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Chung-hye Han  
*University of Pennsylvania*

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## On Negative Alternative Questions

# On Negative Alternative Questions\*

Chung-hye Han

## 1 Introduction

The question in (1) is formally a *yes-no* question. But in terms of its interpretation, it is ambiguous: it can have either a *yes-no* question reading or an alternative question reading.

- (1) Did John drink coffee or tea?

Under the *yes-no* question reading, the speaker has no presupposition as to whether John drank coffee or tea, and the possible answers are *Yes, John drank coffee or tea* and *No, John didn't drink coffee or tea*. Under the alternative question reading, the speaker presupposes that John drank either coffee or tea, and the possible answers are *John drank coffee* and *John drank tea*.

The corresponding negative *yes-no* question can be formed in two ways: with *n't* as in (2a), and with *not* as in (2b). I will refer to the negative *yes-no* questions formed with *n't* as *n't-questions* and the ones formed with *not* as *not-questions*.

- (2) a. Didn't John drink coffee or tea?  
b. Did John not drink coffee or tea?

Although the questions in (2a) and (2b) have the same components, namely the proposition *John drank coffee or tea* and negation, they do not have the exact same interpretation. The question in (2b) has both the *yes-no* question reading and the alternative question reading available. Under the *yes-no* question reading, the possible answers are *Yes, John drank coffee or tea* and *No, John did not drink coffee or tea*. Under the alternative question reading, the speaker presupposes that among coffee and tea, there is a drink that John didn't drink, and the possible answers are *John did not drink coffee* and *John did not drink tea*. On the other hand, the question in (2a) only has the *yes-no* question reading available.

In this paper, I show that the (un)availability of the alternative question reading in negative *yes-no* questions such as (2) is a puzzle given the syntax

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of *yes-no* questions and the syntax of disjunction proposed in Larson (1985). In section 2, I briefly discuss Larson's analysis of affirmative alternative questions and extend it to negative alternative questions. It will turn out that although Larson makes correct predictions for *n't*-questions, he does not do so for *not*-questions. In sections 3 and 4, I consider two alternative syntactic approaches that may explain the problem at hand. In section 3, I modify Larson's (1985) analysis to include LF movement of the disjunctive phrase and in section 4, I extend Schwarz's (1999) gapping analysis on *either...or* constructions to *whether...or* constructions. However, I will point out problems for both approaches; neither can explain the interpretive asymmetry between *n't*-questions and *not*-questions. In section 5, I pursue a non-syntactic approach and suggest that (un)availability of the alternative question reading in negative *yes-no* questions should be explained by the interaction between the syntax and the interpretive component of the grammar.

## 2 Larson (1985)

### 2.1 On Affirmative Questions

According to Larson (1985), a *yes-no* question has an empty operator that corresponds to *whether*. It originates from a disjunction phrase and moves to [Spec, CP], marking the scope of disjunction. Moreover, a *yes-no* question may have an unpronounced disjunction phrase *or not*. If the disjunction phrase from which the empty *whether* originates is the unpronounced *or not*, then the *yes-no* question reading is derived. Otherwise, the alternative question reading is derived. For instance, the *yes-no* question in (1) (repeated below as (3)) can have either a *yes-no* question reading or an alternative question reading. Under the *yes-no* question reading, the empty *whether* operator originates from the unpronounced *or not* and moves to [Spec, CP], as represented in (3a). This representation makes available the alternatives *John drank coffee or tea* and *John didn't drink coffee or tea* as answers. Under the alternative question reading, the empty operator originates from the disjunction phrase *coffee or tea* and moves to [Spec, CP], as represented in (3b). This representation makes available the alternatives *John drank coffee* and *John drank tea* as answers.

- (3) Did John drink coffee or tea?
- a. *yes-no* question:  
Op<sub>i</sub> ( $\epsilon_i$  or not) [did John drink [coffee or tea]]  
{John drank coffee or tea, John didn't drink coffee or tea}
  - b. alternative question:  
Op<sub>i</sub> [did John drink [ $\epsilon_i$  coffee or tea]]  
{John drank coffee, John drank tea}

Supporting evidence for the proposal that empty *whether* moves from a disjunction phrase to [Spec, CP] comes from the fact that *yes-no* questions that have a disjunction phrase inside an island do not have the alternative question reading available.

- (4) Do you believe the claim that Bill resigned or retired?
- a. *yes-no* question:  
Op<sub>i</sub> ( $\epsilon_i$  or not) [do you believe [<sub>NP</sub> the claim that Bill resigned or retired]]
  - b. \* alternative question:  
Op<sub>i</sub> [do you believe [<sub>NP</sub> the claim that Bill [  $\epsilon_i$  resigned or retired]]]

In (4), the disjunctive phrase *resigned or retired* is inside a complex NP. The alternative question reading is not available since the empty operator would have to move out of an island to generate this reading. But the *yes-no* question reading is available, since under this reading the empty operator is moving from the unpronounced *or not*, which is not inside an island.

## 2.2 On Disjunction in Negative Declaratives

Before extending Larson's analysis to negative questions, we need to understand his treatment of disjunction scope in negative declaratives. Larson claims that (5) only has the reading where negation has scope over the disjunction. This is the reading represented in (5a), according to which John drank neither coffee nor tea. The reading represented in (5b), according to which John drank either coffee or tea, is claimed to not exist.

- (5) John did not drink coffee or tea.
- a. John did not drink Op<sub>i</sub> [ $\epsilon_i$  coffee or tea]. He drank juice. (narrow scope *or*)
  - b. \* Op<sub>i</sub> John did not drink [ $\epsilon_i$  coffee or tea]. But I don't know which. (wide scope *or*)

According to Larson, the scope of disjunction is determined by the movement of a scope indicating operator from the disjunction phrase to higher up in the clause. In *yes-no* questions, the scope indicating operator is overt or empty *whether*, and in declaratives it is *either* or a corresponding empty *either* operator. Adopting the semantics of disjunction in Rooth and Partee (1982), Larson argues that a disjunctive phrase introduces a free variable that must be bound by the scope indicating operator that originates from the disjunctive phrase. This is how the scope of disjunction is marked. Larson further assumes that negation always introduces existential closure, which unselectively binds any free variable under its scope. In (5b), the empty operator cannot bind the free variable introduced by the disjunctive phrase because it is already bound by the existential closure of the intervening negation. But in (5a), the empty operator binds the free variable of the disjunctive phrase since the negation does not intervene between the operator and the disjunctive phrase.

### 2.3 Extending Larson (1985) to Negative Questions

Let us now apply Larson's analysis to negative *yes-no* questions. We will see that he correctly predicts that *n't*-questions only have the *yes-no* question reading, but he wrongly predicts that the alternative question reading is not available for *not*-questions. I repeat the questions in (2) as (6) and (7) below for convenience.

In (6), the empty *whether* operator can move from the unpronounced *or not* phrase to [Spec, CP], deriving the *yes-no* question reading. This is represented in (6a). But the empty operator cannot move from the disjunctive phrase *coffee or tea* to [Spec, CP], as in (6b). This is because the intervening negation introduces existential closure which binds the free variable of the disjunctive phrase, thereby blocking the empty operator from marking the disjunctive scope. And thus, the alternative question reading is correctly ruled out.

- (6) Didn't John drink coffee or tea?
- a. *yes-no* question:  
Op<sub>i</sub> ( $\epsilon_i$  or not) [didn't John drink [coffee or tea]]
  - b. \* alternative question:  
Op<sub>i</sub> [didn't John drink [ $\epsilon_i$  coffee or tea]]

In (7), the *yes-no* question reading is derived by moving the empty operator from the unpronounced *or not* to [Spec, CP], as represented in (7a). However, under Larson's analysis, the alternative question reading is incorrectly predicted to be ruled out. This is because the intervening negation between

the empty operator in [Spec, CP] and the disjunctive phrase would block the empty operator from marking the disjunctive scope, as represented in (7b).

- (7) Did John not drink coffee or tea?
- a. *yes-no* question:  
Op<sub>i</sub> ( $\epsilon_i$  or not) [did John not drink [coffee or tea]]
  - b. alternative question:  
Op<sub>i</sub> [did John not drink [ $\epsilon_i$  coffee or tea]]

### 3 Syntactic Approach 1: Modifying Larson (1985)

Contrary to Larson (1985), I point out that in negative declaratives with a disjunctive phrase the disjunction can have scope over negation, given the right context. For instance, assume that my mother always bakes too many different kinds of pies for Thanksgiving dinner, and so every year, there are too many left-over pies. But this year, she decided not to make one of the pies she doesn't like, namely pumpkin pies and apple pies. In this context, I can say:

- (8) For Thanksgiving dinner this year, my mother is not going to make a pumpkin pie or an apple pie. But I don't know which.

According to the native speakers that I have consulted, the first sentence in (8) can have the reading paraphrasable as *My mother is not going to make a pumpkin pie or she is not going to make an apple pie*. This is the wide scope reading of disjunction over negation.

Further, we have already seen that in matrix negative *yes-no* questions with a disjunctive phrase, *not*-questions allow the disjunction to have scope over negation, deriving the alternative question reading, although this was not possible for *n't*-questions. It turns out that in indirect negative *yes-no* questions with a disjunctive phrase, both *n't*- and *not*-questions allow the disjunction to have scope over negation. Assume a context in which it is well known that John does not eat a particular type of meat for some reason, but I don't know which type he doesn't eat. So, I ask John to find out the correct information. In this context, both indirect questions in (9) can have the alternative question reading, as can be seen by the fact that both sentences in (9) can be continued with the phrase *because I don't know which*.

- (9) a. I asked John whether he doesn't eat beef or chicken (because I don't know which).  
b. I asked John whether he does not eat beef or chicken (because I don't know which).

One way of deriving the interpretive representation in which disjunction scopes over negation is by allowing the disjunctive phrase to undergo LF movement. For instance, in (8), we can assume that *a pumpkin pie or an apple pie* is a generalized quantifier that can undergo QR (quantifier raising) to IP at LF. If it undergoes QR, then it escapes negation, and the free variable of the disjunction phrase will not be existentially closed, leaving it free to be bound by the empty operator that is higher in the clause, as represented in (10a). This derives the reading in which disjunction scopes over negation. On the other hand, if the disjunction phrase does not undergo QR, then the free variable is bound by the empty operator that is lower in the clause, as represented in (10b), deriving the reading in which negation scopes over the disjunction.

- (10) a. [<sub>IP</sub> Op<sub>i</sub> [  $\epsilon_i$  a pumpkin pie or an apple pie]<sub>j</sub> [<sub>IP</sub> My mother will not make t<sub>j</sub>]]  
 b. [<sub>IP</sub> My mother will not make Op<sub>i</sub> [  $\epsilon_i$  a pumpkin pie or an apple pie]]

Now we can apply this analysis to negative questions. The explanation for the availability of the *yes-no* question reading in (6) and (7) is trivial. These questions have an unpronounced *or not* that contributes a free variable, and it gets bound by the empty *whether* operator. As for the (un)availability of the alternative question reading, in (6), *coffee or tea* can undergo QR to IP, but it cannot QR higher than negation *n't* since *didn't* is in C<sup>0</sup>. The variable introduced by disjunction would be bound by the existential closure introduced by negation and so the alternative question reading is ruled out. In (7), if *coffee or tea* undergoes QR to IP, then it is not under the scope of negation *not* anymore. And so, the free variable of disjunction can be bound by the empty *whether* operator, deriving the alternative question reading.

What if the disjunction phrase is not a generalized quantifier, as in (11)? In (11), the items in disjunction are verbs.

- (11) Did John not dance or sing at the wedding?

We can say that the disjunction V *dance or sing* moves to I<sup>0</sup> at LF. Assuming that negation projects below INFL, the disjunction is above negation at LF. Thus, the empty *whether* will bind the free variable of the disjunctive phrase and so the alternative question reading is derived.

So far, we have seen examples in which QR and LF verb movement can be argued to be involved. Given that these two operations are independently motivated for English, the analysis that assumes LF movement of the disjunction phrase seems attractive (cf., Chomsky 1995, May 1985). But what if the

disjunctive phrase is adjectival, as in (12)? Assume a context in which it is well-known that John didn't date girls with a particular hair color last year.

- (12) Did John not date any blond or red haired girls last year?

The NP *any blond or red haired girls* has to stay lower than negation because the negative polarity item (NPI) *any* has to be licensed by negation.<sup>1</sup> But we have to get the disjunction out of the scope of negation to get the alternative question reading. But then, we would be forced to move just the adjective phrase *blond or red*. However, it is difficult to independently motivate LF adjective movement in English. Consequently, the analysis that assumes the movement of the disjunction phrase cannot be successful.

#### 4 Syntactic Approach 2: Gapping

Schwarz (1999) argues that the syntax of *either...or* can be assimilated to the syntax of coordinate constructions that involve *gapping*. Gapping originally refers to the grammatical process which is responsible for the deletion of a verb in the second coordinate of a conjunctive coordination under identity with the first coordinate, as in (13) (Ross 1970). The deleted material in the second coordinate is called *gap*, and the materials in the second coordinate that have not been deleted are called *remnants*. I represent the gaps with parenthesis.

- (13) a. Tom has a pistol and Dick a sword.  
       Tom has a pistol and Dick (has) a sword. (Schwarz 1999, 30a)  
       b. Some ate beans and others rice.  
       Some ate beans and others (ate) rice. (Schwarz 1999, 30b)

Schwarz points out that gaps may contain more than just a verb, although the finite verb of the second coordinate is always included in the gap, and argues that this fact is comparable with the idea that *either...or* constructions involve gapping.

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<sup>1</sup> Although *yes-no* questions in general license NPIs such as *any* and *ever*, alternative questions do not, as pointed out by Ladusaw (1980) and Higginbotham (1993). For instance, the question in (1a) is ambiguous between a *yes-no* question and an alternative question, whereas the question in (1b) can only be interpreted as a *yes-no* question.

- (1) a. Did John play chess or checkers?  
       b. Did anybody play chess or checkers?

NPIs in alternative questions are allowed only when there is an explicit licenser such as negation, as shown in (12). See Higginbotham (1993) and Han and Siegel (1997) for an account of NPI licensing in *yes-no* questions and alternative questions.

- (14) a. Bill must eat the peaches quickly and Harry slowly.  
Bill must eat the peaches quickly and Harry (must eat the peaches) slowly. (Schwarz 1999, 33a)
- b. \* Bill must eat the peaches quickly and Harry might slowly.  
Bill must eat the peaches quickly and Harry might (eat the peaches) slowly. (Schwarz 1999, 30b)

According to Schwarz, in *either...or* constructions, *either* marks the left periphery of the first disjunct, and some materials in the second disjunct are deleted under identity with the first disjunct.

- (15) a. John either ate rice or beans.  
John either [<sub>VP</sub> ate rice] or [<sub>VP</sub> (ate) beans] (Schwarz 1999, 28a)
- b. Either John ate rice or beans.  
either [<sub>IP</sub> John ate rice] or [<sub>IP</sub> (John ate) beans] (Schwarz 1999, 28b)

One piece of supporting evidence for gapping analysis of *either...or* constructions comes from what Schwarz calls *dangling remnants*. Dangling remnants would occur in the second conjunct of a coordinate construction if you were to have elision in both the first and the second conjunct. Schwarz points out that dangling remnants are prohibited in coordinate constructions, and shows that they are prohibited in *either...or* constructions as well.

- (16) a. \* Some talked about politics and others with me about music.  
some talked (with me) about politics and others (talked) with me about music (Schwarz 1999, 40b)
- b. \* John dropped the coffee and Mary clumsily the tea.  
John (clumsily) dropped the coffee and Mary clumsily (dropped) the tea (Schwarz 1999, 41b)
- (17) a. ?? Either this pissed Bill or Sue off.  
either this pissed Bill (off) or (this pissed) Sue off (Schwarz 1999, 43a)
- b. ?? Either they locked you or me up.  
either they locked you (up) or (they locked) me up (Schwarz 1999, 43c)

Let us then apply Schwarz's gapping analysis of *either...or* constructions to *whether...or* constructions. *Whether* would mark the left periphery of the first disjunct and some materials from the second disjunct would be deleted under identity with the first disjunct. We will see that this analysis makes

correct predictions for *not* questions, but not for *n't* questions. As in Larson (1985), I am assuming that direct *yes-no* questions have the empty *whether* operator in [Spec, CP], and that these questions can have unpronounced *or not*. In (18), the empty *whether* has the option of being associated with *or* in *coffee or tea* or with *or* in the unpronounced *or not*. If it is associated with *or* in *coffee or tea*, the alternative question reading is derived, and if it is associated with *or* in *or not*, then the *yes-no* question reading is derived.

- (18) Did John not drink coffee or tea?
- a. (whether) [did John not drink coffee or tea] [(or not) (did John not drink coffee or tea)]  
 $\approx$  (whether) [did John not drink coffee or tea] [(or did John drink coffee or tea)]
  - b. (whether) [did John not drink coffee] [or (did John not drink) tea]

In (19), the empty *whether* also has the option of associating with the *or* in *coffee or tea* and the *or* in the unpronounced *or not*. But then, both the alternative question reading and the *yes-no* question reading are wrongly predicted to be available for *n't* questions. But we have already seen that only the *yes-no* question reading is available for *n't*-questions.

- (19) Didn't John drink coffee or tea?
- a. (whether) [didn't John drink coffee or tea] [(or not) (didn't John drink coffee or tea)]  
 $\approx$  (whether) [didn't John drink coffee or tea] [(or did John drink coffee or tea)]
  - b. (whether) [didn't John drink coffee] [or (didn't John drink) tea]

In fact, Schwarz points out that gapping analysis is not appropriate for *whether...or* constructions since they allow dangling remnants, unlike *either...or* constructions and other coordinate constructions with gapping.

- (20) a. Did this piss Bill or Sue off?  
 b. Did she turn the test or the homework in?  
 c. Did he gulp one or two down?

The questions in (20) can all have the alternative question reading. However, if we were to apply the gapping analysis to these questions, then we would end up with dangling remnants, which were prohibited from other gapping constructions.

Furthermore, *whether...or* constructions behave differently from other gapping constructions in that while remnants in gapping constructions cannot be in embedded finite clauses, they can be in *whether...or* constructions.

- (21) a. \* The first letter says that you should pay tax and the second letter V.A.T.  
       [the first letter says that you should pay tax] and [the second letter (says [that you should pay) V.A.T]] (Schwarz 1999, 61a)
- b. ?? Either Bill said that Mary was drinking or playing video games.  
       Either [Bill said that Mary was drinking] [or (Bill said [that Mary was) playing video games]]
- (22) a. Did John say that Bill retired or resigned?  
       b. Did John claim that Bill drank coffee or tea?

The questions in (22) all have the alternative question reading available. If this reading was derived via gapping in the second disjuncts in (22), then the remnants would be in embedded finite clauses. But this was impossible in other gapping constructions.

## 5 A Non-Syntactic Approach

We have so far considered and rejected two alternative syntactic approaches to account for the interpretive asymmetry between *n't*-questions and *not*-questions exemplified in (2). One approach was an extension of Larson (1985) to include LF movement of the disjunction phrase, and the other was an extension of Schwarz's (1999) gapping analysis on *either...or* constructions to *whether...or* constructions.

Here, I suggest that we go back to Larson's (1985) analysis, but this time abandon his assumption that negation always introduces unselective existential closure. In other words, as in Larson, let us assume that disjunction scope in *yes-no* questions is determined by the movement of the empty *whether*-operator from the disjunction phrase, but unlike Larson, let us allow this operator to move over negation. This is well-motivated given the fact that disjunction can take scope over negation even in negative declaratives in certain contexts, as was shown in (8).<sup>2</sup>

Allowing the empty *whether*-operator to move over negation allows disjunction to scope over negation in a *not*-question like (7). This correctly permits the alternative question reading that Larson's original account ruled out. But now disjunction can scope over negation in *n't*-questions as well, which

<sup>2</sup>Although negative declaratives with a disjunction phrase do allow a reading where the disjunction takes scope over negation, the fact is that the most easily accessible reading is the one where negation scopes over the disjunction. I leave open the question as to why this should be so.

we know lack the alternative question reading. An explanation of this lack, therefore, cannot come from the syntax alone.

I propose that the the syntax indeed allows both the alternative question and the *yes-no* question readings for *n't*-questions as well as *not*-questions. But the syntax interacts with the interpretive component of the grammar to rule out the alternative question reading for *n't*-questions. That is, the alternative question reading gets ruled out for *n't*-questions because the interpretation contributed by *n't*-questions and the interpretation contributed by alternative questions are incompatible with each other.

Direct negative *yes-no* questions formed with *n't* are associated with a special conventional implicature which cannot be cancelled.

- (23) a. Isn't John intelligent?  
 b. Is John not intelligent?  
 c. Is John intelligent?

*Yes-no* questions formed with *n't* implies that the speaker has a bias towards the answer: s/he expects the answer to be in the affirmative. The question in (23a) is used when the speaker expects the hearer to simply agree that John is intelligent by answering *yes*, or when s/he believes that John is intelligent but s/he is surprised that the hearer does not seem to share this belief. However, *yes-no* questions formed with *not* do not necessarily have this implicature. (23b) can be a polite way of asking whether John is stupid. Moreover, the affirmative *yes-no* question in (23c) does not imply that the speaker has a bias towards an answer either. It is a neutral way of asking whether John is intelligent or not.

As for the alternative questions, they do not imply that the speaker has a bias towards the answer. They presuppose that the answer to the question is either of the alternatives posed by the question, but they do not imply that one answer is more likely to be true than the other.

- (24) Did John drink coffee or tea?

For instance, (24) under the alternative question reading does not imply that the speaker expects that it is more likely that *John drank coffee* or that *John drank tea*.

Now to explain the problem at hand, the conventional implicature associated with *n't*-questions is not compatible with alternative questions. The implicature associated with an *n't*-question is that one particular answer is presupposed to be true. But alternative questions by definition cannot have any conventional signal as to which of the possible answers is presupposed to be true. This means that given an alternative question interpretation, it would

be impossible to calculate the implicature associated with the *n't*-question. I postulate that this conflict cancels the alternative question reading for *n't*-questions rather than canceling the implicature associated with it. In contrast, *not*-questions and affirmative *yes-no* questions are not associated with the implicature that the speaker has a bias towards an answer. And so, they can be interpreted as alternative questions.

Recall from section 3 that indirect *yes-no* questions allow both the *yes-no* question reading and the alternative question reading for *n't*-questions as well as *not*-questions (and also for affirmative indirect *yes-no* questions), as shown in (25) ((25a) and (25b) are repeated from (9)).

- (25) a. I asked John whether he doesn't eat beef or chicken.  
 b. I asked John whether he does not eat beef or chicken.  
 c. I asked John whether he eats beef or chicken.

This is predicted by the non-syntactic approach proposed here. Indirect *n't*-questions are not associated with the implicature that the questioner expects the answer to be in the affirmative, just as in indirect *not*-questions and indirect affirmative *yes-no* questions.

- (26) a. I asked Mary whether John isn't intelligent.  
 b. I asked Mary whether John is not intelligent.  
 c. I asked Mary whether John is intelligent.

Under the non-syntactic approach, the alternative question reading is expected to be available for the indirect *yes-no* questions in (25) because they are not associated with a conventional implicature that is incompatible with the alternative question reading.

## 6 Conclusion

In this paper, I have made a novel observation about negative *yes-no* questions in English: namely, the alternative question reading is available for *not*-questions but not for *n't*-questions. I have argued that the interpretive asymmetry attested between *n't*-questions and *not*-questions cannot be accounted for in syntax. Instead, I have proposed that the syntax makes available both the *yes-no* question and the alternative question readings for *n't*-questions as well as *not*-questions, but the alternative question reading is ruled out for *n't*-questions due to the incompatibility in the interpretation contributed by *n't*-questions and alternative questions. That is, *n't*-questions are associated with the conventional implicature that the speaker expects the answer to be in the

affirmative and this implicature is not compatible with alternative questions. Although the question remains as to why *n't*-questions are associated with this implicature, if the conclusions reached in this paper are correct, the interpretive asymmetry in *n't*-questions and *not*-questions is another case that has implications for the close interaction between structure and interpretation in the grammar.

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Institute for Research in Cognitive Science  
University of Pennsylvania  
3401 Walnut St., Suite 400A  
Philadelphia, PA 19104-6228  
[chunghye@linc.cis.upenn.edu](mailto:chunghye@linc.cis.upenn.edu)