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Chung-hye Han
Simon Fraser University

Maribel Romero
University of Pennsylvania

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Ellipsis and Movement in the Syntax of *Whether/Q...or* Questions*

Chung-hye Han and Maribel Romero

Simon Fraser University and University of Pennsylvania

1 Introduction

In English, a non-*wh*-question may have a disjunctive phrase explicitly providing the choices that the question ranges over. For example, in (1), the disjunction *or not* indicates that the the choice is between the positive and the negative polarity for the relevant proposition, as spelled out in the *yes/no* (*yn*)-question reading (2) and in the answers (2a,b). Another example is (3). The disjunction in (3) can be understood as providing the choices that the question ranges over, hence giving rise to the alternative (alt-)reading in (4) and eliciting the answers in (4a,b). (Cf. Karttunen (1977) and Higginbotham (1993) for the semantics of *yn*/alt-questions)

(1) Did John eat beans or not?

(2) "Is it true or false that John ate beans?"
   a. Yes, John ate beans.
   b. No, John didn't eat beans.

(3) Did John eat beans or rice?

(4) "Which of these two things did John eat: beans or rice?"

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a. John ate beans.
b. John ate rice.

The syntax of this type of disjunctive non-*wh*-questions, which also occur embedded (see (5)-(6)), is the topic of the present paper. Note that (3) and (6) also have a *yn*-reading, spelled out in (7). Under this reading, the question choice does not range over the overt disjuncts *beans* and *rice*, but over a positive and negative polarity not explicitly expressed. Although it is beyond the scope of this paper to determine the syntax of questions without overt associated disjunction, we will briefly sketch possible analyses of them that are compatible with the main claims of this paper.

(5) I wonder [whether John ate beans or not].
   a. *Yn*-reading: "I wonder whether it is true or false that John ate beans."

(6) I wonder [whether John ate beans or rice].
   a. Alt-reading: "I wonder which of these two things John ate: beans or rice."

(7) *Yn*-reading for (3) and (6):
"Is it true or false that John ate any of these two things, beans or rice?"
   a. Yes, John ate beans or rice.
   b. No, John didn't eat beans or rice.

Throughout this paper, we will call both matrix and embedded non-*wh*-questions with an associated disjunctive phrase *whether/Q...or* constructions. Q corresponds to covert *whether*. Positing a covert *whether* in matrix non-*wh*-questions is motivated by the fact that there are languages that allow overt *whether* in matrix non-*wh*-questions. Examples from Early Modern English and Yiddish are given in (8) and (9).

(8) Early Modern English (examples taken from Radford (1997): pg. 295)
   a. **Whether** had you rather lead mine eyes or eye your master's heels? (Mrs Page, *Merry Wives of Windsor*, III.ii)
   'Would you rather lead my eyes or eye your master's heels'
   b. **Whether** dost thou profess thyself a knave or a fool? (Lafeu, *All's Well that Ends Well*, IV.v)
   'Do you profess yourself (to be) a knave (= scoundrel) or a fool?'

(9) Yiddish
   a. (Tsi) reykhert Miryam?
   whether smokes Miryam
   'Does Miryam smoke?'
   b. Shmuel hot mikh gefregt, tsi Miryam reykhert.
   Shmuel has me asked whether Miryam smokes
   'Shmuel asked me whether Miryam smokes.'

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There have been two main approaches to the syntax of disjunctive *Operator...or* constructions in the literature. Larson (1985) assimilates the syntax of *whether/Q...or* constructions to *either...or* constructions as in (10), arguing that in both, *either* or *whether/Q* is base-generated adjacent to the disjunctive phrase and that it undergoes movement.

(10) Either John ate beans or rice.

Schwarz (1999), on the other hand, showed that the syntax of *either...or* can better be accounted for if we assume that the second disjunct is a clause with a particular type of ellipsis, namely gapping. Unfortunately, he was not able to extend the ellipsis analysis to *whether/Q...or*, because he found certain asymmetries between *whether/Q...or* structures and the type of ellipsis allowed in *either...or*.

In this paper, we propose that the syntax of *whether/Q...or* questions involves ellipsis of the type that has been argued to exist for *either...or* constructions. This is illustrated in (11) for *whether/Q...or* and (12) for *either...or*. We also argue, with Larson, that *whether/Q* undergoes movement. We attribute the apparent asymmetries between *whether/Q...or* and *either...or* constructions to the fact that *whether/Q* is a *wh*-phrase that can undergo movement, while *either* is not.

(11) a. (Q/whether) Did John eat beans or rice?

b. (Q/whether) [did John eat beans] or [~~did John eat~~ rice]

(12) a. Either John ate beans or rice.

b. either [John ate beans] or [~~John ate~~ rice]

Three arguments for our combined ellipsis/movement analysis of alt-questions will be presented: (i) English *whether/Q...or* questions present at the same time movement characteristics (sensitivity to islands, contrast with *if*) and ellipsis traits (Focus pattern on the disjuncts); (ii) certain asymmetries between *whether/Q...or* and *either...or* are resolved, permitting for a unified account of the two types of constructions; and (iii) crosslinguistic data on the surface string syntax of Subject-Object-Verb (SOV) languages support the ellipsis account in general and, indirectly, the movement account for English.

This paper is organized as follows. In sections 2 and 3, we will briefly present the main points of Larson's movement account and Schwarz's ellipsis account. We will then present our analysis of alt-questions in section 4, a combined approach of movement and ellipsis analyses. It will be shown that the new account explains the asymmetries between *whether/Q...or* and *either...or* and the aforementioned mixed characteristics of *whether/Q...or* questions. Section 5 presents further supporting evidence for the ellipsis analysis of alt-questions from languages with canonical SOV word order: Hindi and Korean. We conclude with some discussion on alt-questions involving right-node raising, in section 6.

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2 Larson's Movement Account

According to Larson (1985), in sentences with *either...or*, *either* originates adjacent to a disjunctive phrase, and moves to higher up in the clause, determining the scope of disjunction. For instance, in (13a), *either* originates adjacent to *rice or beans*, moving to the surface position adjacent to VP. In (13b), *either* originates adjacent to *rice or beans*, moving to the surface position adjacent to IP.

(13) a. John either ate rice or beans.
John either$_i$ ate t$_i$ [$_{NP}$ rice] or [$_{NP}$ beans]

b. Either John ate rice or beans.
Either$_i$ John ate t$_i$ [$_{NP}$ rice] or [$_{NP}$ beans]

Larson extends the movement analysis of *either...or* constructions to non-*wh*-questions. He argues that a non-*wh*-question has a question operator: *whether* or null *Q*. This operator originates from a disjunction phrase and moves to [Spec, CP], marking the scope of disjunction. Moreover, this type of question may have an overt or an unpronounced disjunction phrase *or not*. If the disjunction phrase from which the *whether/Q* originates is the overt or the unpronounced *or not*, then the *yn*-question reading is derived. Otherwise, the alt-question reading is derived. For instance, the non-*wh*-question in (14) can have either a *yn*-question reading or an alt-question reading. Under the *yn*-question reading, the *whether/Q* operator originates from *or not* and moves to [Spec, CP], as represented in (14a). This representation makes available the alternatives *John drank coffee or tea* and *John didn't drink coffee or tea* as answers. Under the alt-question reading, the *whether/Q* operator originates from the disjunction phrase *coffee or tea* and moves to [Spec, CP], as represented in (14b). This representation makes available the alternatives *John drank coffee* and *John drank tea* as answers.

(14) Did John drink coffee or tea?

a. *yn*-question:
Op$_i$ (ϵ_i or not) [did John drink [coffee or tea]]
{John drank coffee or tea, John didn't drink coffee or tea}

b. alt-question:
Op$_i$ [did John drink [ϵ_i coffee or tea]]
{John drank coffee, John drank tea}

Supporting evidence for the proposal that *whether/Q* moves from a disjunction phrase to [Spec, CP] comes from the fact that non-*wh*-questions that have a disjunction phrase inside an island do not have the alt-question reading available.

(15) Do you believe the claim that Bill resigned or retired?

a. *yn*-question:
Op$_i$ (ϵ_i or not) [do you believe [$_{NP}$ the claim that Bill resigned or retired]]

b. * alt-question:
Op$_i$ [do you believe [$_{NP}$ the claim that Bill [ϵ_i resigned or retired]]]

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In (15), the disjunctive phrase *resigned or retired* is inside a complex NP. The alt-question reading is not available since the empty operator would have to move out of an island to generate this reading, as represented in (15b). But the *yn*-question reading is available, since under this reading the empty operator is moving from the unpronounced *or not*, which is not inside an island. This reading is represented in (15a).

3 Schwarz's Ellipsis Account

Schwarz (1999) argues that the syntax of *either...or* can be assimilated to the syntax of coordinate constructions that involve *gapping*, a type of ellipsis. 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 (16) (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*.

(16) 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, as shown in (17a), although the finite verb of the second coordinate is always included in the gap, as illustrated by the ungrammaticality of (17b). He argues that this fact is comparable with the idea that *either...or* constructions involve gapping.

(17) 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. This is represented in (18).

(18) a. John either ate rice or beans.
John either [$_{VP}$ ate rice] or [$_{VP}$ ~~ate~~ beans] (Schwarz 1999, 28a)

b. Either John ate rice or beans.
either [$_{IP}$ John ate rice] or [$_{IP}$ ~~John ate~~ beans] (Schwarz 1999, 28b)

A compelling 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

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both the first and the second conjunct, resulting in an unbalanced ellipsis. Schwarz points out that dangling remnants are prohibited in gapping constructions, as in (19), and shows that they are prohibited in *either...or* constructions as well, as in (20).

(19) 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)

(20) 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)

Larson's movement account on the other hand has nothing to say about the fact that examples with dangling remnants are degraded.

Schwarz however did not extend the gapping analysis to alt-questions because gapping allowed in *whether/Q...or* constructions appears to be different from *either...or* constructions. First of all, *whether/Q...or* constructions seem to allow dangling remnants, unlike *either...or* constructions and other coordinate constructions with gapping.

(21) 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 (21) can all have the alt-question reading. But 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.

Second, *whether/Q...or* constructions behave differently from other gapping constructions in that while elided materials cannot spread across matrix and embedded finite clauses, as shown in (22), they seem to be able to in *whether/Q...or* constructions, as in (23).

(22) 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].

(23) a. Did John say that Bill retired or resigned?

b. Did John claim that Bill drank coffee or tea?

The questions in (23) all have the alt-question reading available. If this reading was derived via gapping in the second disjuncts in (23), then the ellipsis would spread beyond a finite clause boundary. But this is impossible in other gapping constructions.

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4 Our Proposal: Combination of Movement and Ellipsis

In this section, we first show that *whether* is in [Spec, CP], being a *wh*-phrase, as opposed to C^0, a complementizer position. We then argue that the ellipsis account can be extended to *whether/Q...or* constructions if *whether/Q* can undergo movement to [Spec, CP], just like other *wh*-phrases.

4.1 *Whether/Q* is a *wh*-phrase

One compelling piece of evidence that supports the idea that *whether* is in [Spec, CP] comes from the fact that there are languages that allow *whether* to cooccur with a complementizer. For example, this is attested in Middle English. The examples in (24) are from Penn-Helsinki Parsed Corpus of Middle English (Kroch and Taylor (2000)).

(24) a. for men weten nou+gt **whe+ter +tat** he leue+t or is dede. (cmbrut3,90.2727)
'For people don't know whether he is alive or is dead'

b. and **whe+ter +tat** he shal ascape or dye, at Godes wil most hit be. (cmbrut3,107.3225)
'and whether he escapes or dies, it must be according to God's will'

c. aske hym **whe+ter +tat** er+te ys herre +ten Heuen? (cmmirk,10.273)
'ask him whether Earth is higher than Heaven?'

d. for Seynt Ierome sei+t **whe+tur +tat** he ete, drynke, or slepe, or what-euer els +tat he dothe, (cmroyal,18.162)
'for Saint Jerome says that, whether he eats, drinks, or sleep;s, or whatever else that he does'

e. it weere for to witen **whether that** alle thise thinges make or conjoynene as a maner body of blisfulnesse by diversite of parties or membres, ... (cmboeth,433.C1.189)
'it would be to know whether all these things make or conjoin as a manner a body of blissfulness by diversity of parts or members ...'

It turns out that Middle English also allows a *wh*-phrase to cooccur with a complementizer, as in (25).

(25) a. First the behoueth to knowe **why that** suche a solitary lyf was ordeyned. (cmaelr4-s0.m4,13)
'First, it behooves thee to know why such a solitary life was ordained.'

b. ... he wiste wel hymself **what that** he wolde answere ... (cmctmeli-s0.m3,75)
'he himself knew well what he would answer'

c. Now shall ye understonde **in what manere that** synne wexeth or encreesseth in man. (cmctparss0.m3,390)
'Now you shall understand in what manner sin grows or increases in man.'

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d. I pray you telle me **what knyght that** ye be (cmmalory-20.m4,4655)
'Please tell me what knight you are'

Same facts obtain in Belfast English (p.c. Alison Henry).

(26) a. ?John wonders **whether that** Mary ate beans.
b. John wonders **which sandwich that** Mary ate.

This suggests that *whether* should not be classified as a complementizer, but as a *wh*-phrase, occupying [Spec, CP].

Furthermore, Larson (1985) points out, citing Jespersen (1909-49), that *whether* developed historically as the *wh*-counterpart of *either*, and it originally meant 'which of either A or B'. If *whether* is a *wh*-phrase, it is reasonable to assume that it and its covert version Q can end up in [Spec, CP] by movement, just like any other *wh*-phrases.

4.2 Ellipsis in alt-questions

We argue that the ellipsis analysis can be extended to *whether/Q...or* constructions if we incorporate the insight from Larson that the *whether/Q* undergoes movement. The starting point of our analysis is that the degraded *either...or* constructions with dangling remnants and those with ellipsis spreading across matrix and finite embedded clauses become well-formed if *either* is lower in the clause.

(27) a. This either pissed Bill or Sue off.
b. this either [$_{VP}$ pissed Bill t_j] or [$_{VP}$ ~~pissed~~ Sue t_j] off$_j$

(28) a. Bill said either that John retired or resigned.
b. Bill said either [$_{C'}$ that John retired] or [$_{C'}$ ~~that John~~ resigned]

According to Schwarz, in (27a), *either* is adjoined to VP marking the left periphery of the first disjunct, and the particle *off* has undergone right-node raising, as represented in (27b). Given this analysis, the only elided material is the verb *pissed* in the second disjunct, and so there is no dangling remnant.[1] In (28a), *either* is adjoined to C', and so ellipsis is restricted to the embedded finite clause, as represented in (28b).

The difference between *whether/Q* and *either* is that *whether/Q* is a *wh*-phrase, while *either* is not, as noted in Larson. This means that *whether/Q* can undergo movement,

[1] According to Schwarz, in (20a) (repeated here as (1a)) the option of right-node raising the particle, as in (1b), is difficult, if not completely unavailable, because the particle would have to right-node raise above IP. But right-node raising option is available for (27a) because the particle is required to raise only above VP.

(1) a. ?? Either this pissed Bill or Sue off.
b. ?? Either [$_{IP}$ this pissed Bill t_j] or [$_{IP}$ ~~this pissed~~ Sue t_j] off$_j$.

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leaving a trace, while *either* cannot. In other words, the trace of *whether* corresponds to the surface position of *either*. This in turn means that the left edge of ellipsis can be the originating position of *whether/Q*, and not its surface position, and that as long as there is a grammatical source sentence with *either*, the corresponding *whether* sentence should be well-formed. This then is why *whether/Q...or* constructions appear to allow unbalanced ellipsis and ellipsis across matrix and embedded finite clauses. The LFs we propose for (21a) and (23a) are given in (29a) and (30a) respectively. For us, (21a) does not involve a dangling remnant as in (29b), and (23a) does not involve ellipsis across finite embedded clause as in (30b).

(29) Did this piss Bill or Sue off? (repeated from (21a))

a. Q_i did this t_i [$_{VP}$ piss Bill t_j] or [$_{VP}$ ~~piss~~ Sue t_j] off_j

b. * Q_i [$_{C'}$ did this piss Bill ~~off~~] or [$_{C'}$ ~~did this piss~~ Sue off]

(30) Did Bill say that John retired or resigned? (repeated from (23a))

a. Q_i did Bill say t_i [$_{C'}$ that John retired] or [$_{C'}$ ~~that John~~ resigned]

b. * Q_i [$_{C'}$ did Bill say that John retired] or [$_{C'}$ ~~did Bill say that John~~ resigned]

In our analysis, the apparent unbalanced ellipsis actually involves disjunction of VPs with a right-node raised particle, and the apparent ellipsis across matrix and embedded finite clauses actually involves disjunction of *that*-clauses.

4.3 Predictions and consequences

Several movement and ellipsis characteristics of *whether/Q...or* questions follow from our combined proposal. Island effects, contrast between *whether* and *if*, and the particular stress pattern on the associated disjuncts will be examined in turn in the following subsections. We will also briefly consider possible syntactic analyses of non-*wh*-questions without overt associated disjunction. Finally, we will discuss negative polarity item (NPI) licensing in alt- and *yn*-questions.

4.3.1 Island effects

Our analysis of *whether/Q...or* that combines both ellipsis and movement account preserves Larson's prediction that alt-question reading cannot be obtained if the disjunction phrase is inside an island. Under the combined approach, the question under an alt-question reading is ruled out because it would involve *whether/Q* movement out of a complex NP (as in Larson, illustrated in (31a)), or because it would involve ellipsis that spreads across a matrix clause and a complex NP (as in Schwarz, illustrated in (31b)).

(31) Do you believe the claim that Bill resigned or retired?

a. * Q_i do you believe [$_{NP}$ the claim [$_{CP}$ t_i [that Bill resigned] or [~~that Bill~~ retired]]]

b. * Q_i do t_i [$_{IP}$ you believe [$_{NP}$ the claim [$_{CP}$ [that Bill resigned]]]] or [~~$_{IP}$ you believe [$_{NP}$ the claim [$_{CP}$ [that Bill~~ retired]]]]

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4.3.2 *Whether* vs. *if*

In addition to *whether*, embedded questions can be introduced with *if*. And just like *whether*, *if* can be associated with a disjunction, allowing for an alt-reading, as illustrated in (32).

(32) John didn't know if Mary drank coffee or tea.

It is standardly assumed that *if* introducing an embedded question is a complementizer. Further, the standard assumption is that complementizers do not move. This predicts that an embedded question introduced with *if* and containing a disjunction phrase should behave like *either...or* constructions, and not *whether/Q...or* constructions. That is, an embedded question introduced with *if* should not allow the alt-reading if it has a disjunction phrase followed by a particle, or a disjunction phrase inside an embedded finite clause, just as in corresponding sentences with *either*. This prediction is borne out, as shown in (33) and (34). Examples with *if* are more degraded than examples with *whether* in the alt-reading.[2]

(33) a. ?? Either this pissed Bill or Sue off. (Schwarz 1999, 43a)
b. ?? Mary doesn't know [if this pissed Bill or Sue off].
c. Mary doesn't know [whether this pissed Bill or Sue off].

(34) a. ?? Either Bill thinks that John retired or resigned.
b. ?? Mary doesn't know [if Bill said that John retired or resigned].
c. Mary doesn't know [whether Bill said that John retired or resigned].

4.3.3 Focus pattern

A (written) question such as *Did John drink coffee or tea?* has, in principle, two potential readings: the *yn*-question reading and the alt-question reading. However, as noted in Romero (1998), Focus intonation disambiguates the two readings: the *yn*-reading presents neutral intonation on the disjunctive phrase, as in (35a), whereas the alt-reading is in general achieved by placing Focus stress on each disjunct, as in (35b).

(35) a. Did John drink coffee or tea? (neutral intonation, *yn*-reading only)
b. Did John drink COFfee or TEA? (Focus in capitals, alt-reading only)

[2]For independent reasons discussed in Adger and Quer (2001), an affirmative sentence with an embedded question introduced with *if* is degraded, in comparison to a negative sentence, as shown in (1). To control for this factor, we use negative sentences in (33b-c) to illustrate the asymmetry between *whether* and *if*.

(1) a. # John knew if Mary had committed the crime.
b. John didn't know if Mary had committed the crime.

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Also, a *yn*-reading in a question with overt *or not* correlates with the presence of stress on the verb and on *not*, as in (36).

(36) Did John DRINK or NOT?

The function of this double focus is naturally explained if *whether/Q...or* constructions involve ellipsis. We can then say that the double focus on the disjuncts corresponds to the focus on the remnant and its correlate, as it is usual in elliptical constructions like VP-ellipsis (as in (37a)) and gapping in declaratives (as in (37b)). The resulting structures are illustrated for *whether/Q...or* cases with one remnant in (38a-b), and for cases with two remnants in (38c).

(37) a. MaTILda went to the theater. SUsan did ~~go to the theater~~, too.
b. JOHN drank COFfe and MARY ~~drank~~ TEA.

(38) a. Q_i t_i [$_{C'}$Did John drink COFfee] or [$_{C'}$ ~~did he drink~~ TEA]?
b. Q_i t_i [$_{C'}$ Did John DRINK] or [$_{C'}$ ~~did he~~ NOT ~~drink~~]?
c. Q_i t_i [$_{C'}$ Did JOHN drink COFfee] or [$_{C'}$ ~~did~~ MARY ~~drink~~ TEA]?

4.3.4 Syntax of non-*wh*-questions without an overt associated disjunction

Under our ellipsis analysis, the syntax of alt-questions and *yn*-questions with overt *or not* are parallel: both involve ellipsis and a focused remnant, and the semantic difference derives from the different material in the disjuncts. As for *yn*-questions without overt *or not*, the two following analyses are compatible with the main claims of the present paper.

A first possible approach is that *yn*-questions like (39) are actually a disjunction of affirmative and negative clauses, where Q is associated with *or* that disjoins the two clauses. Under this approach, one of the clauses has been deleted, including the disjunctive marker *or*. This is represented in (40).

(39) Did John eat beans or rice?
"Is it the case that John ate any of these two things: beans or rice?"

(40) Q [Did John eat beans or rice] ~~or [did John not eat beans or rice]~~?

A second possible approach is that a *yn*-question does not contain a disjunction of clauses at the level of syntax and so Q does not associate with *or*, as represented in (41). Under this approach, there is no ellipsis in the syntax of *yn*-questions, and the disjunction of affirmative and negative propositions are provided in semantics (Cf., Karttunen (1977)).

(41) Q [Did John eat beans or rice]?

4.3.5 NPIs in alt- and *yn*-questions

As pointed out in Ladusaw (1980) and Higginbotham (1993), alt-questions do not license NPIs, while *yn*-questions do. Consider the examples in (42) which are from Higginbotham (1993).

(42) a. Did John play chess or checkers?
b. Did anyone play chess or checkers?

While (42a) is ambiguous between a *yn*-question and an alt-question, (42b) can only be interpreted as a *yn*-question.

Our syntax of *yn*- and alt-questions does not make any predictions with respect to NPI licensing. Under our analysis, (42b) would be represented as (43) for the *yn*-reading and as (44) for the alt-reading. As far as syntax is concerned, if an NPI is licensed in the structures in (43) (possibly because it is in the c-command domain of Q), it should also be licensed in (44) as well. But the fact is that (44) is not possible.

(43) a. Possibility 1:
Q [did anyone play chess or checkers] ~~or [did anyone not play chess or chekekers]~~
b. Possibility 2:
Q [did anyone play chess or checkers]

(44) Q [did anyone play chess] or [~~did anyone play~~ checkers]

This, however, is not a problem if NPI licensing in questions applies at a level more abstract than LF, along the lines proposed in Higginbotham (1993) and Han and Siegel (1997). Higginbotham adopts the proposal by Ladusaw (1980) that NPIs may appear only within the scope of downward entailing expressions. According to Higginbotham, *whether* functions like a universal quantifier such as *every*. Hence, *whether* will license NPIs in its restrictive clause, but not in its nuclear scope. Higginbotham proposes (45a) for the semantic representation of *yn*-reading of (42b). Under this reading, the NPI *anyone* is licensed because it occurs in the restrictive clause of a universal quantifier. He further argues that (45b) would be the semantic representation for the alt-reading. But (42b) cannot have this interpretation because the NPI *anyone* cannot be licensed in the nuclear scope of a universal quantifier.

(45) a. [$\forall$p: p = anyone played chess or checkers $\vee$ p = $\neg$(anyone played chess or checkers)] ?p
b. * [$\forall$x: x = chess $\vee$ x = checkers] ?anyone played x

Han and Siegel adopt the semantics of questions in Groenendijk and Stokhof (1984), where a question is a function that partitions the set of all possible worlds. The partition corresponds to the set of propositions which are possible answers. Han and Siegel argue

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that an NPI is licensed in a question if the partition contains a proposition that corresponds to a negative answer. This means that the partition returned by (42b) under a *yn*-question reading contains a proposition that corresponds to a negative answer (i.e., ¬[*anyone played chess or checkers*]) and so an NPI is licensed. On the other hand, the partition returned under an alt-question reading does not contain a proposition that corresponds to a negative answer: it only contains *anyone played chess* and *anyone played checkers*. Hence, an NPI cannot be licensed under the alt-reading.

5 Cross-linguistic Support

Languages that have SOV word order provide further evidence that the syntax of alt-questions involve ellipsis. Moreover, when ellipsis does not suffice (e.g., when there is disjunction in an embedded clause), the same scopal mechanisms that apply to regular *wh*-phrases apply to *whether/Q*, supporting that *whether/Q* has the syntax of a *wh*-phrase.

5.1 Hindi

If a non-*wh*-question such as *Did Chandra drink coffee or tea?* has a *yn*-question reading, *coffee or tea* is instantiated as an NP disjunct in the object position, as in (46). The same question can never have an alt-reading.

(46) (Kyaa) Chandra-ne **coffee yaa chai** pii?
what Chandra-Erg **coffee or tea** drink-Pfv
'Is it the case that Chandra drank coffee or tea?' (*yn*-question)

On the other hand, in (47a), where *coffee* and *tea* are separated by the verb *drink*, only alt-question reading obtains. In this question, *coffee* is the object of the first disjunctive clause, and *tea* occurs alone in the second disjunct. This suggests that the subject and the verb have been elided in the second disjunct, as represented in (47b).[3]

(47) a. (Kyaa) Chandra-ne **coffee** pii yaa **chai**?
what Chandra-Erg **coffee** drink-Pfv or **tea**
'Which of these two things did Chandra drink: coffee or tea?'
(alt-question)

b. (Kyaa) Q [Chandra-ne **coffee** pii] yaa [~~Chandra-ne~~ **chai** ~~pii~~]?
what Q Chandra-Erg **coffee** drink-Pfv or ~~Chandra-Erg~~ **tea** ~~drink-Pfv~~

[3]In principle, a *yn*-question reading should be available to (47a), as well as an alt-reading. But only alt-reading seems to be available to native speakers. This may be a pragmatic effect caused by disjoining full clauses in a *whether/Q* question. The same effect is attested in English *whether* questions with two disjoined clauses: e.g., *I wonder whether John drank coffee or he drank tea.* We will see later (cf., (52), (57b)) that *yn*-question reading is available to *whether/Q* questions when disjoined clauses are restricted to embedded contexts.

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Let us now turn to questions with embedded disjunction. An alt-question with a disjunction in an embedded clause obligatorily has a scope marker *kyaa*. We argue that this scope marking mechanism is the same mechanism used for *wh*-questions in Hindi. It has been noted (cf., Dayal (1996)) that Hindi is a *wh*-in-situ language with LF *wh*-movement (overtly moved *wh*-phrases are generally assumed to be scrambled), as exemplified in (48).

(48) Tum-ne us-ko **kyaa** diyaa
you-Erg he-Dat **what** give-Pfv
'What did you give him?'

It has also been noted that LF *wh*-movement is not possible out of finite clauses in Hindi, as in (49).

(49) Tum jaante ho [ki us-ne **kyaa** kiyaa]
you know be that he-Erg **what** do-Pfv
'You know what he did.'
*'What do you know he did?'

The way to obtain a direct question when the *wh*-phrase originates in an embedded finite clause is by using the scope marker *kyaa* in the matrix clause, as in (50) (Cf., Dayal (1996), Dayal (2000) for syntax of *wh*-scope marking).

(50) Jaun **kyaa** soctaa hai [ki merii **kis-se** baat karegii]
John **what** think be-Pres that Mary **who-Ins** talk do-Fut
'What does John think, who will Mary talk to?'
I.e., 'Who does John think Mary will talk to?'

What happens then with Hindi alt-questions with embedded disjunction? Recall from section 4.2 that, in English alt-questions, when the disjunction originates from a finite embedded clause, we proposed that *whether* moves from the embedded CP to the matrix CP overtly and that the trace position marks the left edge of ellipsis. But as we just saw, (LF) *wh*-movement in this configuration is not possible in Hindi. Interestingly, the way to overcome this handicap in Hindi alt-questions is the same as Hindi *wh*-questions: using a scope marking structure with *kyaa*. That is, while *kyaa* is optional in simple alt-questions (as in (47a)) and in *yn*-questions (as in (46) and (51)), it is obligatory in alt-questions involving an embedded disjunction, as in (52).[4]

(51) Jaun (kyaa) sochtaa hai [ki Chandra-ne **coffee yaa chai** pii thii]
John (what) think be-Pres that Chandra-Erg **coffee or tea** drink-Pfv Past
'Is it the case that John thought that Chandra drank coffee or tea?'
(*yn*-question)

[4](52) can have either an alt-question reading or a *yn*-question reading. Under the *yn*-reading, *Does John think that Chandra drank coffee or Chandra drank tea?*, *kyaa* can be deleted.

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(52) Jaun **kyaa** sochtaa hai [ki Chandra-ne **coffee** pii thii yaa **chai**]?
John **what** think be-Pres that Chandra-Erg **coffee** drink-Pfv Past or **tea**
'Which does John think: that Chandra drank coffee or that he drank tea?'
(alt-question)

The obligatoriness of *kyaa* under the alt-reading suggests that the combined ellipsis/*wh*-phrase analysis that we have proposed for English also extends to Hindi, yielding (53) as the representation of (52). First, as in English, gapping in Hindi declaratives is clause bound (see (54)-(55)). And so is ellipsis in Hindi alt-questions. For, if ellipsis in Hindi alt-questions could spread across a finite clause boundary, we could have the representation in (56) instead of the one in (53), and then *kyaa* would be wrongly predicted to be optional (since *Q* would be in the matrix clause, as in (47b)).

(53) Jaun **kyaa** sochtaa hai [$_{CP}$ Q [[$_{C'}$ ki [Chandra-ne **coffee** pii thii]]
what John think be-Pres [$_{CP}$ Q [[$_{C'}$ that [Chandra-Erg **coffee** drink-Pfv Past]]
yaa [$_{C'}$ ~~ki [Chandra-ne~~ **chai** ~~pii thii~~]]]]?
or [$_{C'}$ ~~that [Chandra-Erg~~ **tea** ~~drink-Pfv Past~~]]]]
'Which does John think: that Chandra drank coffee or that Chandra drank tea?'

(54) Sue aaluu pasand kartii hai aur Martha pyaaz
Sue potatoes like do-Hab.f be-Pres and Martha onions
'Sue likes potatoes and Martha onions.'

(55) Sue sochtii hai ki mE Bill-ko pasand kartaa huN aur Martha
Sue think-Hab.f be-Pres that I Bill-Dat like do-Hab be-1Sg and Martha
Tom-ko
Tom-Dat
'Sue thinks that I like Bill and Martha (likes) Tom.'
*'Sue thinks that I like Bill and Martha (thinks that I like) Tom.'

(56) Jaun (**kyaa**) Q [sochtaa hai [$_{CP}$ ki Chandra-ne **coffee** pii thii]]
John **what** Q [think be-Pres [$_{CP}$ that [Chandra-Erg **coffee** drink-Pfv Past]]
yaa [~~sochtaa hai [$_{CP}$ ki Chandra-ne~~ **chai** ~~pii thii~~]]?
or [~~think be-Pres [$_{CP}$ that [Chandra-Erg~~ **tea** ~~drink-Pfv Past~~]]
'Which one is true: John thinks that Chandra drank coffee or John thinks that Chandra drank tea?' (same reading as in (53))

Second, as we mentioned, the same scoping mechanism applies to *wh*-phrases and *whether/Q* in Hindi, and in both cases this mechanism is subject to the same constraints. In particular, *kyaa* cannot mark the scope of a *wh*-phrase inside an island. For instance, (57a) is possible under the *yn*-reading, but it is impossible under the matrix *wh*-question reading. Similarly, *kyaa* cannot mark the scope of *whether/Q* associated with a disjunction in an island. That is why (57b) cannot be interpreted as an alt-question. It can only be interpreted as a *yn*-question.

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(57) a. Ram-ko **kyaa** yeh baat pataa hai ki Chandra-ne kyaa pii
Ram-Dat **what** this thing known be-Pres that Chandra-Erg what drink-Pfv
thii?
Past
'Does Ram know what Chandra drank?'
*'What does Ram know the fact that Chandra drank?'

b. Ram-ko **kyaa** yeh baat pataa hai ki Madhu-ne **chai** pii
Ram-Dat **what** this thing known be-Pres that Madhu-Erg **tea** drink-Pfv
thii yaa **coffee**?
Past or **coffee**
'Does Ram know the fact that Madhu drank tea or Madhu drank coffee?'
*'Which fact does Ram know: that Madhu drank tea or that Madhu drank coffee?'

In sum, *wh*-phrase and *whether/Q* associated with disjunction are treated similarly with respect to movement and scope, strongly supporting that *whether/Q* and *wh*-phrases should be given a unified syntax. In an alt-question with disjunction in an embedded clause, *whether/Q* moves to the matrix clause in English just like other *wh*-phrases; and in Hindi, where such movement is not allowed for *wh*-phrases, the scope marker *kyaa* is used in the matrix clause just as with other *wh*-phrases.

5.2 Korean

Word order facts similar to the ones in Hindi obtain in Korean. A non-*wh*-question containing a disjunctive phrase such as *coffee or tea* can only have a *yn*-question reading, as in (58).

(58) Chulswu-ka **khophi-na cha-lul** masi-ess-ni?
Chulswu-Nom **coffee-or tea-Acc** drink-Past-Int
'Is it the case that Chulswu drank coffee or tea?' (*yn*-question)

In order to obtain an alt-question reading, *coffee* must be part of the first disjunctive clause, and *tea* must be part of the second disjunctive clause. There are two ways to achieve this: (i) by disjoining two clauses without deleting the verb from neither of the clause, as in (59a); or (ii) by disjoining two clauses with deletion of the verb from the first clause, as in (59b).

(59) a. Chulswu-ka **khophi-lul** masi-ess-ni, animyuen **cha-lul** masi-ess-ni?
Chulswu-Nom **coffee-Acc** drink-Past-Int if-not **tea-Acc** drink-Past-Int
'Which of these two things did Chulswu drink: coffee or tea?'
(alt-question)

b. Chulswu-ka **khophi-lul**, animyuen **cha-lul** masi-ess-ni?
Chulswu-Nom **coffee-Acc** if-not **tea-Acc** drink-Past-Int
'Which of these two things did Chulswu drink: coffee or tea?'
(alt-question)

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The accusative case marker in both *khophi-lul* ('coffee') and *cha-lul* ('tea') in (59b) suggests that clause disjunction is involved rather than a simple noun phrase disjunction. As shown in (58), a simple noun phrase disjunction allows case marking only on the head noun. An example with a simple noun phrase conjunction also allows case marking only on the head noun, as in (60).

(60) John-i **Mary-wa Sue-lul** po-ass-ta.
John-Nom **Mary-and Sue-Acc** see-Past-Decl
'John saw Mary and Sue.'

Further, in (59b), each accusative-case marked noun can be followed by an adverb as illustrated in (61a), supporting our claim that it involves clause disjunction with verb deletion in the first clause. On the other hand, this is impossible in (58), as illustrated in (61b), as we would expect for a simple noun phrase disjunction.

(61) a. Chulswu-ka **khophi-lul ppali**, animyuen **cha-lul ppali**
Chulswu-Nom **coffee-Acc quickly** if-not **tea-Acc quickly**
masi-ess-ni?
drink-Past-Int
'Which of these two things did Chulswu drink quickly: coffee or tea?'
(alt-question)

b. * Chulswu-ka **khophi-na ppali cha-lul ppali** masi-ess-ni?
Chulswu-Nom **coffee-or quickly tea-Acc quickly** drink-Past-Int
'Is it the case that Chulswu drank coffee or tea quickly?' (*yn*-question)

Korean, however, is different from Hindi and English in that deletion targets the verb in the first clause and not the one in the second clause, as (59b)-(62) show, a possible reason being that Korean is strictly head-final.

(62) * Chulswu-ka **khophi-lul** masi-ess-ni, animyuen **cha-lul**?
Chulswu-Nom **coffee-Acc** drink-Past-Int if-not **tea-Acc**
'Which of these two things did Chulswu drink: coffee or tea?'
(alt-question)

Nevertheless, Korean shows that alt-questions must disjoin full clauses, indirectly supporting our analysis that in languages that allow verb deletion in the second disjunctive clause, the syntax of alt-questions involve ellipsis.

6 Ellipsis in Conjunction with Right-node Raising

So far, we have considered *whether/Q...or* constructions that have a VP disjunctive phrase or a disjunctive phrase in an object position. How then should we handle constructions with disjunctive phrase in other positions? Here, we will consider three such cases: (i) alt-questions with disjunction in a subject position; (ii) alt-questions with a verb disjunction; and (iii) constructions in which the disjunction phrase is *whether or not*.

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An account consistent with our approach for alt-questions, and also used in Schwarz's account of *either...or* (see (27b)), is to assume that some material moves by right-node raising. In an example with disjunction in subject position, as in (63), the VP *finish the paper* has undergone right-node raising, making available the two alternatives *Mary finished the paper* and *John finished the paper*. This can be represented as in (64).

(63) Did **Mary or John** finish the paper?

(64) Did [Mary t_i] or [John t_i] $[_{VP}$ finish the paper$]_i$?

For alt-questions with verb disjunction, as in (65), we can also argue that the object NP *the book* has undergone right-node raising, making available the alternatives *Mary bought the book* and *Mary borrowed the book*, as represented in (66).

(65) Did Mary **buy or borrow** the book?

(66) Did Mary [buy t_i] or [borrow t_i] $[_{NP}$ the book$]_i$?

For constructions in which the disjunction phrase is *whether or not*, as in (67), a possible analysis is the following. The source sentence is as in (68a). Then, raising the positive (*POS*) and negative polarities, or reconstructing the subjects, yields the constituency structure in (68b). Finally, the entire IP *John finished the paper* right-node raises out of both disjuncts, as represented in (68c).

(67) I don't know **whether or not** John finished the paper.

(68) a. ...whether $[_{IP}$ John finished the paper] or $[_{IP}$ John did not finish the paper]
b. ...whether $[_{IP}$ POS $[_{IP}$ John finished the paper]] or $[_{IP}$ not $[_{IP}$ John finished the paper]]
c. ...whether [POS t_i] or [not t_i] $[_{IP}$ John finished the paper$]_i$

Another possible approach is that the second disjunct *or not* moves and adjoins to *whether* after ellipsis has taken place, as illustrated in (69).

(69) a. ...whether $[_{IP}$ John finished the paper] [or $[_{IP}$ ~~John~~ not ~~finished the paper~~]]
b. ...whether [or $[_{IP}$ ~~John~~ not ~~finished the paper~~]]$_i$ $[_{IP}$ John finished the paper] t_i

7 Conclusion

To conclude, by arguing that *whether/Q* undergoes movement, whereas *either* does not, we were able to extend the ellipsis analysis of *either...or* to *whether/Q...or*, and yet explain the apparent asymmetries between the two types of constructions. Given that *whether* is a *wh*-form of *either*, the syntactic parallelism between the two types of constructions is a welcome result.

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Chung-hye Han
Department of Linguistics
Simon Fraser University
8888 University Drive
Burnaby BC V5A 1S6, Canada

chunghye@sfu.ca

Maribel Romero
Department of Linguistics

610 Williams Hall
University of Pennsylvania
Philadelphia, PA 19104-6305, USA

romero@ling.upenn.edu