effect of letting the negation 'disappear'. The resulting partition is between worlds where x is absolutely sure that p is in the common ground vs those where they are less than absolutely sure. The observation that INPQs and ONPQs ask about different propositions follows from the scope of VERUM: INPQs are about a negated proposition, ONPQs about a non-negated one.

The fact that VERUM quantifies over worlds in the common ground makes questions containing it determine partitions different from normal polar questions and those containing expressions of epistemic certainty such as *be sure*, *be certain* or *must*. Romero and Han note that the partitions determined by VERUM-questions are *unbalanced* in the sense that one cell of the partition corresponds to an extremal point on the scale of certainty, absolute certainty, while the other cell corresponds to all other degrees of certainty. This imbalance feeds their account for why VERUM-questions are biased.

Bias arises from the interaction of pragmatic principles and the semantics of VERUM-questions. The pragmatic part of their account has two parts. The first is a small theory of conversational moves. One kind of move is *assertion*. An assertion of p is an instruction to add p to the common ground. Assertions are governed by Grice's maxim of quality. The second kind of move is questioning a move. That is questioning whether a proposition should be introduced into the common ground. This second kind of move is called a *meta-conversational move*, and it is governed by the economy principle in (28).

(28) Principle of Economy: Do not use a meta-conversational move unless necessary (to resolve epistemic conflict or to ensure Quality). (Romero & Han, 2004, 629)

VERUM-questions are considered meta-conversational moves. The motivation for this assumption comes from the fact that they determine unbalanced partitions. Romero and Han suggest that when a questioner is unbiased with respect to a proposition p, they have no reason to question an assertion of p, since there is no conflict between their beliefs and the assertion that could interfere with the maxim of quality. Only when someone has previous beliefs about p, and these beliefs are contradicted by an assertion of p, are they in a position to make a meta-conversational move, since there is a possibility of conflict with the maxim of quality.

The second part of the pragmatics is the notion of *intent* of a question. This is the intuition mentioned in Section 2.1 that the form of the question is determined by what issue the speaker is trying to resolve. Specifically, Romero & Han assume that the cell of the partition that is pronounced corresponds to the issue that a questioner is trying to resolve. In the partitions in (26) and (27), the left cells are pronounced.

Together, the semantics of the partitions and the pragmatics account for epistemic bias as follows. An INPQ asks whether an addressee is absolutely certain that $\neg p$ is true.

In keeping with (28), this is only licit if the addressee is committed to $\neg p$ and the speaker believes p. This accounts for the positive epistemic implicature as well as the fact that INPQs are about a proposition that the addressee is committed to. In ONPQs on the other hand, the issue that the questioner is concerned with is resolving whether there is less than absolute certainty about p or whether there is doubt about p. The reasoning about the epistemic implicature is analogous to the one about INPQs.

The aspect of the VERUM-account that I will take issue with here is the assumption that what makes I/ONPQs metaconversational is that they determine unbalanced partitions. I will show that unbalanced partitions can be found in questions without VERUM too, and these questions are neither metaconversational nor biased.

What makes a partition unbalanced according to Romero & Han is that one cell corresponds to an extremal point on a scale, while the other corresponds to all other points on the scale. This situation can also be found in questions containing gradable adjectives like *straight*, *dangerous* or *certain*. Kennedy & McNally (2005) argue that gradable predicates can be distinguished by the structure of the scales that are related to. These scales are either open, measures on them can in principle extend into infinity, or closed, there are maximal or minimal values on the scale. Scales can be closed in three different ways: they can have a maximal degree, a minimal degree or both. Whether and where the scale of a predicate is open or closed can be diagnosed with adverbs that refer to terminal degrees like *completely* or *fully* which only modify adjectives that are associated with the closed end of a scale. To show both ends of the scale, Kennedy and McNally use pairs of predicates that use the same scale but are polar opposites. Combining *straight*, *dangerous* and *certain* and their polar opposites *bent*, *safe* and *uncertain* with *fully*/*completely* yields the following pattern:

(29) a. The rod was fully {??bent / straight}.
b. This jump is completely {safe / ??dangerous}
c. The outcome is fully {certain / ?? uncertain}.

The examples show that *straight* and *bent* use a scale that has a minimal degree denoted by *straight*, but no maximal degree. Similarly, *safe*/*dangerous* and *certain*/*uncertain* use scales with maximal degrees, but no minimal ones. Questions containing these predicates like *Is the jump safe?* or *Is the rod straight?* determine partitions that are unbalanced in the same way VERUM-questions are. The p cell of the partition, *the jump is safe*/*the rod is straight*, refers to an extremal degree on the scale, while the $\neg p$ cell comprises all other degrees. Despite this, these questions are neither biased, nor intuitively metaconversational.

The same holds for the epistemic uses of *certain*. *Certain* uses a scale with a maximal degree which *certain* associates with, as shown by (29c). The partition determined by *Are you certain about the outcome of the trial?* again involves one cell that represents absolute certainty, and another one that comprises all lesser degrees of certainty. The question is neither biased, nor metaconversational. This observation extends even to cases that get very close to the meaning of VERUM like (30).

(30) Are you certain that we should adopt this assumption?

The question overtly raises the issue of what to adopt into the common ground and should on the whole be very similar to a VERUM-question. It is intuitively metaconversational in

that it makes explicit reference to the epistemic base under which the conversation should proceed, but it is not biased in the way fronted negation NPQs are.

Closed scale adjectives are not the only case where we find unbalanced partitions in unbiased questions. Polar questions with unstressed *any* are another case. For a question like *Did anyone come?* with the partition $\boxed{\neg\exists x.[\text{come}(x)] \mid \exists x.[\text{come}(x)]}$, one could argue that the $\neg p$ cell marks an extremal point on a scale of numbers of visitors. In a context where only the number, but not the identity of the visitors matters, say donors in a blood-bank, the p cell of the partition comprises all worlds where there was a positive number of visitors, while the $\neg p$ cell is the extreme case of no visitors at all. This is a scale with a minimal, but no maximal element like we saw with *straight* and *bent*. Again, the imbalance does not give rise to the pragmatic effects we observed with fronted negation NPQs.

Taken together, these observations shed doubt on the usefulness of the concept of imbalance in a partition in explaining either bias or the metaconversational status of questions.

A different challenge to the VERUM account is addressed in Romero (2006, 20): answers to fronted negation NPQs, as illustrated in (31), don't contain VERUM. Independent of whether (31a) is interpreted as an INPQ or ONPQ, that is whether 'not' in (31b) is interpreted above or below VERUM, the answer always addresses only the proposition *Mary visited Sue*, excluding negation and VERUM. This is clearest in the *no*-answer, which is not understood to mean *it is not certain that Mary visited Sue*.

(31) a. Q: Didn't Mary visit Sue?
b. LF: [Q (not) VERUM (not) [Mary visited Sue]]
c. A: Yes (. . . , she did).
d. A': No (. . . , she didn't).
(Romero, 2006, 20)

Romero suggests that an explanation of this observation might be that VERUM does not contribute to descriptive content, but to expressive content following work on discourse particles, epistemic adverbs and parentheticals (e.g. Kratzer, 1999, Potts, 2005). The relevant parallel is that seemingly like VERUM in (31), the contribution of, for example, parentheticals is not part of replies to utterances containing them, as illustrated in (32).

(32) A: John, unfortunately, lost the election.
S: That's not true. $\Rightarrow$ $\neg$(John lost), *$\neg$(it is unfortunate that John lost)
(Romero, 2006, 22)

If the contribution of VERUM is a form of expressive meaning, its absence from the answers in (31) is expected. A problem that Romero notes with an expressive account of VERUM is that expressive content is typically scopeless, and hence should not take narrow scope with respect to the question operator. If VERUM didn't contribute to descriptive content anymore and didn't shape the question partitions as in (26) and (27), the pragmatic side of the VERUM-account would have to be reworked.

An expressive account of VERUM also raises empirical questions: the bias of ONPQs and the expressive contribution of an element like *damn* (see Potts, 2005, 2007) differ

with respect to their embedding properties. As shown in (33), negative polar questions do embed, and even under embedding maintain some of their bias as well as their PI licensing properties. In (33a), the negation fails to antilicense the PPI *already*.

(33) A: Fred really has a taste for challenging literature. I hear Mary was thinking of giving him *Finnegan's Wake* to read in his vacation.

B: So I heard. She hasn't done it yet though.

a. She's still wondering whether he hasn't already read that damn book.

b. She's still wondering whether he hasn't read that damn book yet.

The bias and the expressive content are attributed to different people in these examples. Both (33) a. and b. share the property of matrix NPQs that they give rise to an epistemic bias that the positive proposition underlying the NPQ is true. The epistemic bias is about the beliefs of the matrix subject Mary, not the speaker's. The expressive content of *damn* on the other hand is attributed to the speaker B, not Mary. This difference shows that the epistemic bias of NPQs differs in its embedding properties from expressive content.

While the nature of the contribution of VERUM remains a research question, assuming that it does not contribute to the descriptive content of NPQs fits with the main arguments of this paper. I argued for a treatment of INPQs as determining normal partitions and for the assumption that their bias properties cannot be explained by pragmatics alone. An approach that assumes that there is an additional operator in fronted negation NPQs contributing to a level of meaning outside their descriptive content is consistent with this argument. It also avoids the problems of attributing pragmatic effects to imbalance in partitions. Such an approach is also in line with work on rhetorical questions such as Guerzoni (2004) or van Rooij (2003) where the rhetorical quality of these questions is attributed to their presuppositions, rather than their descriptive content. Embedding contexts like (33) also provide a point of departure for a further investigation of the special properties of fronted negation NPQs.

6. Conclusion

This paper developed an account of the relation between INPQs and the contextual evidence the presence of which they are sensitive to. It was shown that INPQs are questions about the contextual evidence, and that their acceptability is dependent on indeterminacy about the contextual evidence. Indeterminate utterances were argued to introduce multiple propositions into the context which can be taken up in replies to them. INPQs are such replies and their sensitivity to indeterminacy was modeled in terms of the availability of semantic answers in a partition semantics of polar questions.

References

Barker, Christopher (2002). The dynamics of vagueness. *Linguistics and Philosophy* 25:1, pp. 1–36.

Barker, Christopher (2006). Clarity and the grammar of scepticism. Ms.

Barker, Christopher & Gina Taranto (2002). The paradox of asserting clarity. Koskinen, Paivi (ed.), *Proceedings of the Western Conference on Linguistics (WECOL) 2002*, Department of Linguistics, California State University, Fresno, vol. 14, pp. 10–21.

Bolinger, Dwight (1978). Yes-no questions are not alternative questions. Hiż, Henry (ed.), *Questions*, D. Reidel, Dordrecht, pp. 87–105.

Büring, Daniel & Christine Gunlogson (2000). Aren't positive and negative polar questions the same? Ms.

von Fintel, Kai (1994). *Restrictions on Quantifier Domains*. Ph.D. thesis, University of Massachusetts at Amherst, Amherst, MA.

von Fintel, Kai & Anthony S. Gillies (2007). 'might' made right. Ms.

Groenendijk, Jeroen & Martin Stokhof (1984). *Studies on the Semantics of Questions and the Pragmatics of Answers*. Ph.D. thesis, University of Amsterdam.

Guerzoni, Elena (2004). *even*-npis in yes/no questions. *Natural Language Semantics* 12, pp. 319–343.

Hartung, Simone (2006). Forms of negation in polar questions. Ms.

Hartung, Simmone (2007). Forms of negation in polar questions. Zeijlstra, Hedde & Jan-Philipp Soehn (eds.), *Proceedings of the Workshop on Negation and Polarity*, Universität Tübingen, SFB 441, Tübingen, pp. 71–77.

Höhle, Tilman N. (1992). Über Verum Fokus im Deutschen. *Linguistische Berichte* pp. 112–141.

Kaplan, David (1978). On the logic of demonstratives. *Journal of Philosophical Logic* 8, pp. 81–98.

Kennedy, Christopher (2007). Vagueness and grammar: the semantics of relative and absolute gradable adjectives. *Linguistics and Philosophy* .

Kennedy, Christopher & Louise McNally (2005). Scale structure and the semantic typology of gradable predicates. *Language* 81:2, pp. 345–381.

Kratzer, Angelika (1999). Beyond 'ouch' and 'oops': How descriptive and expressive meaning interact. Http://semanticsarchive.net.

Ladd, D. Robert (1981). A first look at the semantics and pragmatics of negative questions and tag-questions. *Papers from the 17th Regional Meeting of the Chicago Linguistic Society*, University of Chicago, pp. 164–171.

Potts, Christopher (2005). *The Logic of Conventional Implicatures*, vol. 10 of *Oxford Studies in Theoretical Linguistics*. Oxford University Press, Oxford.

Potts, Christopher (2007). The expressive dimension. *Theoretical Linguistics* 33:2, pp. 165–197.

Reese, Brian (2006). The meaning and use of negative polar interrogatives. Bonami, Oliver & P. Cabredo Hofherr (eds.), *Empirical Issues in Formal Syntax and Semantics 6*, http://www.cssp.cnrs.fr/eiss6, pp. 331–354.

Reese, Brian Jon (2007). *Bias in Questions*. Ph.D. thesis, The University of Texas at Austin.

Romero, Maribel (2006). Biased *Yes/No* questions: The role of verum. *Sprache und Datenverarbeitung* 30, pp. 9–24.

Romero, Maribel & Chung-hye Han (2004). On negative *Yes/No* questions. *Linguistics & Philosophy* 27, pp. 609–658.

van Rooij, Robert & M. Šafářová (2003). On polar questions. *Proceedings of Semantics and Linguistic Theory*, CLC Publications, Ithaca, NY, vol. 13.

Stanley, Jason (2000). Context and logical form. *Linguistics and Philosophy* 23, pp. 391–434.

Stanley, Jason (2002). Nominal restriction. Peter, George & Gerhard Preyer (eds.), *Logical Form and Language*, Oxford University Press, pp. 365–390.

Stanley, Jason & Zoltán Gendler Szabó (2000). On quantifier domain restriction. *Mind and Language* 15:2, pp. 219–261.

van Rooij, Robert (2003). Negative polarity items in questions: Strength as relevance. *Journal of Semantics* 20, pp. 239–273.