

## Alternative questions as strongly exhaustive *wh*-questions

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Alternative questions, e.g. Did John<sub>F</sub> or Mary<sub>F</sub> come to the party?, are problematic to semantic theories of questions because they look like polar questions and yet behave like *wh*-questions: like polar questions they lack a morphologically marked *wh*-phrase, and like *wh*-questions they can only receive constituent answers. Previous analyses fail to provide a directly compositional account for the types of answers these questions can receive, their distribution under embedding predicates and their varying ability to license NPIs. This paper argues that Alternative questions should be offered an analysis akin to that of strongly exhaustive *wh*-questions, thereby accounting for all of the above phenomena within a unified semantics for questions.

### 1. Introduction

Alternative questions are questions that have the shape of polar (yes/no) questions but function like *wh*-questions (cf. Karttunen 1977, Groenendijk and Stokhof 1984, Krifka 2011, a.o.). Similarly to polar questions, alternative questions lack a morphologically-marked *wh*-phrase. Unlike polar questions, however, the disjuncts must bear focus (cf. for very detailed characterizations of the prosodic characteristics of these types of questions Han and Romero 2004, Pruitt and Roelofsen 2011, Biezma and Rawlins 2013, a.o.). What is striking about these polar-looking questions is that they admit the same types of answers as *wh*-questions do, namely constituent answers. While the polar question in (1a) can only be answered with a “yes” or “no”, the alternative question in (1b) can only be answered by naming Pam or Kelly.

- (1) a. Does Jim love Pam or Kelly?  
Yes.  
b. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
Jim loves Pam.

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In particular, note the parallel between the alternative question in (1b), and the *wh*-question in (2a) in terms of the availability of a constituent answer, (2b):

- (2) a. Which girl does Jim love?  
b. Jim loves Pam.

Alternative and *wh*-questions resemble each other also in terms of what types of answers they cannot receive. As mentioned above, “yes” would not count as an informative answers. Furthermore, negative answers like (3a) are also disallowed, as are answers that name multiple girls, (3b).

- (3) a. #Jim doesn't love either Pam or Kelly.  
b. #Jim loves both Pam and Kelly.

That this is a real effect, note the contrast between (4a) and (4b) with respect to the availability of the answer in (4c). (4b) but not (4a) allows (4c) as an answer.

- (4) a. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
b. Does Jim love Pam<sub>F</sub>, Kelly<sub>F</sub> or both<sub>F</sub>?  
c. Jim loves both.

This contrast is reminiscent of the contrast between *wh*-questions with singular and plural *which*-phrases, respectively, so in this regard, alternative questions of the sort in (4a) behave like singular *which*-questions. Based on these observations, we can deduce that the possible answer set for (4a) (and not (4b)) must be as in (5):

- (5) {Jim loves Pam, Jim loves Kelly}

This paper will pursue an analysis that takes these similarities at face value and it will put forward the claim that alternative questions should be given the same interpretation as strongly exhaustive *wh*-questions: not only in terms of the answer set they denote, but, crucially so, also in terms of the underlying structure — specifically, by analyzing the disjunctive phrase as a *wh*-phrase that obligatorily associates with *only*.

One prediction of such an approach is that NPIs should exhibit the same contrast when they appear in alternative questions as they do in *wh*-questions. Namely, that the question receives a non-rhetorical reading only if the NPI is c-commanded by the *wh*-trace at LF, an observation due to Han and Siegel (1997).

- (6) a. Which girl won anything in the raffle?  
b. \*Which girl did anyone kiss?
- (7) a. Did Pam<sub>F</sub> or Kelly<sub>F</sub> win anything in the raffle?  
b. \*Did anyone kiss Pam<sub>F</sub> or Kelly<sub>F</sub>?

The paper is organized as follows. In section 2 I provide some background on the syntax and semantics of *wh*-questions, followed by a quick overview of previous approaches to alternative questions in section 3. In section 4 I propose a possible analysis of alterna-

tive questions as *wh*-questions but conclude that this analysis cannot be enough. Section 5 outlines a new analysis of exhaustivity in *wh*-questions (Nicolae 2013, 2014), and section 6 revises the analysis of alternative questions in section 4. The last two sections conclude with some predictions and open problems.

## 2. Background on *wh*-questions

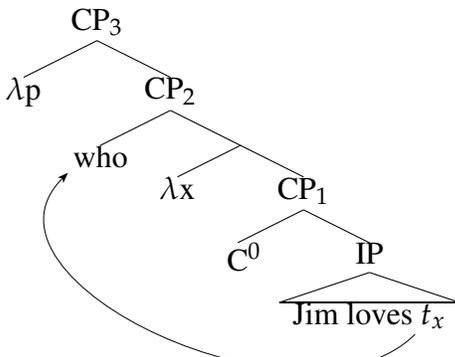
A standard theory of questions that I will follow takes *wh*-questions to denote sets of propositions, namely the set of possible answers to the respective question (cf. Hamblin 1973, Karttunen 1977).<sup>1</sup> For example, in a situation with two individuals, the set of propositions denoted by the question in (8a) will be (8b).

- (8) a. Who does Jim love?  
 b. {Jim loves Pam, Jim loves Kelly, Jim loves Pam and Kelly}

I follow Karttunen (1977) and take *wh*-words to be analyzed as existential quantifiers.

- (9) a.  $[[\text{who}]] = \lambda P_{\langle e,t \rangle} . \exists x [\text{person}(x) \wedge P(x)]$   
 b.  $[[\text{which}]] = \lambda P_{\langle e,t \rangle} . \lambda Q_{\langle e,t \rangle} . \exists x [P(x) \wedge Q(x)]$

There are three crucial ingredients needed to derive the set in (8b): (i) *wh*-phrases are existential quantifiers that furthermore bear a [WH] feature, (ii) the interrogative C head carries a [WH] feature that drives the *wh*-movement of the *wh*-phrase, and (iii) this C head semantically provides the shift from a declarative to an interrogative meaning, mediated through the formation of a proto-question. Consider, for example, the underlying representation of the question in (8a).

- (10) a. 
- b. (i)  $CP_1: p = \lambda w. \text{Jim loves } x \text{ in } w$   
 (ii)  $CP_2: \exists x[\text{person}(x) \wedge p = \lambda w. \text{Jim loves } x \text{ in } w]$   
 (iii)  $CP_3: \lambda p. \exists x[\text{person}(x) \wedge p = \lambda w. \text{Jim loves } x \text{ in } w]$

By taking questions to denote the set of possible answers we need a way to pick out the answer in a given world, which we do via an answer-hood operator. Let's assume the answer-

<sup>1</sup>One could just as easily assume that questions denote propositional concepts, in the spirit of Groenendijk and Stokhof 1984. Nothing about the argument would differ.

hood operator in (11) from Dayal 1996, which picks out the maximally true proposition within the question denotation and presupposes that there is a proposition in this set that is true in the world of evaluation.

- (11)  $[[\text{ANS}]] = \lambda Q. \lambda w. \iota p [p(w) \wedge Q(p) \wedge \forall p' \in Q (p'(w) \rightarrow p \subseteq p')]$   
*defined iff*  $\exists p [p(w) \wedge Q(p) \wedge \forall p' \in Q (p'(w) \rightarrow p \subseteq p')]$ .

In the example at hand, the question denotation will be as in (12a). If we assume that in the actual world Jim loves Pam, applying the answer operator in (11) to the question denotation will deliver the proposition in (12b).

- (12) a.  $[[Q]] = \{\text{Jim loves Pam, Jim loves Kelly, Jim loves Pam and Kelly}\}$   
 b.  $\text{ANS}(Q)(w_0) = \lambda w. \text{Jim loves Pam in } w$

### 3. Previous approaches to alternative questions

There are two main approaches to the analysis of alternative questions: (i) as disjunctions over polar questions (cf. Karttunen 1977), and (ii) as questions involving disjunctions over propositions (cf. Groenendijk and Stokhof 1984, Han and Romero 2004). Below I provide a cursory overview of these two kinds of approaches. I strongly encourage the interested reader to refer to the original texts for the complete details of these analyses.

The Karttunen-style approaches take alternative questions to be analyzed as disjunctions over polar questions. The answer set to a question such as (13) is going to denote the union of the answer sets to the two polar questions that are being disjoined:

- (13) Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
 a. Does Jim love Pam? or Does Jim love Kelly?  
 b.  $\{\text{Jim loves Pam, Jim doesn't love Pam, Jim loves Kelly, Jim doesn't love Kelly}\}$

This approach immediately runs into the problem of how and why the negative propositions do not count as appropriate answers, i.e. (14), given that these propositions belong to the answer set.

- (14) \*Jim doesn't love Pam.

Another prediction is that alternative and polar questions should behave similarly in all respects. One such case would be with respect to the distribution of NPIs. Since NPIs are acceptable in both subject and object position in polar questions, the Karttunen-style approach would predict NPIs to also be acceptable in both subject and object positions in alternative questions. That doesn't seem to hold, however, as shown below:<sup>2</sup>

- (15) Polar questions  
 a. Did anyone sign up for a presentation?  
 b. Did you send her anything?

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<sup>2</sup>The results of an ongoing experiment provide empirical support for these contrasts.

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- (16) Alternative questions
- a. \*Did anyone kiss Pam<sub>F</sub> or Kelly<sub>F</sub>?
  - b. Did Pam<sub>F</sub> or Kelly<sub>F</sub> kiss anyone?

A second approach treats alternative questions as questions involving clausal disjunction. One way to implement such an analysis within the current framework is to assume that unlike in *wh*-questions where we quantify in the *wh*-phrase, e.g. (17a), in disjunctive questions we quantify in the disjunction of two clauses, e.g. (17b). The best representative of this type of approach is Han and Romero 2004, whose analysis involves both movement and ellipsis, following in part Larson (1985) and Schwarz (1999).

- (17) a. Which of Pam and Kelly does Jim love?  
 $\lambda p. \exists x \in \{\text{Pam, Kelly}\} \wedge p = \lambda w. \text{Jim loves}_{sw} x$
- b. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
 $\lambda p. \exists p \in \{\text{Jim loves Pam, Jim loves Kelly}\}$

Such accounts take the underlying representation of alternative questions to be the same, regardless of whether the question involves a disjunction over the object, verb, or subject (minus the ellipsis site). In other words, all alternative questions are uniformly analyzed as disjunctions of propositions. All three questions below will, at one point in the derivation, involve the disjunction of two propositions.

- (18) a. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
b. Did Pam<sub>F</sub> or Kelly<sub>F</sub> win the raffle?  
c. Did Pam [make a salad]<sub>F</sub> or [bake a cake]<sub>F</sub>?

This type of approach is successful at delivering the right type of answer set as it only contains the positive propositions, thus avoiding the problem encountered by the previous approach. It does, however, fail to account for NPI licensing, and in fact make the distinct prediction that there should be no subject-object asymmetries of the sort we see in (16).

#### 4. A new account of alternative questions

In providing a new analysis for alternative questions, we will want to derive the fact that alternative questions denote two-membered answer sets, or as many as there are disjuncts. Crucially, we will need an approach that can exclude the negative answer from the question denotation, similarly to the second type of approach presented above. We will also want the answer set to exclude the plural member, similarly to what happens with singular *which*-questions. The new analysis should also be able to capture the fact that which constituents are being disjoined plays a role in the underlying representation.

A first attempt will be to claim that alternative questions are, underlyingly, *wh*-questions with the domain of the *wh*-phrase restricted to the individual members of the disjunction. This would amount to saying that the questions in (19) have the same underlying representations.

- (19) a. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
 b. Which girl does Jim love?  
*the domain of girls restricted to Pam and Kelly*

In order to derive this compositionally, we need two crucial pieces. Semantically, we want to take the disjunction to be interpreted as a *wh*-term, so as to deliver the existential force. Syntactically, we need the disjunction to undergo the same movement as a *wh*-term.

The semantic requirement is straightforward and independently motivated by the behavior of agreement with disjunction in Russian (Ivlieva 2012). In order to show that the disjunctive phrase is interpreted as a *wh*-phrase, it will be enough to argue that the disjunctive phrase has the same semantics as an existential quantifier given that we are already taking for granted the fact that *wh*-phrases are existential quantifiers at their core. I follow Ivlieva (2012) and claim that disjunction is a generalized quantifier consisting of a covert existential quantifier and a predicate, as in (20a). Note that this delivers the same meaning for a disjunction and the corresponding existential quantifier phrase, (20b).

- (20) a.  $\lambda Q. \exists x[(x=Pam \vee x=Kelly) \wedge Q(x)]$     b.  $\lambda Q. \exists x[(x=Pam \vee x=Kelly) \wedge Q(x)]$
- 
- $\exists$                       *Pam or Kelly*                      *some*                      *girl*  
 $\lambda P. \lambda Q. \exists x[P(x) \wedge Q(x)]$      $\lambda x. x=P \vee x=K$      $\lambda P. \lambda Q. \exists x[P(x) \wedge Q(x)]$      $\lambda x. x=P \vee x=K$

*Wh*-terms have the same meaning as existential quantifiers, which in turn have the same meaning as disjunctive phrases:

- (21) a.  $[[\text{Pam or Kelly}]] = \lambda Q. \exists x [x \in \{\text{Pam, Kelly}\} \wedge Q(x)]$   
 b.  $[[\text{some girl}]] = \lambda Q. \exists x [x \in \{\text{Pam, Kelly}\} \wedge Q(x)]$   
 c.  $[[\text{which girl}]] = \lambda Q. \exists x [x \in \{\text{Pam, Kelly}\} \wedge Q(x)]$

The syntactic requirement is that disjunctions, like existential quantifiers, can also enter in a relation with the *wh* comp, i.e. they come in a WH variant, meaning that disjunctive phrases have a +WH and -WH incarnation, similarly to existential quantifiers.

- (22) a.  $\begin{matrix} & \wedge & \\ -WH & & +WH \\ \text{some} & & \text{which} \end{matrix}$                       b.  $\begin{matrix} & \wedge & \\ -WH & & +WH \\ \text{or} & & \text{or} \end{matrix}$

The only difference is that *or*<sub>+WH</sub> undergoes covert *wh*-movement while regular *wh*-words move overtly.<sup>3</sup> Interestingly enough, we find evidence cross linguistically that languages make a morphological distinction between these two varieties of *or*. There are some languages that employ a different type of disjunction for disjunctive questions suggesting that this analysis is on the right track:

<sup>3</sup>Or at least it hasn't been the case that an instance of overt *wh*-movement of a disjunction has been observed cross-linguistically.

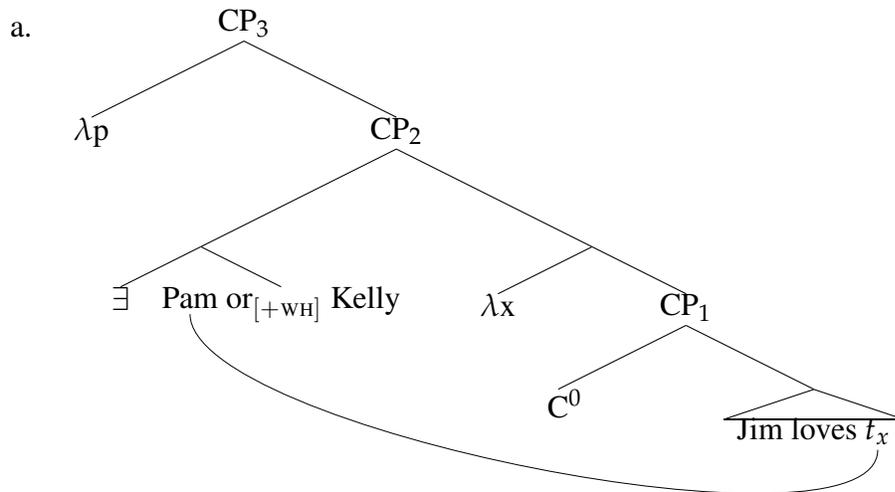
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- (23) Finnish (Kaiser 2004)
- a. Huomasiko Pekka miehen **tai** naisen?  
 Noticed-Q Pekka-Nom man-Acc or woman-Acc  
 ‘Did Pekka notice man or woman?’ Y/N or DisjQ
- b. Huomasiko Pekka miehen **vai** naisen?  
 Noticed-Q Pekka-Nom man-Acc or woman-Acc  
 ‘Did Pekka notice man or woman?’ only DisjQ
- (24) Basque (Saltarelli 1988)
- a. Te-a **edo** kafe-a nahi duzu?  
 tea-art or coffee-art want you.it  
 ‘Do you want tea or coffee?’ Y/N Q
- b. Te-a **ala** kafe-a nahi duzu?  
 tea-art or coffee-art want you.it  
 ‘Do you want tea or coffee?’ DisjQ

The same is also claimed to hold in Mandarin (Li and Thompson 1981), Egyptian Arabic (Winans 2012) and Polish (C. Mayr p.c.).

Putting all of this together, the proposed underlying structure for alternative questions comes out as in (25), where the entire disjunctive phrase moves to the SpecCP, similarly to a *wh*-phrase.

- (25) Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?



- b. (i) CP<sub>1</sub>: p = λw. Jim loves x in w  
 (ii) CP<sub>2</sub>: ∃x ∈ {Pam, Kelly} ∧ p = λw. Jim loves x in w  
 (iii) CP<sub>3</sub>: λp. ∃x ∈ {Pam, Kelly} ∧ p = λw. Jim loves x in w

## 4.1 Taking stock

In this section we saw how to derive the answer set for alternative questions in a similar fashion to other *wh*-questions. No additional assumptions had to be made as we already have independent evidence from Russian for an account of disjunctive phrases as existentials, and cross-linguistic evidence for the existence of two disjunctive phrases, a +WH and a -WH. This analysis also accounts for the fact that neither a negative answer nor an answer that names both girls counts as appropriate. This comes for free by taking the set of propositions to be determined by the quantificational domain of the disjunction, which includes only the individual disjuncts, similarly to questions involving singular *which*-phrases.

## 4.2 A problem

This account, however, predicts that alternative questions should exhibit the same distribution as *wh*-questions. Let's start by considering what happens when you embed a *wh*-question under *know*. Consider the situation below:

- (26) a. Context: Bill ratted on John and Mark didn't rat on him.  
b. John's beliefs: Bill ratted on him and Mark didn't.

In this situation, we can claim either of the following:

- (27) a. John knows who ratted on him.  
b. John knows whether Bill<sub>F</sub> or Mark<sub>F</sub> ratted on him.

However, it's been argued that *know* can also allow for weaker readings of its embedded *wh*-question (cf. Guerzoni and Sharvit (2007) among others). So consider now a slightly different situation:

- (28) a. Context: Bill ratted on John and Mark didn't rat on him.  
b. John's beliefs: Bill ratted on him and he isn't sure about Mark.

In this scenario it seems like the parallel from above doesn't hold anymore:

- (29) Bill, you should probably run away because ...  
a. John knows who ratted on him.  
b. #John knows whether you<sub>F</sub> or Mark<sub>F</sub> ratted on him.

We see then that while a *wh*-question can receive two different interpretation (i.e. be associated with two different types of answers), an alternative question cannot, given its unacceptability in a context in which the equivalent *wh*-question is acceptable. In conclusion, it appears that while *wh*-questions are ambiguous, alternative questions are not.

Based on this observation we can conclude that alternative questions have the same structure as *wh*-questions but only under a particular interpretation, an interpretation which has been dubbed the strongly exhaustive interpretation. In the next section we turn to these types of *wh*-questions.

## 5. Weakly versus strongly exhaustive *wh*-questions

A long standing observation is that a *wh*-question can receive one of two possible interpretations: a weakly exhaustive (WE) and a strongly exhaustive (SE) interpretation (cf. Heim 1994, Beck and Rullmann 1999, Guerzoni and Sharvit 2007, a.o.). The easiest way to exemplify this distinction is by looking at a particular scenario, so consider a situation in which Bill ratted on John and Mark didn't rat on him. On the strongly exhaustive interpretation, for John to know who ratted on him, he needs to stand in the know relation to the proposition "Bill and nobody else ratted on him," as in (30a). However, the claim is that one could say of John that he knows who ratted on him even if he stands in the know relation to the weaker proposition "Bill ratted on him," i.e. if he doesn't know anything about Mark. This is shown in (30b).

- (30) John knows who ratted on him.
- a.  $\xrightarrow{SE}$  John knows that Bill and nobody else ratted on him.
  - b.  $\xrightarrow{WE}$  John knows that Bill ratted on him. (no knowledge about Mark)

The fact that the SE reading is not the only possible reading can be further reinforced by the fact that there are predicates, like *surprise*, that only allow for the WE reading of embedded questions. Consider the following:

- (31) Kevin was surprised by who came to the party.

How can we check that *surprise* only embeds WE readings? The idea is that if *surprise* were to embed SE readings, then in a scenario in which Kevin is surprised by the SE answer, (31) should be true. But one can imagine situations in which (31) is judged as false despite the fact that Kevin is surprised by the SE answer to the question. Such examples involve cases where Kevin's expectations are at odds only with the SE answer, and not with the WE answer. Consider a situation in which Angela and Pam went to the party, but Kelly didn't. Furthermore, assume that Kevin expected for all three women to go the party. In this situation, (32a), which counts as the answer to the question on its WE interpretation, would not be surprising for Kevin while (32b), the SE answer, would count as surprising.

- (32) a. WE-ANS = Angela and Pam showed up ← not surprising  
 b. SE-ANS = Angela, Pam and nobody else showed up ← surprising

Since in this situation (32a) is true and yet (32b) is not, we can conclude that *surprise* does not allow for a strongly exhaustive interpretation of its embedded question.

- (33) a. Kevin was surprised that Angela, Pam and nobody else showed up. ← true  
 b. Kevin was surprised by who came to the party. ← false

Previous analyses derive the WE/SE ambiguity by positing different answer-hood operators that act on the set of answers and return one of the two types of answers (cf. Heim 1994, Beck and Rullmann 1999). In previous work (Nicolae 2013, 2014) I have argued that these analyses fail to account for the distribution of NPIs and I have proposed a different

account of the WE/SE ambiguity of *wh*-questions. For reasons of space I will only present this analysis as I believe it offers a more fine-grained account of the facts surrounding NPIs without losing any predictive power.

### 5.1 An analysis of strong exhaustivity in *wh*-questions

The analysis I proposed in Nicolae (2013, 2014) goes as follows: strength of exhaustivity should be encoded at the level of the question nucleus, rather than in different answer operators. The way I claim this takes place is via a silent *only*-like operator that adjoins to the question nucleus and associates with the *wh*-trace, delivering the set of SE answers in (34b):

- (34) Which woman does Jim love?
- a.  $Q_{we} = \{\text{Jim loves Pam, Jim loves Kelly}\}$
  - b.  $Q_{se} = \{\text{Jim loves only Pam, Jim loves only Kelly}\}$

*Wh*-questions can thus be viewed as having two possible LFs:

- (35) a. LF- $Q_{we}$ :  $[\lambda p [\text{which girl } [\lambda x [C^0 [IP t_x \text{ loves Pam } ]]]]]$   
 b. LF- $Q_{se}$ :  $[\lambda p [\text{which girl } [\lambda x [C^0 [IP_2 (\text{only}) [IP_1 t_x \text{ loves Pam } ]]]]]]$

This approach to exhaustivity in questions allows us to derive the distribution of NPIs in *wh*-questions straightforwardly, namely the fact that NPIs are acceptable in questions that receive a SE interpretation, but not in those that receive a WE interpretation (Guerzoni and Sharvit 2007). One way to illustrate this is by looking at how NPIs behave in the same question when embedded under different predicates, namely those like *know* which allow for a SE interpretation of its embedded question, versus those like *surprise* which only allow for a WE interpretation.

- (36) questions receiving SE interpretations
- a. Mary knows which boys brought her *any* gifts.
  - b. John wonders who has *ever* been Paris.
  - c. Chris asked me who took *any* linguistics classes.
- (37) questions receiving WE interpretations
- a. \*It surprised Mary which boys brought her *any* gifts.
  - b. \*It amazed her which girls had *ever* participated in a dance competition.
  - c. \*Jay was disappointed by who sold *any* antique books.

The argument is that the acceptability of NPIs in *wh*-questions should be tied directly to their acceptability in the declaratives corresponding to the question IP, which is what (38) illustrates.

- (38) Who brought her any gifts?
- a. Only Kevin<sub>[F]</sub> received any gifts. SE question IP
  - b. \*Kevin received any gifts. WE question IP

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Within a framework that takes NPI licensing to be governed by the monotonicity of its environment (cf. Krifka 1995, Lahiri 1998, Chierchia 2013), the analysis in Nicolae 2013, 2014 of the WE/SE ambiguity in questions can explain the distribution of NPIs in *wh*-questions on a par with the explanation we provide for their distribution in declaratives. NPIs are not acceptable in WE questions because the question nucleus creates an upward entailing environment, whereas NPIs are acceptable in SE questions because the question nucleus creates a (Strawson) downward entailing environment (cf. von Stechow 1999).

### 6. The revised analysis of alternative questions

So where do we stand? We saw evidence from embedding under *know* suggesting that alternative questions pattern with strongly exhaustive *wh*-questions. Specifically, we saw that alternative questions cannot be embedded under *know* in a context in which a weakly exhaustive *wh*-question could be embedded (e.g. in a context in which you are ignorant about one of the disjuncts). Based on this evidence we concluded that alternative questions should be analyzed as strongly exhaustive *wh*-questions.

Given the account for strongly exhaustive *wh*-questions I outlined in the previous section, we can now see how it carries over to the case of alternative questions:

- (39) a. Does Jim love Pam<sub>F</sub> or Kelly<sub>F</sub>?  
 b.
- 
- c. {Jim loves only Pam, Jim loves only Kelly}

So in a world in which Jim loves only Pam, the analysis offered here correctly predicts that the following inference pattern should hold:

- (40) Kevin knows whether Jim loves Pam<sub>F</sub> or Kelly<sub>F</sub>.  
 → Kevin knows that Jim loves only Pam.

### 7. Predictions

Under an analysis that treats alternative questions on a par with strongly exhaustive *wh*-questions, their distribution in embedded contexts is predicted to be the same. Specifically, since predicates like *surprise* cannot embed SE *wh*-questions, we expect the same to be true of alternative questions. None of the predicates that embed exclusively WE questions allow alternative questions in their scope, as shown below for three such predicates.

- (41) a. \*Kevin was surprised by whether Jim loves Pam<sub>F</sub> or Kelly<sub>F</sub>.  
 b. \*It amazed her whether Angela<sub>F</sub> or Meredith<sub>F</sub> filled out the paperwork.  
 c. \*Jim was disappointed by whether Angela kissed Andy<sub>F</sub> or Dwight<sub>F</sub>.

Another very interesting prediction we make is that NPIS should be licensed in alternative questions, similarly to what is the case for NPIS in *wh*-questions which receive a SE interpretation. We see this below in (42).

- (42) a. Did Erin<sub>F</sub> or Angela<sub>F</sub> win anything in the raffle?  
 b. Who won anything in the raffle?

Furthermore, we expect NPIS in alternative questions to exhibit the same type of subject-object asymmetries they exhibit in *wh*-questions. Namely, we expect the NPI to be licensed in an alternative question only if the disjunction phrase c-commands the NPI in their base positions. This prediction also turns out to be correct.

- (43) a. (i) Did Erin<sub>F</sub> or Angela<sub>F</sub> win anything in the raffle?  $or_{[+wh]} > \text{NPI}$   
 (ii) \*Did anyone kiss Erin<sub>F</sub> or Angela<sub>F</sub>?  $\text{NPI} > or_{[+wh]}$   
 b. (i) Which girl won anything in the raffle?  $wh > \text{NPI}$   
 (ii) \*Which girl did anyone kiss?  $\text{NPI} > wh$

Lastly, there are cases like (44a) where the two phrases being disjoined are clearly larger than a DP. What we are interested in are examples where the NPI occurs within one of these larger disjuncts, as in (44b). The point here is that such questions are significantly worse than their minimal pair involving a smaller disjunction, e.g. (44c).

- (44) a. Did Jim<sub>F</sub> win the race or Kim<sub>F</sub>?  
 b. ??Did Jim<sub>F</sub> win any race or Kim<sub>F</sub>?  
 c. Did Jim<sub>F</sub> or Kim<sub>F</sub> win any race?

The current analysis takes this to be due to the fact that the NPI occurs within the associate of *only*, i.e. within one of the clauses being disjoined. The point is that as soon as the disjunction occurs over constituents that contain the NPI, the NPI ends up being interpreted within the associate of the silent *only* I posited for SE and alternative questions. For reasons similar to why NPIS are ruled out from the focus associate of overt *only*, the NPI cannot survive in this position and it's thus expected to give rise to unacceptability (cf. Nicolae 2013 for a much more detailed explanation).

## 8. Conclusion and open questions

The goal of this paper was to argue for an analysis of alternative questions that treats them on a par with *wh*-questions, and specifically, strongly exhaustive *wh*-questions. I claimed that these types of questions not only give rise to the same set of answers, but that they in fact should be analyzed as having the same underlying semantic structure. Namely, I proposed to analyze the disjunctive phrase as a *wh*-phrase, both in terms of its semantic contribution as well as its syntactic behavior. Using data from embedding under predi-

cates like *know* I showed that alternative questions do not exhibit the same ambiguity that *wh*-questions do: alternative questions resemble a particular type of *wh*-questions, namely strongly exhaustive questions.

This proposal leaves open a number of questions, questions that previous proposals have been unsuccessful at addressing as well. One issue that instantly arises from the current analysis is why alternative questions are strongly exhaustive across the board and don't exhibit the same ambiguity we see with *wh*-questions. One possibility worth pursuing in further work on this topic is to consider the parallel with *either ... or* which, unlike *or*, needs to be construed exhaustively. If one could argue convincingly that the disjunction we have in questions is more like *either ... or* than the declarative *or*, we would be a step closer to understanding this contrast.

Another big issue in the semantics of alternative questions regards the incompatibility of alternative and *wh*-questions. Nothing in the present analysis can predict the ungrammaticality of the examples in (45):

- (45) a. \*Which boy did Pam<sub>F</sub> or Kelly<sub>F</sub> kiss?  
b. \*Which boy kissed Pam<sub>F</sub> or Kelly<sub>F</sub>?

Possibly the most lingering question, however, concerns the status of *whether*. At present, I have nothing enlightening to say about this other than to suggest that *whether* is a dummy element whose function is simply that of a repair strategy for embedded [+WH] CPs whose specifier positions are phonologically null. In other words, we would take *whether* to be devoid of any semantic contribution.

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