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## An Analysis of Quantificational Variability in Indirect Questions

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## 0. Introduction

Lewis (1975) discusses a number of cases where indefinite noun phrases display variable quantificational force; Heim (1982) takes this as evidence that such NPs are inherently unquantified. I will argue that the same holds for indirect questions, and examine some consequences of that conclusion. This claim runs counter to most recent analyses of indirect questions, according to which they have inherent universal force. In section 1 I review the evidence for this position, and discuss some problems with it. In section 2 I present evidence for the quantificational variability of indirect questions; I account for this, in section 3, by proposing a logical form for sentences with indirect questions that parallels Heim's LFs for sentences with indefinite NPs. In section 4 I argue that part of the LF for indirect questions is derived systematically from the presuppositions of the sentence; this entails an asymmetry with respect to quantificational variability, which I discuss in section 5. In an appendix, I briefly consider extending the analysis to concealed questions and free relatives.

## 1. Indirect questions and exhaustiveness

The basic empirical claim of my analysis, that indirect questions have no inherent quantificational force, is in a way in the spirit of Jespersen, who wrote that in *wh*-questions

"we have an unknown 'quantity' exactly as in an algebraic equation; we may therefore use the well-known symbol *x* for the unknown and the term *x-question* for a question aiming at finding out what *x* stands for (1924,303)."

This suggests that, in the case of quantified sentences, the quantificational force of the *wh*-clause depends on the quantifier it is in the scope of. However, recent analyses (including Hamblin (1973/6), Karttunen (1977), Boër (1978), Higginbotham and May (1981), Groenendijk and Stokhof (1982/4), Cooper (1983), von Stechow (1986), and Jacobson (1988)) have

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\*While I take sole responsibility for the form and content of this paper, I am grateful to Angelika Kratzer for suggesting the topic to me, and for detailed and continuing discussions of my thinking about it. I have also benefitted from comments by Barbara Partee on an early version, as well as from the opportunity to present parts of it at UMass, SCIL at MIT, and WCCFL 8 at UBC. This research is partially supported by NSF grant BNS-8719999.

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 usually taken a more restrictive view, namely, that *wh*-questions in general have universal force. In other words, they are claimed to be exhaustive.

As discussed most explicitly by Groenendijk and Stokhof, exhaustiveness is the putative property of indirect questions that accounts for the validity of the argument in (1):

- (1) John mentioned who came to the party.  
Mary came to the party.  
 \*John mentioned that Mary came to the party.

In effect, exhaustiveness amounts to universal quantificational force of the indirect question, since for (1) to be valid, it must be that for each person who came to the party, John mentioned that s/he came to the party. Exhaustiveness accounts for the contradiction that Karttunen observed in (2):

- (2) John remembers who came though he doesn't remember that Mary came.

Exhaustiveness seems to obtain in a wide variety of indirect questions, as the sentences in (3) indicate:

- (3)a. Mary knows who did well on the exam.  
 b. Mary knows what was brought to the party.  
 c. John knows what they serve for breakfast.  
 (Karttunen (1977(3.a)))  
 d. John knows where the Olympics are held.  
 e. Mary knows when Halley's comet appears.

All of these sentences appear to give rise to a contradiction when appropriately embedded in sentences of the form in (2).

Although these examples show that indirect questions may be exhaustive, I will now demonstrate that this is not generally the case; consequently, it cannot be maintained that exhaustiveness is an inherent semantic property of indirect questions, or of sentences containing them, so that indirect questions should not be treated logically as inherently universally quantified. One piece of evidence for this conclusion is that with some predicates the indirect question is in general not exhaustive, as the sentences in (4) show:<sup>1</sup>

- (4)a. John wonders who Mary likes.  
 b. Sue guessed at what questions are on the test.  
 c. Bill pictured to himself who was at the party.  
 d. Jane and Frank agree on who danced the best.

This is shown by the contradiction test: for example, unlike (2), (5) is not a contradiction:

- (5) Bill pictured to himself who was at the party though he didn't picture to himself that Mary was at the party.

Another argument against exhaustiveness comes from sentences such as those in (6):

- (6)a. Janet knows how one can get from Heathrow to Oxford.  
(Hintikka (1983))  
b. John knows who can deliver the books.  
c. Mary knows who to talk to about the exam.  
d. Sue knows where to hear good jazz.  
e. Bill knows when he can call Mary up.  
f. George knows who might attend the conference.

Each of these sentences has a reading in which the subject need know only some, not every, positive instance of the indirect question. That is, they have an existential reading, and this is inconsistent with their being necessarily exhaustive. (7), for example, is not a contradiction, despite the compatibility of the matrix verb, *know*, with an exhaustive complement, as the sentences in (3) have shown.

- (7) Mary knows who can deliver the books though she doesn't know that John can deliver them.

On the basis of such facts, Hintikka (1976) contends that *wh*-questions generally are ambiguous between two interpretations, a universal and an existential one. Thus, his analysis is exceptional in that it does not entail that *wh*-questions are generally exhaustive. According to his analysis *wh*-sentences are assigned two first-order translations, one for each reading. This is illustrated in (8), for *wh*-questions embedded under *know*:

- (8)a.  $\forall x(Px \rightarrow a \text{ knows that } Px)$   
b.  $\exists x(Px \ \& \ a \text{ knows that } Px)$

The translation schema in (8.a) yields exhaustive *wh*-complements, thus accounting for sentences such as those in (3), while the nonexhaustive readings of the sentences in (6) are accounted for by the translation schema in (8.b). Hintikka says that in principle any *wh*-sentence can have either reading, with context and pragmatics determining whether one is favored.

If the quantificational force of indirect questions were always either universal--that is, exhaustive--or existential, Hintikka's analysis would have a fair claim to adequacy; however, this is not the case. As I show in section 2, there are indirect questions that have interpretations which are neither universal, nor whose quantificational force is merely existential.

## 2. The Quantificational Force Variability of Indirect Questions

Consider the following sentences:

- (9)a. Sue mostly remembers what she got for her birthday.
- b. For the most part, Bill knows what they serve for breakfast at Curtis and Schwartz.
- c. Mary largely realizes who cheated on the exam.
- d. With few exceptions, John knows who likes Mary.
- e. To a considerable extent, the operating manual lists what bugs might occur.
- f. The school paper recorded in part who made the dean's list.
- g. The conductor seldom finds out who rides the train without paying.

In none of these sentences is the indirect question exhaustive, even though the matrix predicates are all of the kind that typically can go with an exhaustive complement, as we saw in section 1. The contradiction test confirms this lack of exhaustiveness;<sup>2</sup> for example, (10) is not a contradiction:

- (10) Sue mostly remembers what she got for her birthday though she doesn't remember that she got a gyroscope.

What is more, in each sentence in (9), the quantificational force associated with the indirect question, through the *wh*-phrase, is that of the corresponding adverbial phrase: we are talking about most gifts, many bugs, few riders, and so on. In view of this quantificational variability, I will call the kind of reading exemplified in these sentences the variable reading. I turn now to an analysis of this.

## 3. Indirect Questions as Open Sentences

As I noted in the introduction, quantificational force variability of the sort I am arguing that indirect questions display, was observed in indefinite NPs by Lewis (1975); his examples include the following:

- (11)a. Riders on the Thirteenth Avenue line seldom find seats
- b. A quadratic equation usually has two different solutions

Keim (1982) accounts for this by analysing indefinite NPs as containing free variables, capable of being bound, thus supplied a quantificational force, by an independent element, such as an adverb of quantification. (This nonquantificational analysis of indefinite NPs was independently proposed by Kamp (1981), though he only considers cases of universal and existential quantification.) The evidence presented in section 2 suggests extending this analysis to the domain of indirect questions: that is, they are logically open sentences, whose

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 quantificational force is determined by an independent element. This idea has a precedent in the work of Kuroda and especially of Nishigauchi on the analysis of certain *wh*-constructions in Japanese, cf Nishigauchi (1986); though they do not treat indirect questions. To my knowledge, the quantificational variability of the latter was first suggested by Angelika Kratzer, in lectures from Spring 1988. Kratzer also noted there the parallel with the Lewis/Kamp/Heim treatment of indefinites. My analysis is an attempt to carry out and substantiate Kratzer's suggestion.<sup>3</sup>

As a first step in developing this idea, let us consider generalizing Hintikka's analysis along the lines of Lewis, Kamp, and Heim. To begin with, then, note that, in Hintikka's LFs in (8), the first occurrence of ' $Px$ ' serves as a restriction on the quantifier. That is, on the variable reading, we do not examine the entire domain, but only that part of it of which  $P$  is truly predicated. So, for example, in (9.a), we restrict the domain of quantification to gifts Sue got for her birthday. To maintain this restrictive function in the general case, I will abandon Hintikka's use of truthfunctional connectives, since quantifiers like *mostly* (corresponding to determiners like *most*) have no first-order translation by means of them. Instead, I follow Lewis in employing tripartite structures of restricted quantification. This is schematized in (12), together with a rough truth definition:

- (12)a.  $\alpha = Q, R(\Sigma), N(\Sigma)$   
 b.  $\|\alpha\|$  is true iff for  $Q$ -many assignments of values to each free variable  $x_i \in \Sigma$  such that  $R(\Sigma)$  is true,  $N(\Sigma)$  is true.

In (12)  $Q$  is the quantifier, and  $R$  and  $N$  constitute, in Heim's terminology, respectively the restrictive term and the nuclear scope of the quantifier, each of which contains an identical sequence of free variables ( $\Sigma$ ), which are unselectively bound by  $Q$ . The nuclear scope is obtained by removing the adverb from the sentence and also replacing the *wh*-word with a variable. In section 4 I will propose a general way to systematically derive the restrictive term; but for the moment, let us simply equate it, following Hintikka, with  $Px$ , that is, the indirect question with the *wh*-word replaced by a variable. Applying this analysis to (9.a), yields an LF as in (13):

- (9.a) Sue mostly remembers what she got for her birthday.  
 (13) Mostly, Sue got  $x$  for her birthday, Sue remembers she got  $x$  for her birthday

This will be true, according to (12) iff most things (contextually, gifts) that Sue got for her birthday are such that she remembers getting them.



#### 4. Presupposition Accommodation and the Restrictive Term

I turn next to a proposal for deriving the restrictive term based on a systematic relation between it and the nuclear scope. Lewis (1975) noted that a quantifier is often restricted by an *if*-clause; examples of this are the sentences in (14):

- (14)a. If a cat drops to the ground, it always lands on its feet. (cf Schubert and Pelletier (1987))
- b. When they play, John usually beats Marvin at ping pong. (ibid.)
- c. If Weinberg submits an article to *Physical Review B*, *Physical Review B* usually accepts it.
- d. When John eats out, he seldom tips more than 10%.

What is notable about the restrictive clauses in (14) is that they are presupposed by the nuclear scope: for a cat to be able to land on its feet it must have dropped to the ground. Often, such a restrictive clause is omitted, as in the following sentences, which have the same interpretations as those in (14):

- (15)a. A cat always lands on its feet.
- b. John usually beats Marvin at ping pong.
- c. *Physical Review B* usually accepts an article by Weinberg.
- d. John seldom tips more than 10%.

These examples illustrate a familiar process by which the felicity of a discourse is maintained, which Lewis has termed *presupposition accommodation*. As Lewis characterizes it:

"If at time *t* something is said that requires presupposition *P* to be acceptable, and if *P* is not presupposed just before *t*, then--*ceteris paribus* and within certain limits--presupposition *P* comes into existence at *t* (1979,172)."

Heim (1982) exploits this process to supply the restrictive term of her tripartite LFs in many cases. I would like to formulate this as a general process of quantifier restriction, stated in (16):

- (16) The presuppositions of the nuclear scope are accommodated into the restrictive term of the quantifier.

Let us apply this to the analysis of indirect questions that I have developed. Consider the following sentence (= (9.b)):

- (17)a. For the most part, Bill knows what they serve for breakfast at Curtis and Schwartz.

The nuclear scope of (17.a) is (17.b) (I ignore *wh*-movement):

- (17)b. Bill knows they serve *x* for breakfast at Curtis and Schwartz

I am proposing that the restrictive term is obtained from (17.b) by presupposition accommodation. Now, (17.b) presupposes the following:

(17)c. they serve *x* for breakfast at Curtis and Schwartz

This is because the matrix verb, *know*, is semantically factive. A property of factive predicates, recognized since Kiparsky and Kiparsky (1971), is that they presuppose their complement. Putting all this together, we get the LF for (17.a):

(17)d. For the most part, they serve *x* for breakfast at Curtis and Schwartz, Bill knows they serve *x* for breakfast at Curtis and Schwartz

And, as we saw in section 3, this is true according to (12) iff most things they serve for breakfast at Curtis and Schwartz are such that Bill knows they serve them.

##### 5. The Quantificational Variability Effect

To recapitulate, so far my analysis has involved generalizing Hintikka's LF for indirect questions to the Lewis/Kamp/Heim tripartite quantification structures; treating indirect questions logically as open sentences, in order to facilitate an account of their quantificational variability; and deriving the restrictive term from the nuclear scope by presupposition accommodation. Now, it turns out that the interaction of these three aspects of the analysis entails a certain asymmetry.

5.1. *An asymmetry explained.* As we have seen, there are predicates whose *wh*-complement is in general not exhaustive (recall the sentences in (4)). What is more, the *wh*-complement of such verbs also lacks a variable reading. Consider for example the sentences in (18):

- (18)a. Sue mostly wonders what she got for her birthday.  
 b. For the most part, Bill asks what they serve for breakfast at Curtis and Schwartz.  
 c. With few exceptions, John inquired who likes Mary.

(18.a), for instance, does not mean that most things Sue got for her birthday are such that she wonders whether she got them. The adverb *here* rather is equivalent to 'most of the time'. The other sentences hardly seem grammatical. This contrasts sharply with the sentences in (9), which have clear variable readings. I refer to this asymmetry as the Quantificational Variability Effect, or QVE. This effect follows from my analysis, as we see when we try to derive the LFs for the sentences in (18). For example, the nuclear scope of (18.a) is the following:



(19) Sue wonders she got *x* for her birthday

From this we cannot, however, derive the restrictive term necessary to yield a variable reading for (18.a). This is because *wonder* is nonfactive, it does not presuppose its complement, 'she got *x* for her birthday', which consequently is not accommodated into the restrictive term. Hence the absence of a variable reading. As for (18.b,c), it may be that they are bad because the semantics of adverbs such as *for the most part*, as quantifiers, is such that they require a restrictive term of the kind not derivable in (18), due to the nonfactivity of these verbs; this would result in an illformed or sortally incorrect LF.

5.2. *On the role of factivity.* Although the sentences in (18) lack a variable reading, it appears that many predicates that are usually classified as nonfactive nevertheless can take an indirect question having a variable reading, as in the following examples:

- (20)a. For the most part, Mary guessed what she got for her birthday.  
 b. To a large extent, Bill decides who plays in the tournament.  
 c. Jane told me in part who presented at the ISA.

This situation looks like the "semantic crossover", ie, factivity-switch, discussed by Boër (1978). Boër attributes this to the semantics of the indirect question itself, that is, he claims it is independent of the matrix predicate. There are a number of problems with this view, however. One is exemplified by sentences such as those in (18), which apparently do not display such crossover. Boër is aware of this, and attempts to deal with it by appealing to certain lexical properties, and a mechanism of factivity-nullification. I will not go into the details of his account, because I believe that its premise, that there is an inherent factivity-switch in indirect questions, is dubious. Rather, it seems that variability with respect to factivity, is a property of some classes of predicates that shows up both with indirect questions and declarative complements. For example, it is well-known that some verbs which are usually taken to be nonfactive or indifferent with respect to factivity, when negated tend to presuppose their complement, as in the following sentence (from Gazdar (1979,117):

- (21) The repairman didn't tell me that my camera was suitable for color too.

Also, in certain (negative) modal contexts, the same sort of factivity-switch appears:

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(22) a. I can't believe that he really did it  
(Grimshaw (1977,55))

b. John can't imagine who Sue invited to the party

Secondly, many verbs have readings that consistently differ with respect to factivity. Consider the behavior of *guess*. It may be understood in two ways: in the sense of making a correct guess, similar to *foretell*; or without such a presupposition of correctness. This corresponds to a factive and an indifferent reading, respectively. I think that each of the following sentences can be read in both of these ways:

- (23) a. Mary guessed that John passed the test.  
b. Mary guessed who passed the test.  
c. Mary guessed that John will pass the test.  
d. Mary guessed who will pass the test.  
e. Mary guessed that John would pass the test.  
f. Mary guessed who would pass the test.

I am not necessarily suggesting that this is a lexical ambiguity; context may favor one reading over the other. In fact, such variability with respect to factivity leads Grewendorf (1983) to conclude that this is basically a matter of pragmatics, not of the semantics either of the embedding predicate or of the indirect question.<sup>5</sup>

I cannot pursue this issue further here; let me just reiterate the main point as regards the QVE, namely, that when a factive reading is available, that is, when the complement is presupposed, it becomes part of the restrictive term by presupposition accommodation, giving rise to a variable reading; and when such presupposition accommodation cannot take place, as with nonfactive readings of predicates, the restrictive term needed for a variable reading cannot be derived.

#### Conclusion

I have shown that indirect *wh*-questions display variable quantificational force. This is accounted for by treating these *wh*-clauses logically as open sentences, thus inherently unquantified, and analysing their LF as tripartite structures of restricted quantification, in the manner of Lewis, Kamp, and Heim. Moreover, I have proposed systematically deriving the restrictive term of the quantifier by presupposition accommodation from the nuclear scope. This entails that, when such accommodation is impossible, there will be no variable reading. This asymmetry is correlated with the matrix predicate having a factive reading. I have also presented evidence that suggests variability (perhaps contextually conditioned) of predicates with respect to factivity.

**Appendix: Concealed Questions and Free Relatives**

Having presented my analysis of quantificational variability in indirect questions, I will now briefly consider extending it to the treatment of free relatives and concealed questions.

*A1. Concealed questions.* These have been treated as noun-phrase variants of indirect questions. Although the status of this relation is still disputed, at least as concerns quantificational force the two constructions do seem to show similar behavior. Consider the concealed questions in (24):

- (24) a. For the most part, John knows the answers on the exam.  
 b. George found out, almost to a man, the cheaters on the exam.  
 c. Mary mostly forgets the breakfast at Curtis and Schwartz.  
 d. With few exceptions, Sue remembers her birthday presents.  
 e. To a large extent, the operating manual lists the bugs likely to occur.  
 f. Bill told me in part the answers to the test.  
 g. Almost without exception, Jane guessed the answers on the exam.

Each of these sentences has a variable reading, just like the indirect questions sentences in (9), on which many of them are patterned. This is accounted for on my analysis by assigning the concealed question sentences the same kind of tripartite quantificational LF as the indirect question sentence are assigned. In this case, the head of the embedded NP will be supplied a variable, since there is no *wh*-word to replace. And, since all the matrix predicates in (24) are either strictly factive, or can have a factive reading (as in (24.f,g)), along the lines argued in section 5, their complements are presupposed, thus according to my analysis are accommodated into the restrictive term.

In addition, like indirect questions, concealed questions display the QVE. Consider the sentences in (25):

- (25) a. Mary mostly wonders about the breakfast at Curtis and Schwartz.  
 b. John asked in part about the speakers at the ISA.  
 c. With few exceptions, Sue guesses at her birthday presents.  
 d. By and large Bill decides about the players in the tournament.

These do not have to have a variable reading. I find that the preposition here makes it easier not to get such a reading;

for example, in (25:c,d) without the preposition it seems much easier to get a variable reading. (Of course, in the other sentences in (25), the preposition is obligatory.) This is consistent with Boër's idea about the factivity-nullifying role of prepositions, though given the reservations I expressed in section 5 towards his account, I prefer to withhold commitment to this idea; however, I have nothing more interesting to suggest at this point. There remain a number of intricacies regarding concealed questions (cf Grimshaw (1977) and Heim (1979)), but this discussion suggests that, at least with respect to their quantificational properties, they are amenable to my analysis.

A2. *Free relatives*. These have been claimed to have both a universal reading and an interpretation as definite descriptions (vide Jacobson (1988) for a recent analysis along these lines). In fact, however, it seems that they are subject to the same quantificational variability as indirect questions. Consider, for example, the following sentences:

- (26)a. Jane mostly sells what she plants.  
 b. For the most part, Mary likes who she meets.  
 c. With few exceptions, Sue resents what she sees on TV.  
 d. By and large Bill wants what Mary has.

Each of these can have a variable reading; (26.a), for instance, can mean that Jane sells most of the things she plants. This is accounted for, just as with concealed questions, by giving free relatives the tripartite LF for quantification. However, it seems that factivity cannot be invoked in (26) to derive the restrictive term by presupposition accommodation: although *resent* is factive, and arguably *sell* too, *like* and *want* are not. In other words, in contrast to concealed questions, it seems that free relatives do not display the QVE. Nonetheless, I would like to maintain that the restrictive term is still derived by presupposition accommodation from the nuclear scope. But in free relatives it is not factivity that supplies the presupposition; instead, I suggest that it comes from inherent definiteness of the free relative.

I noted above that definiteness is commonly attributed to free relatives; this is supported by the existence of a paraphrase relation between sentences with free relatives and sentences with definite descriptions. Moreover, this paraphrase relation persists under quantification; compare the following sentences with those in (26):

- (27)a. Jane mostly sells the things she plants.  
 b. For the most part, Mary likes the people she meets.  
 c. With few exceptions, Sue resents the things she sees on TV.  
 d. By and large Bill wants the things Mary has.

Each of these sentences, just like the corresponding sentences with free relatives, has a variable reading. This can be accounted for by analysing definite noun phrases, like indefinites and *wh*-clauses, as open sentence--in fact, this is precisely how they are treated by Heim (1982). Definites differ from indefinites in that they presuppose their descriptive content (vide Heim for detailed discussion of this and related issues). This becomes part of the restrictive term, and in this way the variable reading is accounted for. If this analysis can be imported into the analysis of free relatives, as seems plausible, then the variable reading they exhibit is straightforwardly explained. (The relation between free relatives and Heim's account of definiteness is pointed out by Kratzer (1988b).) Note that the lack of the QVE asymmetry in free relatives is not a problem, since definiteness is independent of factivity, and in the case of free relatives it is particularly presuppositions due to the former that are accommodated into the restrictive term, whether or not those due to the latter are accommodated.

#### Notes

1. Groenendijk and Stokhof account for this by analysing predicates such as those in (4) as intensional, operating on functions from indices to propositions. On their analysis, both *wh*-complements and *that*-complements denote propositions, but whereas the latter always denotes the same proposition, the denotation of the former depends on what is the case at an index. This means that at an index the denotations of the two complements may differ; thus arguments such as (1) do not generally go through for intensional predicates. In contrast, extensional predicates, such as *know*, operate simply on propositions, so that at an index the denotations of a *wh*-complement and a *that*-complement coincide. I return to the distinction between *wonder* and *know* in section 5, where I discuss data that cast some doubt on Groenendijk and Stokhof's account.

2. (9.g) may be thought of as having to do with train-riding situations, and then it may be possible to maintain exhaustiveness, as was brought to my attention by Roger Schwarzschild. That is, (9.g) may be read as saying that few train-riding situations are such that the conductor finds out, for each person in the situation, that s/he is in it (ie, that s/he rides the train). Such a reading does not seem available in the other sentences in (9). To ascertain the conditions giving rise to one or the other reading is a large undertaking, involving such issues as genericity and the ontology of quantifiers and quantification, that goes way beyond the scope of this paper. I am exploring these matters in work in progress; cf Berman (1987) and Kratzer (1988a) for relevant discussion. For the purposes of the present paper, I will stick to clear



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cases of the variable reading, since that suffices to show my point  
about the quantificational variability of indirect questions.

3. Independent support for parallel logical treatments of *wh*-phrases and indefinite NPs comes from the fact that in many languages interrogative pronouns can function as indefinite pronouns; German, Latin, and Japanese are three such languages, as the examples in (i) illustrate:

- (i)a. Da hat wer angerufen.       'Somebody has called'  
      there has who called up  
              (von Stechow (1986,24))  
      b. Si quis habet asinum, pulsat eum.  
          if who has a donkey he beats it  
              (ibid.)  
      c. Dare-ka-kara henna tegami-ga todoi-ta.  
          who-Q-from strange letter-NOM arrived  
          'A strange letter came from somebody'  
              (Nishigauchi (1986,151))

4. The need to treat presuppositions of nonpropositional constituents, eg open sentences as in (17), has been defended in detail by Karttunen and Peters (1979) and Heim (1983).

5. Note that variability with respect to factivity, if true, vitiates the empirical force of Groenendijk and Stokhof's division of *wh*-embedding predicates into intensional and extensional ones, referred to in note 1, given that these properties are supposed to be independent of factivity. *Tell*, for instance, is claimed to be extensional, while *guess* is intensional. But then the facts in (23) have no account.



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