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## Questions, Answers and Selection

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# Questions, Answers and Selection

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## 1 Introduction

Here, I will examine some questions about the selectional properties of predicates that take *wh*-complements. It has been noted by linguists as well as philosophers who have worked on the semantics of questions, going as far back as Katz & Postal (1964), Harrah (1956), Belnap & Steel (1963), Baker (1968), and subsequent researchers in syntax as well as formal semantics, that interrogative *wh*-complements can be interpreted as questions or answers depending on the predicate they are embedded under. If one assumes a syntactic theory according to which syntactic structures are projected from selectional properties of lexical items, in particular, from the semantic selectional properties verbs and other predicates, as explored in Stowell (1981), Chomsky (1984), Pesetsky (1982), and others, one must ask what these predicates *s*-select. I will examine one proposal in the literature, viz., Berman (1990), that argues that predicates that interpret their embedded *wh*-complements as questions *s*-select questions, whereas predicates that interpret their embedded *wh*-complements as answers

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s-select propositions. I will argue that this proposal faces some problems, semantic as well as syntactic. I also argue that if all, or most, of selection is s-selection, as argued in Pesetsky (1982), then both classes of predicates must s-select questions, the question/answer distinction being a lexical property of the predicates belonging to either class.

## 2 What do question-embedding verbs s-select ?

### 2.1 (Some) questions as open sentences

In a couple of recent papers (Berman (1989, 1990)), Stephen Berman has argued, following Hintikka (1976), that wh-questions embedded under propositional attitude verbs like *know*, *remember*, *realize* are open sentences. The evidence for this view comes from sentences like the following:

- (1) Sue mostly remembers what she got for her birthday.
- (2) For the most part, Bill knows what they serve for breakfast at Tiffany's.
- (3) Mary largely realizes who cheated on the exam.
- (4) With few exceptions, John knows who likes Mary.
- (5) To a considerable extent, the operating manual lists what bugs might occur.
- (6) The school paper recorded in part who made the dean's list.
- (7) The conductor seldom finds out who rides the train without paying.

In each of the above examples, the quantificational force of the embedded question is derived from the adverb of quantification. So, according to Berman, (2), e.g., can mean that for most things  $x$  that they serve for breakfast at Tiffany's, Bill knows that they serve  $x$  for breakfast at Tiffany's. In the absence of an overt adverb of quantification, the embedded question is interpreted exhaustively, because of default universal quantification. This phenomenon is called the Quantificational Variability Effect (QVE). Moreover, according to Berman (1989), QVE is observed only with factive verbs. So QVE does not obtain in the following examples:

- (8) Sue mostly wonders what she got for her birthday.
- (9) For the most part, Bill asks what they serve for breakfast at Tiffany's.
- (10) With few exceptions, John inquired who likes Mary.

Berman notes that (8) does not mean that most things that Sue got for her birthday are such that she wonders whether she got them, and also that (9) and (10) barely make sense.

This distinction between verbs of the *know*-class and those of the *wonder*-class is explained by assuming that adverbs of quantification can be treated as unselective

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quantifiers, in the tradition of Lewis (1975). Berman extends the Lewis-Kamp-Heim idea about indefinite NPs being free variables to *wh*-phrases. Using the Heim (1982) idea that structures involving adverbs of quantification have a tripartite logical form, including a quantifier, a restrictive term, and a nuclear scope, and Hintikka's (1976) idea that embedded questions are open sentences (with a free variable, that is), one can see, e.g., that in a sentence like (2), the quantifier is *mostly*, which can bind any variable free in the restriction and the nuclear scope. The nuclear scope is the open sentence

(11) Bill knows that they serve  $x$  for breakfast at Tiffany's.

The problem is to get the restrictive term. Berman proposes that the restrictive term be derived by presupposition accommodation, using Heim's (1983) idea that presuppositions can be open sentences, and the fact that factives presuppose their complements. In (2), since the verb *know* presupposes its complement, i.e.,

(12) they serve  $x$  for breakfast at Tiffany's.

one gets the following LF:

(13) MOST( $x$ )[they serve  $x$  for breakfast at Tiffany's][Bill  
knows that they serve  $x$  for breakfast at Tiffany's].

This explains QVE, since, on the one hand, embedded questions have no inherent quantificational force, being open sentences, and on the other hand, nonfactives do not presuppose their complements, and hence the restrictive term is not derivable by presupposition accommodation.

The question, of course remains what the denotation of a question is when embedded under a verb of the *wonder*-class. Berman here assumes that predicates of this class *s*-select questions, which are, furthermore, realized syntactically as CPs with a phonologically empty Q-morpheme that can bind all free variables in its scope, as in

(14)...wonder [ who saw what ]

(15)...wonder [[ $Q_{ij}$ ][ $x_i$  saw  $x_j$ ]]

The complement is then mapped into the denotation of a question as proposed in Hamblin(1971) or Karttunen(1977).

## 2.2 Assumptions behind, and Consequences of, the above view

The view outlined above makes certain predictions about the semantics of embedded questions as well as selectional properties of predicates. I will consider them one after the other.

Let's recapitulating some of the assumptions behind the above theory:

- (16) Embedded wh-complements are open sentences, i.e., the same logical type as propositions.
- (17) Predicates of the *know*-class select propositions but not questions.
- (18) A Q-morpheme combines with an open sentence to yield question-denotations.
- (19) Predicates of the *wonder*-class select questions and not propositions.
- (20) LFs containing embedded wh-complements are interpreted after presupposition-accomodation, with factive predicates presupposing their complements.

Now if Pesetsky (1982) is right that all, or at least a significant chunk of phenomena having to do with subcategorization can be derived from s-selection without recourse to c-selection at all, and if the selectional properties of predicates fall in that chunk, then some consequences should follow from the above assumptions. Some of the relevant ones are these:

- (21) All factive predicates must be able to take embedded wh-complements.
- (22) No non-factive predicate<sup>1</sup> can take embedded wh-complements.

(21) must be true on Berman's view because all factive predicates can take propositions, in particular, open sentences which are LF-counterparts of embedded wh-complements, and presupposition accomodation due to factivity guarantees that the LFs would be well-formed. While Berman does assume (22), it doesn't really follow from his theory. This is because there may, for some predicates, be other ways of accomodating presuppositions even though the predicates are nonfactive. So if (22) turns out to be false, it may not be that crucial a problem for this theory. I will try to show that (21) is at least suspicious, and that (22) is in fact false.

## 2.3 Not all factives take questions

The first obvious counterexample to (21) is the verb *regret*, that is factive, but cannot take question complements:

- (23) \*I regret whether John came to the party.
- (24) \*I regret who John saw.
- (25) \*I regret which man saw which woman.

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<sup>1</sup>I.e., non-factive predicates that s-select propositions

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- (26) I regret that John came to the party.  
 (27) I regret what John saw. (free relative)<sup>2</sup>  
 (28) \*I regret who saw what.  
 (29) \*I regret what to do.  
 (30) ??I regret why he had to do this.

Predicates like *resent* are similar to *regret* in this respect, in that they are factive but do not take wh-complements, and this is unexpected on the theory mentioned above.

## 2.4 Nonfactives can take wh-complements

Some caution in the terminology is needed here. By nonfactive I mean any predicate taking a propositional complement that is not a factive (in contrast to the Kiparsky and Kiparsky terminology). What I have in mind here are predicates like *be certain (about)*, *be convinced (about)*, *be sure (of)*, *agree on*, *guess*, *inform X*, etc., to the exclusion of predicates like *ask* and *wonder* which do not take propositional complements at all, and hence the factive/nonfactive distinction should not apply to the latter at all.

- (31) I was certain about whether John came to the party.  
 (32) I was certain which man saw which woman.  
 (33) John and Bill agree on whether to invite Mary.  
 (34) John and Bill agree on which person to invite for which party.  
 (35) I was sure of which person to invite for which party.  
 (36) I informed John whether to invite Bill.  
 (37) I informed John what to do.

(Some of these are probably slightly marginal for some speakers, but none are \*). Note also that the verb *guess* is not necessarily interpreted as factive in its question-taking version, contrary to the literature, at least for some of my informants:

- (38) I guessed who had come to the party.  
 (39) I guessed whether John saw Bill.

This point is particularly clear with null-complement anaphora:

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<sup>2</sup>David Pesetsky (p.c.) points out that there are examples like the following, where *regret* seems to be able to get embedded wh-complements:

(i) I regret when he went to the party.  
 at least in some idiolects, interpreted not as a free relative, but a true wh-complement. If that's true, that would weaken my argument somewhat. But most wh-complements do seem to be disallowed as complements to *regret*.

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(40) I didn't know what John saw, so I guessed.

The predicates of the above class contrast with verbs like *believe* and *think* which do not take question complements at all. Interestingly, as I observed elsewhere, the predicates in (31)-(37) show QVE in a certain way. The following sentences, e.g., show this:

(41) John is certain, for the most part, about who loves Mary.

(42) John is convinced, in part, about who Mary's ex-lovers are.

(43) John and Bill agree, for the most part, on who Mary's ex-lovers are.

(43), e.g., has approximately the following meaning on one reading:

(44) MOST( $x$ )[John believes that  $x$  is an ex-lover of Mary or  
Bill believes that  $x$  is an ex-lover of Mary][John and Bill  
agree that  $x$  is an ex-lover of Mary].

(This is approximate, but it's good enough). This shows that QVE, construed broadly obtains in nonfactive predicates of a certain type.

## 2.5 Where does QVE obtain?

The generalisation that emerges from the previous two sections is that QVE is a property of those predicates taking propositions as well as embedded questions but where the interpretation of embedded questions is restricted in a certain way, viz., by mediating the relationship via answers. Roughly speaking, a two-place predicate  $V$  of this type taking a question argument  $Q$  has the property that

(45)  $V(x, Q)$  iff for a certain  $V_1$ ,  $\exists p V_1(x, p)$  &  $p$  partially answers  $Q$ .

One can use the notion of a *partial answer* as used, e.g., in Higginbotham and May (1981), or Groenendijk and Stokhof (1982, 1984). Versions of (45) can be found, for example, in Karttunen (1977), who postulated two different verbs *know*, one taking question arguments and the other taking propositional arguments, but related by a relation somewhat like (45). Put differently, the question complements embedded under predicates that show QVE stand for answers to questions rather than questions. Berman's solution, in this respect following Boër(1978) is to capture (45) by selection, i.e., to claim that predicates of the above type s-select propositions. On this view, predicates of the *know*-class and the *be certain*-class both select only propositional complement classes. But they can take wh-complements because the latter are open sentences, and one can form well-formed LFs by presupposition accommodation. Predicates of the *believe*-class on the other hand, select propositions but cannot

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take *wh*-complements because there is no way to accommodate presuppositions to get well-formed LFs. Predicates of the *wonder*-class select questions but not propositions.

## 2.6 Problems with reducing the question-answer distinction in embedded clauses to selection

One problem noted earlier with expressing the question-answer distinction in embedded complements as *s*-selection of questions vs. *s*-selection of propositions was that we had no reason why certain emotive predicates do not take embedded *wh*-complements, the only possible solution left being syntactic marking.

### 2.6.1 Null Complement Anaphora

A second problem has to do with Null Complement Anaphora (NCA). It was noted in Grimshaw(1979) that sentential complements of predicates can be dropped if they match up with the semantic type of an antecedent complement clause, and that if it doesn't match up with an antecedent of the same semantic type, the result is ill-formed. Examples:

(46) Question: Has the Mayor resigned? Who resigned? What did the mayor decide to do?

Response: I don't know. John wouldn't tell me. Ask Bill. I haven't found out yet. Guess., etc.

(47) Antecedent: John is telling lies again.

Response: It's too bad. I agree. I'm flabbergasted, etc.

(48) Antecedent: John is telling lies again.

Response: \*I inquired. \*Ask Bill, etc.

Furthermore, the constraint is semantic rather than syntactic, as the following examples involving predicates that do not normally take concealed questions show:

(49) \*Bill asked me the time, so I inquired the time.

(50) Bill asked me the time, so I inquired.

(51) \*Bill claimed to want to know the reasons for my decision, but he didn't really care the reasons for my decision.

(52) Bill claimed to want to know the reasons for my decision, but he didn't really care.

What is relevant for our purposes here is that NCA does not distinguish *know*-class predicates from *wonder*-class predicates:

(53) Bill asked me what the time was, but I didn't know.



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- (54) If you don't know what to do, ask.  
 (55) I realized who I would have to see in Montreal, but I inquired anyhow.

Notice that both mysteries dissolve once we assume s-selection of questions by both classes of predicates. Thus, emotive predicates do not select questions, and NCA ceases to be a problem, since what gets copied is some LF-representation of a question. Of course some predicates are interpreted via (45), and these are exactly the predicates that show QVE.

### 2.6.2 Embedded Wh-Complements and Right-Node Raising

Under the assumption that wh-complements embedded under *wonder*-class predicates have a Q-morpheme, whereas those under *know*-class predicates don't, one would expect to find some syntactic difference between the two types of clauses. One obvious test for such a distinction, if any, is Right-Node Raising (RNR). As the following examples show, RNR treats question-complements and answer-complements as the same:

- (56) John asked, and Bill knew, what went on at the party.  
 (57) John knew, but nevertheless asked Bill, why he was sad.  
 (58) John wondered, but Bill had realized long ago, who the murderer was.  
 (59) John wondered, but Bill was certain, which men love which women.

This is contrary to what one would expect on Berman's theory.

### 2.6.3 Embedded Wh-Complements and Negative Polarity

It is sometimes claimed, e.g., Munsat (1986) that in certain contexts involving embedded wh-complements, negative polarity items are fine under the scope of *wonder*-class predicates but not under the scope of *know*-class predicates. The data are not very clear, though. Munsat's examples involve the following contrasts:

- (60) \*I know how he ever did it.  
 (61) I wonder how he ever did it.  
 (62) I don't know how he ever did it.  
 (63) \*I know why anyone bothers to listen to him.  
 (64) I wonder why anyone bothers to listen to him.  
 (65) I don't know why anyone bothers to listen to him.

Now while the above data are uncontroversial, it is not clear what the badness of (60) and (63) are to be attributed to. These examples get much better with a verb

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like *realize*, for example:

- (66) ?I realize why anyone would bother to listen to him.
- (67) ?I now realize how he ever did a thing like that.
- (68) \*I realize that anyone would bother to listen to him. (free-choice reading only)
- (69) \*I now realize that he ever did a thing like that.

Now, *realize* is a predicate that belongs to the *know*-class, but seems to be able to allow NPIs in their embedded *how*- and *why*- complements. Moreover, predicates belonging to either class allow NPIs in their embedded *whether*-complements.

- (70) John always knows whether anyone is there.
- (71) John wonders whether anyone is there.
- (72) \*John always knows that anyone is there.
- (73) John knows whether Bill ever went to the party.
- (74) John wonders whether Bill ever went to the party.
- (75) \*John knows that Bill ever went to the party.

So again whatever is responsible for the contrast in (60)-(65), it doesn't seem to be a straightforward prohibition against NPIs in *wh*-complements embedded under predicates of the *know*-class.

## 2.7 Conclusions

To conclude this section, we see that the distinction between the predicates of the *know*-class and those of the *wonder*-class is not to be captured by saying that they select propositions and questions respectively, otherwise we lose certain syntactic generalizations. In fact, a cursory glance at various syntactic environments which can possibly distinguish the two classes shows that it is virtually impossible to come up with a syntactic distinction between the predicates of the two classes. This includes not only the syntactic phenomena mentioned in the last section, but also many others that one can think of, e.g., extraction out of the two classes of predicates, or subject-auxiliary inversion in dialects which allow subject-aux inversion in embedded clauses as well, and so on. The syntax seems not to mark the question/answer distinction at all. In the next section, I will discuss the case of Spanish, where it has been argued by Suñer (1989) that the question/answer distinction is represented syntactically by the complementizer *que*. I argue that the complementizer *que* appearing before embedded interrogatives is a marker of a speech-act rather than questions, thus removing another claimed case of syntactic sensitivity to the question/answer distinction from the picture.

### 3 Spanish Quotatives and the Question/Answer distinction

#### 3.1 Predicates of Communication in Spanish

It has been observed in the literature on Spanish indirect questions that certain verbs of communication in Spanish allow, in fact require (in most cases), the complementizer *que* before a moved wh-phrase. The following examples from Plann(1982), citing Rivero(1979), are illustrative.

(76) Te preguntan que para qué quieres el préstamo.

you ask(3-pl) that for what want(2-s) the loan.

'They ask you what you want the loan for.'

(77) Murmuró que con quién podía ir.

murmured(3-s) that with whom could(3-s) go.

'He asked, by murmuring, who he could go with.'

The above examples contrast with verbs like *saber* 'to know', which do not allow the complementizer before the wh-phrase.

(78) El detective sabe (\*que) quién la mató.

'The detective knows (\*that) who killed her.'

(79) Juan nos explicó (\*que) si su abuela había ido a Madrid.

'Juan explained to us (\*that) whether his grandma went to Madrid.'

Susan Plann's generalization from this data is that the questions embedded under the *que* in (76) and (77) are correlates of direct questions, viz.

(80) ¿Para qué quieres el préstamo?

'Who do you want the loan for?'

(81) ¿Con quién puedo ir?

'Who can I go with?'

In a recent paper, Suñer(1989) has argued that the relevant distinction between the two classes of verbs, viz., those that allow *que* with questions, and those that don't, is the distinction observed in the last part of the paper in English, viz., that between *know* and *wonder*. She introduces a feature [+/- prop] to distinguish the two classes of verbs. This amounts to saying that *saber* selects answers (what she calls semi-questions), whereas *preguntar* selects questions. As noted earlier, answers have the same logical type as propositions (well, they are propositions), and so distinguishing the two classes actually amounts to a syntactic, rather than a semantic difference. I will defend Susan Plann's generalisation in this part of the paper, and argue that it is preferable to Suñer's account of the phenomenon in question.

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### 3.2 *Que* as a quotative marker

Suñer(1989) suggests that the complementizer *que* serves to flag the following wh-complement as a genuine question. Following Groenendijk and Stokhof (1982, 1984) in assuming that the denotation of the question *Who walks?* is as in (62):

$$(82) \lambda a \lambda i [\lambda x [\text{walk}(a)(x)] = \lambda x [\text{walk}(i)(x)]]$$

the function of the *que* is to form the outermost lambda-abstract in the (82). The problem however, is that the complementizer *que* shows up even with wh-complementizers that are not questions, and for which a semantics like (82) doesn't seem to be available. Thus, *que* can follow a speech act verb when the followed by an exclamation rather than a question, as in (63):

(83) Dije que qué bonito estaba el cielo.  
'(I) said that how nice was the sky.'

(83) contrasts minimally with predicates that really select exclamations, as in (84), which cannot be followed by a *que*:

(84) Es increíble (\*que) qué cosas dice Maria.  
'It's incredible (\*that) what Maria says.'  
(85)\*\* Es increíble qué cosas quién dice.  
'\*It's incredible who says what.'

((85) is to make sure that *ser increíble* does not take questions.). The generalization seems to be that *que* is a quotative marker<sup>3</sup> rather than really a marker of questions per se. A look at the five verb-classes mentioned in Suñer's paper, shows that looking at the complementizer *que* as a quotative marker rather than a question-marker explains certain facts mentioned by Suñer that remain mysteries otherwise.

### 3.3 Five verb classes

According to Suñer, there are five verb-classes in Spanish with respect to the distribution of question and that-clauses. They can be described as follows:

- (86) Verb classes  
(i) *creer* 'believe', only that-complements  
(ii) *preguntar(se)* 'ask/wonder', only questions, *que* optional

<sup>3</sup>I.e., one that marks the fact that what follows is the object of a speech act

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- (iii) *tartamudear* 'stutter', questions, that-complements, *que* obligatory before questions
- (iv) *saber* 'know', that-compl.s, questions(answers), *que* cannot appear before embedded questions
- (v) *decir* 'speak/tell', that-compls., questions and and answers, *que* may or may not appear depending on the interpretation.

Class (i) is straightforward. Class (ii) verbs select only questions. Class (iii) verbs select questions as well as propositions, moreover *que* is obligatory. Class (iv) verbs take propositions as well as questions that are interpreted as answers, and hence *que* is bad. Class (v) verbs take propositions as well as questions that are interpreted as answers, and hence, on that reading, *que* must be absent. These verbs can also be interpreted as pure questions, in which case *que* is obligatory.

Given that we have established that *que* is really a marker of quotation, an alternative suggestion comes to mind. Suppose the speech-act verbs in the above classes can also select what one might call *report* or *semi-quotations*, and that a report clause must be headed by *que*, the following selection scheme comes to mind:

- (87) Alternative
- (i) *creer* selects propositions
- (ii) *preguntar* selects questions as well as reports
- (iii) *tartamudear* selects reports
- (iv) *saber* selects propositions, questions
- (v) *decir* selects propositions, questions, and reports

Furthermore, class (iv) and class (v) verbs are interpreted in accordance with (45), i.e., they relate to questions via answers. This classification immediately explains why *que* is obligatory with class (iii) verbs but not with class (i) verbs.<sup>4</sup> The reason why it is (87) rather than (86) that is the right classification is that concealed questions embedded under class(v) verbs are interpreted unambiguously as answers rather than questions:

- (88) *Maria dijo/repetió la hora/su número de teléfono/el precio.*  
'Maria told/repeated the time/her telephone number/the price.'

(88) can only mean that Maria repeated what the number was, but *cannot* mean that Maria repeated asked what the number was. On the view expressed in (87), this is because what Suárez would call the "true" question reading, is, on my view a

<sup>4</sup>One also, of course, needs to note why, on (87), predicates of class (ii) cannot take non-question reports. This could be ensured by a principle like:

If a predicate selects a categories  $X_1, \dots, X_n$ , as well as reports and nothing else, then the report-complements are reports of categories restricted to  $X_1, \dots, X_n$ .

Predicates of class (iii), on the other hand, allow speech-reports of any category.

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question-report rather than a question, and so cannot be interpreted as a concealed question.<sup>5</sup> The true concealed question reading on the other hand is available, but because of (45), there is only a propositional reading. The classification in (86), as Suñer notes, finds (88) a mystery.

## 4 Conclusions

The Spanish facts show that contrary to Suñer, the complementizer *que* is a marker of a speech-act rather than an indicator of a distinction between questions and answers. The English as well as the Spanish facts show that the question/answer distinction in the interpretation of embedded interrogatives is not marked in the syntax, and that the distinction is not a case of selection of different semantic types, but a matter of lexical semantics of the predicates in question.

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<sup>5</sup>Since a question-report must normally be sentential, an NP cannot be a question report unless it is direct speech.

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