NEGATIVE BIAS IN POLAR QUESTIONS[*]

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Abstract

This paper investigates the discourse function of negative bias in questions. How and what such questions contribute to the logical form of discourse has not been the focus of previous work. We believe that such a discourse oriented approach, however, provides useful insight into the formal characteristics of bias. Adopting this perspective, we develop an analysis of biased questions as *complex speech acts*, i.e. illocutionary acts comprised of *both* an assertion and a question. This analysis, we feel, is useful in accounting for the behavior of biased questions in discourse and dialogue.

1 Introduction

Certain questions convey an expectation on the part of the speaker for a negative answer. Such utterances are said to be biased or to express a biased question. Previous research varies on how to characterize this bias formally. Guerzoni (2002) and Han (2002) treat biased questions as being in essence assertions. For Krifka (1995) and van Rooy (2003), on the other hand, interrogatives whose use conveys a bias express a true question but carry a strong presupposition or implicature that the speaker takes the question to be more or less settled.

This paper investigates in detail the discourse function of biased questions. How and what such questions contribute to the logical form of discourse has not been the focus of previous work, which is unfortunate, as we believe that such a study provides invaluable insight into how bias should be formally characterized. We develop an analysis of biased questions as *complex speech acts*. We provide evidence that biased questions convey both an assertion and a question and show how this analysis leads to an account of their contribution to discourse and dialogue.

2 Bias and Discourse Function

2.1 Bias, NPIs and Intonation

Borkin (1971) notes that the presence in an interrogative of a minimizer NPI like *a red cent* or *lift a finger* necessarily conveys an expectation by the speaker of a negative answer. The examples in (1) all convey a negative bias; the speaker of (1a), for example, expects that Fred contributed nothing to the campaign.

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(1) a. Did Fred contribute *a red cent* to the campaign?
     b. Did John *lift a finger* to help Mary?
     c. Does Fred do *a damn thing* at the office?

Consequently, most previous research attempts to derive bias through the interaction of the semantics and pragmatics of interrogative sentences and minimizers (Krifka 1995, Guerzoni 2002, van Rooy 2003).

But intonation also appears to contribute to bias. Minimizer NPIs necessarily carry an emphatic stress (Krifka 1995), while so-called weak NPIs such as *any* and *ever* may or may not be so emphasized. When a weak NPI in an interrogative is emphatically stressed, however, the question is biased (3b). An unstressed weak NPI, on the other hand, results in a neutral question (3a).[1]

(2) a. Did Fred contribute anything to the campaign?
     b. Did Fred contribute ANYthing to the campaign?

(3) a. Has John ever voted for a democrat?
     b. Has John EVER voted for a democrat?

Finally, intonation *alone* can convey bias, as shown by (4b), which does not contain an NPI, but which carries a narrow focus on the main verb similar to that found on strong NPIs.

(4) a. Do you need that porkchop?
     b. Do you NEED that porkchop?

So the presence of a minimizer NPI in an interrogative sentence is sufficient, but not necessary, to convey negative bias. We are tempted to go further and say that this is because the only natural way of reading such interrogatives assigns minimizer NPIs the same sort of prosodic stress as the one responsible for the bias in (3b) and (4b). The account developed below, however, is consistent with their being other ways of inducing bias.

2.2 Responses to Biased Questions

That the discourse function of questions conveying a negative bias goes beyond a simple request for information, as predicted by Krifka (1995) and van Rooy (2003) for example, is shown by examining the felicitous responses to questions like (5). Although positive answers are permitted, a simple "yes" as in (5a) feels incomplete or uncooperative in some sense. Lengthy positive answers, on the other hand, are acceptable but intuitively seem to offer counterevidence of some sort as indicated by *actually* in (5b) or the CT tone on *dishes* in (5c).

(5) Does Fred do a damn thing around the house?
     a. ?Yes.

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[1]We use capital letters to indicate prosodically prominent constituents but remain agnostic regarding the exact nature of the prominence.

b.   Well, he actually does quite a lot.

c.   He does the DISHES.

d.   No. [You're right. He doesn't.]

Negative answers also exhibit a complex behavior in that they seem to pattern with assertions expressing agreement. (5d), for instance, can be followed by the explicit agreement shown in square brackets.

(6)   a.   A: Fred doesn't do a damn thing around the house.

b.   B: You're right. He doesn't.

This bracketed material can also be used to express agreement with a negative assertion, as in (6). Furthermore, the bracketed material in (5d) can by itself serve as a felicitous response to the question in (5).

2.3   Contextual Constraints on Biased Questions

Biased questions seem to carry certain constraints on their felicitous contexts of use. Our intuition is that there must be contextually supplied evidence that not only supports the bias of the biased question, but also a prior attitude on the part of the addressee that the bias appears to attack. In (7f), for example, the progression of the dialogue in (7a) – (7d) supports the bias toward a negative answer, but A's initial assertion can be taken to (non-monotonically) entail that John does in fact do something, be it minimal, around the house.

(7)   a.   A: John is a decent husband.

b.   B: Does he do the dishes?

c.   A: Well. . . no.

d.   B: Does he do the laundry?

e.   A: Well. . . no.

f.   B: Does he do a damn thing around the house?

In other words there is some issue about which the participants in the dialogue are in dispute. This point is also demonstrated by examples like (8), which shows that the negative bias cannot be jointly accepted by the dialogue participants.

(8)   a.   A: John never does the dishes, never cleans the house. All he does is lie about, drink beer and watch TV.

b.   S: #Does he lift a finger to help around the house?

This condition applies for biased questions like (4b) as well the other examples in section 2.1.

3   Evidence for a Complex Speech Act

We take biased questions to *simultaneously* express an assertion and a question. We develop two lines or argument in support of this claim. First, we use the fact that discourse

markers generally select for specific types of speech act. *Please*, for example, marks requests. We identify discourse markers that either occur with assertions or questions and show that biased questions can occur with both. Next, we examine the pattern of responses to biased questions. There is a certain class of response that depending on intonational contour can either challenge or mark agreement with a previous assertion or which can serve as an answer to a polar question. These responses, consequently, are good indicators of whether the prior turn in a dialogue is understood as a question or an assertion.

3.1 Discourse Markers

Following Sadock (1971, 1974), we use the sentence initial discourse marker *after all* to test whether a given utterance is used as an assertion. *After all* can be prefixed to an assertion, as shown by (9a), but not to a neutral question, as in (9b).

(9) Its fine if you don't finish the article today.

    a.   After all, your adviser is out of the country.
    b. #After all, is your adviser out of the country?

Sentence initial *yet* also co-occurs with assertions. *Yet* can be prefixed to a clause following an assertion, as shown by (10a), but not to one following a neutral question, (10b).

(10)   a.   John is consistently late for work. Yet, he continues to be promoted.
         b. #Is John consistently late for work? Yet, he continues to be promoted.

Therefore, if a sentence occurs with one of these discourse markers, we take it as evidence that it is being used as an assertion.

Similar tests exist for questions. Again following Sadock (1974), we note that the phrases *by any chance* and *tell me* require the sentences they co-occur with to be questions, rather than assertions, as demonstrated in (11a) and (12a).

(11)   a. #John, by any chance, owns a car.
         b.   Does John, by any chance, own a car?

(12)   a. #Tell me, John owns a car.
         b.   Tell me, does John own a car?

Applying the tests to the interrogative sentences introduced above clearly shows that they are able to function as assertions *and* questions, as shown in (13) – (16).

(13)   a.   After all, does John lift a finger to help around the house?
         b.   Does John lift a finger to help around the house? Yet you continue to reward him.
         c.   Does John, by any chance, lift a finger to help around the house?
         d.   Tell me, does John lift a finger to help around the house?

(14)   I don't understand why you think that John is a liberal.

     a.   After all, he hasn't ever voted for a democrat.
     b.   After all, has he EVER voted for a democrat?
     c. #After all, has he ever voted for a democrat?

(15)   a.   John hasn't ever voted for a democrat. Yet you continue to claim that he is a liberal.
         b.   Has John EVER voted for a democrat? Yet you continue to claim that he is a liberal.
         c. #Has John ever voted for a democrat? Yet you continue to claim that he is a liberal.

(16)   a.   Has John, by any chance, EVER voted for a democrat?
         b.   Tell me, has John EVER voted for a democrat?

(17)   [Nicholas is reaching for the last porkchop, after already having had three.]
         a.   You should have some fruit instead. After all, do you NEED that porkchop?
         b.   Tell me Nicholas, do you NEED that porkchop?

Furthermore, it is not the case that the illocutionary force of biased questions is ambiguous or underdetermined. Rather, it is overdetermined. Biased questions are *simultaneously* assertions and questions as shown by (18).

(18)   *After all*, has John *by any chance* EVER voted for a democrat?

Assuming that the arguments to *after all* and *by any chance* are restricted to assertions and questions respectively, then both speech acts must be available in the context, otherwise a type clash should arise in (18) with respect to the needs of one of the discourse markers.

3.2   Responses

Next, we investigate responses composed of an (optional) answer particle, i.e. *yes* or *no*, followed by a subject pronoun and an auxiliary verb that matches the polarity of the particle. These responses come with two distinct intonational contours corresponding to distinct uses.[2]

The *agreement contour* contains a slight intonational pause between the answer particle and the $Pro + Aux$ combination. Both intonational phrases show low boundary tones. This type of responnse is usually used to mark agreement with a previous assertion or to assert some uncontested information. It occurs in dialogues with assertions of the same polarity, (19c), and as answers to questions, (20b) and (20c). We place a slash between the answer particle and the $Pro + Aux$ component to indicate this contour: *Yes./He does*.

The second contour we refer to as the *challenge contour*. The challenge contour consists of a single intonational contour with a high boundary tone and increased intensity or stress on the auxiliary. This contour usually functions as a correction or challenge to a previous assertion. It only occurs as a response to assertions of the opposite polarity (19d). We

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[2]It is important to distinguish *answers* from *responses*. *I don't know*, for example, is a response to the question *Is Mary coming?*, but not an answer. In some cases the utterances we are concerned with are answers, but not always, as they sometimes follow assertions.

write it *Yes.=He DOES*.

(19)   a.   A: Fred doesn't lift a finger to help around the house.
          b.   #B: Yes. / He does.
          c.   B: No. / He doesn't.
          d.   B: Yes. = He DOES.

(20)   a.   A: Is Kim coming to the party?
          b.   B: Yes. / She is.
          c.   B: No./ She isn't.
          d. #B: Yes. = She IS. (# No. = She ISN'T.)

These types of response are useful to us because if a challenge response occurs with an interrogative sentence, then the sentence must be functioning at least in part as an assertion. Agreement responses, on the other hand, are ambiguous. They can function as real answers and as responses to prior assertions. However, if an agreement response is functioning as a real answer in a given context, that is as an answer to a neutral question, then the alternative response of the opposite polarity should be equally felicitous in the same context.

All of the interrogative sentences that we claim convey a negative bias can be responded to using the challenge contour, (21d) – (23d).[3] So biased questions must in part be assertions. The agreement responses to these interrogatives are more interesting. While the negative responses are perfectly felicitous, the positive responses are slightly marked. We take this to indicate that these interrogatives do in fact express questions, since agreement responses of both polarities are (more or less) felicitous. The slight markedness of the positive response, however, we take to be indicative of the presence of the negative assertion, i.e. the negative bias. Since the agreement contour is only felicitous with assertions of the *same* polarity, a response such as (22c), for example, can only be taken as answering the question component of the speech act, leaving the assertion, which conntradicts the answer, unaddressed.

(21)   a.   A: Does John lift a finger to help around the house?
          b.   B: No. / He doesn't.
          c. ?B′: Yes. / He does.
          d.   B″: Yes. = He DOES.

(22)   a.   A: Has John EVER voted for a democrat?
          b.   B: No. / He hasn't.
          c. ?B′: Yes. / He has.
          d.   B″: Yes. = He HAS.

(23)   a.   Do you NEED that porkchop?
          b.   B: No. / I don't.
          c. ?B′: Yes. / I do.
          d.   B″: Yes. = I DO.

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[3]Some of the speakers we consulted found the challenge response more natural if the optional answer particle were omitted.

4   Previous Approaches

Before dicussing our proposal, we present two recent papers addressing negative bias in questions. There are two basic problems with these accounts: first, the analyses are tied to the presence of a minimizer NPI, but as we have argued bias arises in interrogatives with stressed *any* or *ever* and with marked intonatation alone. Second, these proposals do not capture the complex nature of biased questions discussed in section 3.

Previous researchers have treated biased questions as either assertions (Guerzoni 2002, Han 2002) or as true questions, accounting for the bias through the presence of a presupposition or implicature (Krifka 1995, van Rooy 2003). Guerzoni's (2002) analysis, for example, derives bias from the interaction of the presuppositions of minimizer NPIs in questions with the semantics and pragmatics of scales. These elements conspire to reduce the set of contextually permissible answers to a singleton consisting of the negative answer. The relevant presupposition results from the presence of a covert *even* at logical form.

The presupposition of a question containing *even* is ambiguous according to which endpoint along some scale the focused constituent of the sentence denotes.

(24)   Can Eric even speak [Japanese]$_F$?

(24), for example, either presupposes that the proposition that Eric can speak Japanese is the least likely among the set of alternative propositions, or that it is the most likely, depending on whether it is assumed that Japanese is hard or easy to speak.

Guerzoni (2002) derives these two readings through a syntactic ambiguity. She assumes that polar interrogatives contain a covert *whether* that moves over the set introducing question morpheme at logical form. The covert *even* introduced by minimizer NPIs is allowed to scope either above or below the trace of *whether*. When *even* outscopes the trace, the positive answer carries the "hard" reading and the negative answer carries the "easy" reading. But the fact that minimizers denote the lower endpoint of the scales they introduce is inconsistent with the "hard" reading. Consequently, the positive answer is contextually infelicitous. Furthermore, on the reading where *even* scopes under the trace of *whether*, *both* answers carry the "hard" presupposition.

Therefore, given *any* context c and question $Q = \{q, \neg q\}$ containing a minimizer NPI, the restriction of Q to c will be $\{\neg q\}$. Only the presuppositions of the negative answer are satisfiable and, consequently, only the negative answer is felicitous. The "question" leaves no choice in the matter and so, if we follow the advice of Hamblin (1973), the interrogative will essentially function as an assertion.[4]

We think that Guerzoni is absolutely right that interrogatives like (26) express assertions, as we established already in section 3. But they clearly do more than that. As our tests show, such interrogatives also convey questions. Furthermore, assertions have a particular role to play in discourse which biased questions are unable to play. For instance, biased questions cannot be used to mark agreement in the way that ordinary assertions

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[4]Guerzoni (2002) herself notes a potential criticism of her syntactic approach. *Even* must be the only focus sensitive particle allowed to move over the trace of *whether*, otherwise *Did only* [Mary]$_F$ *attend?* has an unintuitive interpretation in which the negative answer presupposes that Mary *did not* attend and asserts that everyone besides Mary *did* attend.

can. Contrast the discourse in (25) with (8).

(25)   a.   A: John is a slob. He never helps out with the housework.
       b.   B: He doesn't do anything around the house.

van Rooy's (2003) analysis is in many respects similar to Guerzoni's. Once again the denotation of minimizer NPIs and the sematics of scales play a pivotal role. Relying on appropriateness conditions on asking questions, van Rooy derives the presupposition that the question is settled for all non-minimal values along whatever scale the NPI makes salient. (1b), for example, presupposes that for all non-minimal amounts of help x, John did not provide x amount of help to Mary and asks whether he did the minimal amount to help her or nothing at all. This is enough, van Rooy claims, to account for the rhetorical effect of the question.

But it is not clear that this presupposition is able play the role of the assertion noted in section 3. van Rooy (2003) predicts that negative polar interrogatives like (26) have the same presupposition as positive polar interrogatives such as (1b).

(26)   Didn't John lift a finger to help Mary?

But negative polar interrogatives with NPIs do not contain an assertion according to our tests, as demonstrated in (27b).

(27)   Why does Mary feel that she owes John anything?
       a.   After all, did he lift a finger to help her?
       b.   #After all, didn't he lift a finger to help her?

5   Our Approach

Our approach to bias uses the background framework of SDRT (Asher and Lascarides 2003), a theory of discourse interpretation incorporating rhetorical structure into a dynamic semantic account of meaning. Each contribution to a discourse or dialogue must be rhetorically linked to previous contributions. Each discourse relation can be thought of as a relational speech act type: providing an explanation, for example, requires both an *exlanandum* and an *explanans*. In dialogue, an answer requires a previous contribution understood as a question. We need SDRT for analyzing some of the observations we have made about interrogatives that convey bias, since we are concerned with the speech act performed in uttering a biased question and how this relates to their behavior in discourse and dialogue. For example, why are short positive responses to biased questions marked?

In SDRT, a set of DRSs or dynamic logic formulae Φ represents the compositional semantics of clauses. These formulae are labelled by labels $\pi_1, \pi_2 \ldots, \pi_n$ that are typed generally according to the semantics of the formulas they label. For instance a standard dynamic logic formula that denotes a dynamic propositon will be typed as an assertion, while a formula denoting a question will be typed as a question, and similarly for requests. Each labelled formula constitutes for us a *discourse constituent* in an SDRS (a segmented discourse representation structure). More than one discourse relation may relate one discourse constituent to another constituent in an SDRS.

5.1 Complex Speech Acts

Sometimes one and the same utterance may give rise to *two* discourse constituents of different, even incompatible, semantic types that may bear different rhetorical relations to other discourse constituents as well as bearing non symmetric relations to each other. This is what happens in SDRT's analysis of *complex speech acts* of which the indirect request in (28a) is an example. (28a) behaves both like a question and a request (Asher and Lascarides 2001, Asher and Lascarides 2003). For example, it can co-occur with *please*, which collocates with genuine requests, such as (29a), i.e. requests expressed by the use of an imperative sentence, but not with interrogatives that express true questions as in (29b). Furthermore, like genuine (polar) questions, indirect requests can be answered with *yes* or *no*.

(28)   a.   A: Can you pass the salt, please?
       b.   B: Yes [(*uttered as B passes the salt*)]

(29)   a.   Pass the salt, please.
       b.   #Are you coming to the party, please?

Questions and requests are assingned incompatible semantic types by compositional semantics. Adopting some machinery from Asher and Pustejovsky (2004) for lexical semantics, (28a) can be assigned a complex type – or "dot type" – *question • request* (Asher and Lascarides 2003). Both components of this complex type can be exploited by the logic for constructing discourse structure and Asher and Lascarides (2003) argue that Gricean style pragmatic reasoning naturally connects the question to the request. Depending on the particular discourse connection for the constituent of complex type, SDRT allows the complex type to be exploited into its constituent types.

Our view is that biased questions are also complex speech acts that introduce a complex type on the label of the constituent. Biased questions are assigned a dot type *question • assertion*. Discourse connectives like *yet* or *after all* can exploit the assertoric component of the dot type; *tell me* and *by any chance* can exploit the question component. Finally, we assume that maximally coherent responses to biased questions should address *both* component speech acts.

5.2 Linking Intonation to an Assertion

As noted above, we believe intonation to be critical in the promotion of bias. Furthermore, as noted in section 3, we take the presence of an assertion in the illocutionary act performed in uttering a biased question to be characteristic of bias. However, we have said very little about how this assertion is linked to any particular intonation. The examples in section 2.1 all involve a peculiar intonational contour, intuitively, a L* or L*+H pitch accent followed by a final rise. The L*+H pitch accent is phonetically realized as local F0 minima on the accented syllable, followed by a sharp rise potentially extending into the following syllable. The final rise may be realized as either L H% or H H% in the Pierrehumbert notation (Ladd 1996).

We assume that a L* or L*+H pitch accent contributes to logical form a default assertion operator that applies to one of the answers introduced by the question. We gloss the

meaning assigned to these tones as (30).

(30) $\lambda C \exists p.[p \in C \, \wedge \, {}^{\vee} \neg p]$

(30) is a strong statement of the intuition in previous analyses that these tones convey uncertainty, incredulity (Ward and Hirschberg 1988) or a refusal by the speakr to make some predication (Pierrehumbert and Hirschberg 1990).

Assuming a standard partition semantics of interrogatives, sentences of the form $?\phi$ yield the set of propositions $\{\|\phi\|, \|\neg\phi\|\}$. This set is of the right type to combine with C. Pragmatic reasoning then determines which answer or alternative is asserted. In order to get the bias right, the positive answer must be chosen; that is, what gets asserted is $\neg\phi$. This choice is consistent with previous ideas about how speakers choose to phrase their questions. Gunlogson (2001), for example, analyzes the typical final rise of interrogative sentences as conveying a lack of committment to the propositional core of the question. Our examples are all positive polar interrogatives and so convey a lack of commitment to the proposition expressing the positive answer. Selecting the negative answer to instantiate the existentially quantified variable in (30) results in the assertion of ϕ, which is inconsistent with the lack of committment conveyed by the final rise.[5]

The L*+H L H% contour has been extensively studied by Ward and Hirschberg (1988). They note that assertions with this contour convey alternatively uncertainty or incredulity depending on factors independent of the F0 contour itself, such as duration, loudness and pitch range.

(31)   a.   A: I'd like you here tomorrow morning at eleven.
         b.   B: !Eleven in the morning!   (incredulity)

(32)   a.   A: Do you tend to come in pretty late?
         b.   B: \Eleven in the morning./   (uncertainty)

Ward and Hirschberg (1988) subsume both of these concepts, uncertainty and incredulity, under the heading of lack of speaker committment. Pierrehumbert and Hirschberg (1990) locate these meanings in the pitch accent itself, rather than the entire tune.

We proprose that the intonational meaning of the pitch contour contribute basically something similar to (30), though depending on the measure of intensity we might have either (33a) for the incredulity reading or (33b) for the uncertainty reading.

(33)   a. $\lambda C \exists p.[p \in C \, \wedge \, Expect \, \neg p]$
         b. $\lambda C \exists p.[p \in C \, \wedge \, \neg Certain \, p]$

The examples that Ward and Hirschberg investigate are assertions with the L* + H L H% contour. In these cases, we may coerce the argument of C to the singleton set $\{\phi\}$, which will give us the right interpretation for both the incredulity and uncertainty readings. The prosodic facts, however, are not entirely clear to us. It may be that we have the same con-

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[5]Alternativley, we may assume along with Han (2002) and van Rooy and Šafářová (2003) that speakers base interrogatives on the most informative proposition, where the most informative proposition is the one assigned the lowest subjective probability by the speaker. Therefore, if a speaker bases an interrogative on ϕ, they believe ϕ to be less likely than $\neg\phi$.

tour as the one occurring in Ward and Hirschberg's (1988) examples, though noted above a H H% phrase and boundary tone combination seems more likely. Further intonational research on this question is needed. If the contour is the same, then we hypothesize that there are subtle interactions between the syntax and the prosody that distinguish between the meanings of B's utterance in (31) and (32) and in biased questions like (1). On the other hand, the intonational facts may be different, if not in the basic F0 contour then perhaps with respect to other factors – like lengthening over the tone – that may alter the meaning slightly. In that case, there appear to be a number of ways of making an assertion with complex intonational contours, each with slightly different prosodic realizations.

5.3 The Discourse Contribution of Biased Questions

The analysis that we have given of questions like (34a) as complex speech acts of the type *question* • *assertion* raises the question: what is the intention of the speaker in uttering such an interrogative? Normally the intention behind asking a question is that the speaker come to know an answer to it. But if the speaker already believes some proposition that is an answer to the question, this default intention is surely blocked. That is, if (34a) asserts (34b), the speaker of (34a) must not simply intend to find out whether John does the minimal amount to help around the house or nothing at all.

(34)   a.   Does John lift a finger to help around the house?
        b.   John does nothing to help around the house.

Recall the dialogue in (7), repeated here as (35).

(35)   a.   A: John is a decent husband.
        b.   B: Does he do the dishes?
        c.   A: Well. . . no.
        d.   B: Does he do the laundry?
        e.   A: Well. . . no.
        f.   B: Does he lift a finger to help around the house?

 (35f) is assigned a complex semantic type *question* • *assertion* by the grammar. This complex type can be exploited to introduce a new speech act referent π_a that labels the appropriate assertion, i.e. a formula to the effect that John does nothing to help around the house. π_a provides *evidence against* (35a) in the discourse context.

The complex type of (35f) can also be exploited to introduce a speech act referent π_q that labels a question. Our problem then is to compute the content of the question as well as its discourse contribution. Following the discussion in section 2.3, (35a) can be taken to provide some evidence for the proposition that John does something around the house. Therefore π_a, which is the negation of this proposition, must attack or provide *counterevidence* to A's assertion in (35a).

A's intention in uttering (35a) is to get B to believe that John is a decent husband. B doesn't take up this belief as shown by (35f), although he doesn't reject or correct (35a) either. Rather B asserts something incompatible with (35a) and the question naturally connects to this constituent as a challenge to A to explain why B should take up the

assertion in (35a). Following Maudet, Muller and Prevot (2004), we define the discourse relation *Challenge* using the SDRT meta-talk relation $Explanation_q^*$.

(36) $Challenge(\alpha, \beta)(\equiv Explanation_q^*(\alpha, \beta))$ iff β labels a question such that some answer to that question explains why the speaker of α has the goal associated with the utterace of α.

The default goal of assertions is belief transfer. The challenge to A, then, is to convince B that John is in fact a decent husband.

So more specifically (35f) is a complex speech act of type *counterevidence • challenge* and responses should address both components of the speech act. As noted in section 2.2, short positive answers are infelicitous. This is because although they address the challenge, their propositional content conflicts with the couterevidence, i.e. the assertoric aspect of the biased question. In order to be felicitous, positive answers must provide further evidence or counterevidence, as in (37b) and (37c), or issue a challenge themselves, as in (38c).

(37)   a.   A: No. [You're right. He doesn't.]
          b.   A: Well, he actually does quite a lot of YARDwork.
          c.   A: He does the WINDOWS (with a contrastive topic tone on *windows*).

Negative answers on the other hand concede the challenge and accept the counterevidence, as in (37a) and (38b).

(38)   a.   B: #Yes. / He does.
          b.   B: No. / He doesn't.
          c.   B: Yes. = He DOES.

6 Conclusion

The two main contributions of this paper are (1) the observation that the kind of negative bias typical of interrogatives with a minimizer NPI is evident in other types of interrogative sentence as well and (2) that biased questions are best understood as *complex speech acts*. The first point is important because prior research tends to focus rather narrowly on interrogatives with minimizer NPIs to the detriment of interrogatives like (4b) where intonation alone appears to engender bias. To the extent that the pitch accents in questions like (1b), (3b) and (4b) are the same or similar one would hope to be able to develop a unified explanation of why these examples all convey a negative bias. Of course, instrumental studies are needed to confirm whether or not this line of inquiry is justified.

The second point allows us to account for the facts noted about the behavior of biased questions in discourse and dialogue. Perhaps the most interesting of these observations regards the complex pattern of responses to biased questions noted in sections 2.2 and 3.2. Since you can agreee with a negative statement with "No", simple negative responses to negatively biased questions are felicitous because they can address both components of the complex speech act. Positive answers, however, need to do more. Specifically, they must address the negative attitude of the speaker of the biased question. Hence, they often

feel like the speaker is issuing a correction as in (5b) and (5c).

Finally, our approach seems promising for addressing other instances of bias. Negative polar interrogatives on their "outer negation" reading, as in (39b), appear to a convey a positive bias (Ladd 1981). As (39b) shows, this bias once again seems to be able to be characterized in terms of a complex speech act.

(39)   a.   A: Sue can't attend the meeting, so there'll be no syntacticians there.
         b.   B: What do you mean? After all, isn't Jane coming too?
         c.   #B′: What do you mean? After all, isn't Jane coming either?

Furthermore, this assertion has gone unrecoginzed and unaddressed by previous research (van Rooy and Šafářová 2003, Romero and Han 2004), with the possible exception of (Sadock 1971). Our approach, therefore, appears to be promising and extendable to a variety of kinds of bias.

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