More Evidence That Intervention Effects Are Focus Effects

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1. Introduction

In this paper I will discuss the phenomenon of intervention effects in *wh*-questions, brought to light in Beck's (1996) discussion of German data and Beck & Kim's (1997) discussion of Korean data. Intervention effects are essentially blocking effects that occur when certain quantificational elements c-command a *wh*-phrase in situ. The generalization made by Beck (1996) and Beck & Kim (1997) is that an intervening quantifier blocks LF movement of *wh*-in-situ to an operator position.

Wh-intervention effects are observed in a wide variety of languages, suggesting a universal character of the effect (e.g. in Japanese (Hoji 1985, Hagstrom 1998), Hindi/Urdu and Turkish (Beck & Kim 1997), Hungarian (Lipták 2001), French (Chang 1997), English (Pesetsky 2000), to name a few). Despite its apparent universal character, the intervention effect shows some crosslinguistic variation in terms of exactly which quantificational expressions are harmful interveners. This parametric variation regarding the set of problematic interveners seems to be a problem for Beck's and Beck & Kim's analysis, as the property that was held responsible for making an expression induce intervention effect in their analysis was a semantic property (namely, that of being a quantifier).

Based on data from different languages, Kim (2002a,b) proposes that the core set of interveners, which is crosslinguistically stable, consists of focus phrases (not quantifier in general). Kim accounts for this by proposing that the licensing of *wh*-in-situ is focus-sensitive and that a focus phrase may not intervene between a *wh*-phrase and its licensing complementizer. In this paper I extend this analysis and show that many of the interveners which are classified as quantifica-

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tional expressions can be analyzed as focus phrases, consisting of a focus-sensitive particle and a focused expression that introduces alternatives, adopting the proposals of Krifka (1999) and Penka (2006).

This paper is organized as follows. In section 2 I introduce the *wh*-intervention effects and discuss some problems with the analysis proposed in Beck (1996) and Beck & Kim (1997). In section 3 I propose a new generalization of the *wh*-intervention effects, namely the Focus Intervention Effect. In section 4 I provide a semantic and syntactic analysis. In section 5 I show that alternative questions are also subject to the focus intervention effect, just like *wh*-questions. And finally section 6 concludes the paper.

2. *Wh*-Intervention Effects

2.1. *Wh*-Intervention Effects in German

The data in (1)-(3) provide the crucial empirical motivation for the intervention effects. The idea is that in each of the examples, the *wh*-phrase in situ has to be moved for semantic reasons from its surface position to the interrogative and an intervening quantifier blocks that LF movement. Overt movement of the *wh*-in-situ to a position higher than the intervening quantifier makes the structure well-formed, as in the following contrast (here and in what follows, interveners appear in **boldface** and *wh*-in-situ in *italics*):[1]

(1) a. *Wen hat **niemand** *wo* angetroffen?
who$_{acc}$ has nobody where met
b. Wen hat *wo* **niemand** angetroffen?
who$_{acc}$ has where nobody met
'Who did nobody meet where?'

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1. Unlike Korean, which optionally allows *wh*-scrambling, German does not allow *wh*-scrambling in normal contexts (see Fanselow 1990, Müller & Sternefeld 1993, among others). So the example (i) is ungrammatical, where the *wh*-in-situ element *wo* is scrambled to the left of the subject:

(i) *Wen hat wo$_i$ Luise t$_i$ gesehen?
who$_{acc}$ has where Luise seen
'Who did Luise see where?'

In the intervention context such as (1)-(3), the otherwise impossible *wh*-scrambling is allowed to repair the ungrammaticality.

(2) a. * Wen hat **nur** **Karl** *wo* getroffen?
who$_{acc}$ has only Karl where met

b. Wen hat *wo* **nur** **Karl** getroffen?
who$_{acc}$ has where only Karl met
'Who did only Karl meet where?'

(3) a. * Wen hat **fast** **jeder** *wo* getroffen?
who$_{acc}$ has almost everyone where met

b. Wen hat *wo* **fast** **jeder** getroffen?
who$_{acc}$ has where almost everyone met
'Who did almost everyone meet where?'

In (4), the universal quantifier *jeder* 'everyone' c-commands the *wh*-in-situ *wo* 'where'. Unlike the (a.)-examples in (1)-(3), (4) is grammatical. But the intervention of *jeder* does have an effect. (4) has only the pair-list (or distributive reading), which is paraphrased as in (4-i). It does not have the single-answer reading in (4-ii), in which the universal quantifier is in the scope of the *wh*-question.

(4) Wen hat **jeder** *wo* gesehen?
who$_{acc}$ has everyone where seen
'Where did everyone see where?'
(i) For each person *x*: who did *x* see where?
(ii) * Which person and which place are such that everyone saw the person in that place?

Beck argues that in the reading (4-i), the universal quantifier *jeder* 'everyone' has scope over the entire question and hence is moved out of the way at LF, thus does not block the LF movement of the *wh*-in-situ any more, as illustrated in (5):

(5) $[_{CP}$ jeder$_i$ $[_{CP}$ wen$_j$ wo$_k$ $[_{C'}$ C $[_{IP}$ t$_i$ t$_j$ t$_k^{LF}$ gesehen hat]]]]

Beck proposes the generalization that an intervening quantifier blocks LF movement. So the following configuration is ruled out, where t_i^{LF} stands for a trace created by LF movement:

(6) *[... X$_i$ ... [QP ... [... t$_i^{LF}$ ...]]]

2.2. Intervention Effects in Korean

Similar *wh*-intervention effects are observed in Korean, too. This is

illustrated by the contrasts in (7)-(9).

(7) a. * **Amwuto** *nwukwu*-lul chotayha-ci anh-ass-ni?
anyone who-ACC invite-COMP not do-PAST-Q
b. *Nwukwu-lul*$_i$ amwuto t_i chotayha-ci anh-ass-ni?
who-ACC anyone inviate-COMP not do-PAST-Q
'Who did no one invite?'

(8) a.$^{?}$* **Mira-man** *nwukwu-lul* chotayha-ess-ni?
Mira-only who-ACC invite-PAST-Q
b. *Nwukwu-lul*$_i$ **Mira-man** t_i chotayha-ess-ni?
who-ACC Mira-only invite-PAST-Q
'Who did only Mira invite?'

(9) a. * **MIRA-ka** *nwukwu-lul* chotayha-ess-ni?
Mira-NOM who-ACC invite-PAST-Q
b. *Nwukwu-lul*$_i$ **MIRA-ka** t_i chotayha-ess-ni?
who-ACC Mira-NOM invite-PAST-Q
'Who did MIRA invite?'

Universal quantifiers such as *nwukwuna* 'everyone' also seem to show a similar effect, although the effect is much weaker than with NPIs or focus phrases:

(10) a.$^{?(?)}$ Nwukwuna-ka *enu* *kyoswu-lul* conkyengha-ni?
everyone-NOM which professor-ACC respect-Q
b. *Enu* *kyoswu-lul*$_i$ nwukwuna-ka t_i conkyengha-ni?
which professor-ACC everyone-NOM respect-Q
'Which professor does everyone respect?'

Beck & Kim (1997) suggest that these examples require a uniform treatment and propose that the *wh*-phrases in situ have to be moved at LF to the interrogative SpecCP and an intervening quantifier blocks that LF movement.

2.3. Problems

Despite its apparent universal character, the intervention effect shows some crosslinguistic variation. In Mandarin Chinse, for example, ordinary quantifier NPs, quantificational adverbials, and negation do not show intervention effects for nominal *wh*-phrases (see Huang 1982, Aoun & Li 1993a,b, and Soh 2005), as illstrated in (11a-c):

(11) a. **Meige ren** dou mai-le *shenme*?
every man all buy-ASP what
'What did everyone buy?'
b. Zhangsan **changchang** mai *shenme*?
Zhangsan often buy what
'What did Zhangsan often buy?'
c. Zhangsan **bu** xiang mai *shenme*?
Zhangsan not want buy what
'What doesn't Zhangsan want to buy?'

And as pointed out in Kim (2002a), it is even not the case that all quantifiers induce an intervention effect for *wh*-in-situ in Korean. For examples, quantifiers like *most NP* or *always/often* do not induce intervention effects.

This crosslinguistic variation regarding the class of harmful interveners seems to be a problem for Beck's MQSC analysis, as it assumes that quantificational expressions in general block LF movement of *wh*-in-situ. The question is how to account for this variation. And is it possible to identify a set of interveners that induce the intervention effect crosslinguistically?

It seems even more important to ask *why* quantifiers should block LF *wh*-movement. Note that negation and quantificational elements do not have the same make-up as *wh*-elements. And *wh*-elements do not move to the position of negation or quantificational elements, nor vice versa.

3. Focus Intervention Effects

3.1. The Generalization

I proposed in Kim (2002a,b) that the core set of interveners, which is crosslinguistically stable, consists of focus phrases (see Kim 2006 for more details):

(12) A focus phrase may not intervene between a *wh*-phrase and its licensing complementizer.
*[$_{CP}$ Q_i ... [FocP [... wh_i ...]]]

The underlying idea is that the Q operator is a focus sensitive operator and *wh*-phrases in situ are dependent (i.e., semantically deficient) focus elements which must be associated with the Q operator in order to be interpreted. An intervening independent focus element blocks

that association**.** Kim (2002b) further proposes that the *wh*-intervention effect is actually an instance of the more general intervention effect, as given in (13):

(13) *Focus Intervention Effect*
In a focus-sensitive licensing construction, no independent focus phrase may intervene between the licensor Op and the licensee XP.
*[OP_1 ... [FocP [... XP_1 ...]]]

By 'focus-sensitive licensing' I mean to refer to licensing of a *wh*-phrase in a *wh*-question, the disjunctive phrase in an alternative question and an NPI in a negative sentence. These are all dependent focus elements which have to be associated with a licensing operator to be properly interpreted (the Q operator for the first two cases, and NEG for NPIs). I proposed that the Q operator in questions and the NEG operator (licensing NPIs) are focus-sensitive operators, such that an intervening focus phrase induces an intervention effect in all of these three constructions.

In Korean, focus phrases induces an intervention effect for *wh*-in-situ (Kim 2002a analyzes NPIs in Korean as focus phrases, extending Lahiri's 1998 proposal), as shown in (7)-(9) above. Kim (2002b) shows that Malayalam, a Dravidian language spoken in South India, exhibits a similar intervention effect to that observed in Korean *wh*-questions.

In Mandarin Chinese, focus phrases and NPIs (which consist morphologically of a *wh*-pronoun and the focus partical *ye* 'also') induce an intervention effect even for nominal *wh*-phrases, which otherwise do not show the effect when c-commanded by a quantifier or negation (see (11) above):

(14) a. ?***Lian Lili ye** kan de dong *na-ben shu*?
even Lili also read DE understand which-CL book
b. *Na-ben shu* **lian Lili ye** kan de dong?
which-CL book even Lili also read DE understand
'Which book could even Lili understand?'

(15) a. ?***Zhiyou Lili** kan-le *na-ben shu / shenme*?
only Lili read-ASP which-CL book / what
b. *Na-ben shu / shenme* **zhiyou Lili** kan-le?
which-CL book / what only Lili read-ASP
'Which book/what did only Lili read?'

(16) a. * **Shei ye** kan bu dong *na-ben* *shu*?
who also read not understand which-CL book
b. *Na-ben* *shu* **shei** **ye** kan bu dong?
which-CL book who also read not understand
'Which book could no one understand?'

It turns out that NPIs are very consistent interveners for the licensing of *wh*-in-situ across languages. NPIs can be analyzed as focus phrases (see, e.g., Lee & Horn 1994, Krifka 1995, Lahiri 1998), supported by the fact that NPIs consist of an indefinite NP (or a *wh*-pronoun) and an overt focus particle meaning 'even, also' in many languages (cf. Haspelmath 1997). In particular, Krifka (1995) develops this idea within an alternative semantics where NPIs introduce individual alternatives that can expand to propositional alternatives via the same semantic mechanism used in Hamblin's (1973) alternative semantics for questions.

Zubizarreta (2003) seems to provide further evidence for "focus-induced" (rather than quantifier-induced) intervention effects. Zubizarreta observes that a quantifier gives rise to an intervention effect in the French *wh*-in-situ construction only if it is contrastively focused. This is illustrated by the contrast in (17a) and (17b):

(17) a. Ils ont **tous** mangé *quoi* ?
'They have all eaten what?'
b. *Ils ont **TOUS** mangé *quoi* ?
'They have ALL eaten what?'

To sum up, the data from different languages seem to show that an intervention effect occurs whenever a focus phrase intervenes between the interrogative C and the *wh*-phrase in situ.

3.2. Focus and WH

Now the question is why focus should induce an intervention effect for *wh*-in-situ. It is well-known that focused elements and *wh*-elements share some similarities in terms of their overt syntax, semantics and phonology in a number of languages.

3.2.1. Syntactic Similarities

Some languages require *wh*-phrases to appear in the designated structural position for (contrastive) focus (for example, Hungarian (Brody 1990), Chadic (Tuller 1992), Malayalam (Jayaseelan 2003) and Serbo-Croatian (Stjepanovic 2003)). *Wh*-movement in these languages is argued to be an instance of focus movement: *wh*-phrases bear a focus feature that enables them to target the same postion as other focused constituents.

Moreover, it is also observed that focus and *wh*-phrases in situ share the syntactic property of being insensitive to island constraints (see Rooth 1996). As exemplified in (18a), an occurrence of *only* outside the NP modified by the relative clause can readily associate with a focus inside the relative clause. The distinguishes focus from quantifiers, which cannot take scope outside their embedding noun phrases. The scope of the quantifiers in (18b) is restricted to the relative clause. Similarly, in (18c) the second occurrence of *who* is structurally embedded in an island, but semantically has scope at the level of the *wh*-complement of *tell*.

(18) a. Dr. Svenson only rejected the proposal that $[\text{John}]_F$ submitted.
b. Dr. Svenson rejected the proposal no student/almost every student submitted.
c. Tell me who rejected the proposal that who submitted.

Note that overt *wh*-movement of *who* out of the relative clause leads to ungrammaticality, as the relative clause is an island for extraction (cf. Ross 1967):

(19) *Tell me who_i John rejected the proposal that t_i submitted.

3.2.2. Phonological Similarities

Phonologically, a *wh*-element carries a pitch accent which is characteristic of focused elements. A property of *wh*-elements which has often been noted is that they have to carry focal stress in order to receive a question word meaning, especially when they stay in situ. Without focal stress, a *wh*-in-situ receives an indefinite reading, as shown in (20b):

(20) a. Wer hat WAS gelesen?
who has what read
'Who read what?'
b. Wer hat was gelesen?
who has what read
'Who read something/anything?'

In Korean, too, where all *wh*-words stay in situ, *wh*-words must be stressed in order to be interpreted as question words. Without focal stress, the *wh*-word is interpreted as an indefinite pronoun, as illustrated in (21) (cf. Choe 1985):

(21) a. Mira-ka MWUES-ul masi-ess-ni?
Mira-NOM what-ACC drink-PAST-Q
'What did Mira drink?'
b. Mira-ka mwues-ul masi-ess-ni?
Mira-NOM what-ACC drink-PAST-Q
'Did Mira drink something/anything?'

So focal stress has the function of distinguishing the question word meaning from the indefinite existential meaning of *wh*-pronouns in German and Korean.

Other languages corroborate this view: Deguchi & Kitagawa (2002) and Ishihara (2002) shows that Japanese *wh*-questions always exhibit focus intonation; Hayes & Lahiri (1991) show that interrogative *wh*-words exhibit the same prosodic pattern as contrastively focused elements in Bengali.

3.2.3. Semantic Similarities

The idea that *wh*-elements are similar to focus elements is also supported by semantic considerations. It has long been thought that the semantics of questions and of focus (particularly, contrastive focus) are closely related. In particular, Rooth (1985, 1992) developed alternative semantics for focus along the same lines as Hamblin's (1973) alternative semantics for questions. A focused constituent in a sentence evokes alternatives similarly to a *wh*-word in a question.

Rooth (1985, 1992) suggests that sentences with focus are associated with two semantic objects: the ordinary semantic value ($[[.]]^{o}$) and the focus semantic value ($[[.]]^{f}$). Informally, the focus semantic value for a sentence is the set of propositions obtained by replacing the focus with an alternative of

the same type. For example, the ordinary semantic value of (22) is the single proposition in (23), whereas its focus semantic value is a set of propositions, as in (24):

(22) $[\text{John}]_F$ left.

(23) $[[[\text{John}]_F \text{ left}]]^o$ ordinary semantic value
$= \lambda w.$ John left in w
= that John left

(24) $[[[\text{John}]_F \text{ left}]]^f$ focus semantic value
= {that John left, that Bill left, that Amelie left, . . . }
$= \{p : p = \lambda w.\ x \text{ left in } w \mid x \in D\}$

According to Hamblin (1973), the denotation of a question is a set of propositions corresponding to potential answers to the question, as given in (26) for (25).

(25) Who left?

(26) {that John left, that Bill left, that Amelie left, . . . }
$= \{p : p = \lambda w.\ x \text{ left in } w \mid x \in D\}$

Note that the focus semantic value of (22) is identical to the ordinary meaning of the question (25). A *wh*-phrase, like a focus, triggers the introduction of alternatives.

4. Analysis of Focus Intervention Effects

The common properties of focus and *wh*-elements described in section 3.2 can be incorporated into the semantic and syntactic analysis of focus intervention effects. Following the generalization of focus intervention effects proposed by Kim (2002a,b), Beck (2006) proposes a semantic analysis of the intervention effects based on focus semantics, which will be introduced in section 4.1. In section 4.2, I will show how the intervention effects can be analyzed in the syntax, building on my previous approach.

4.1. Semantics of Focus Intervention Effects

Beck (2006) claims that intervention effects follow from focus interpretation. More specifically, an intervention effect occurs whenever a focus sensitive operator other than the Q(uestion) operator tries to

evaluate a constituent containing a *wh*-phrase – the resulting LF fails to have an ordinary semantic interpretation.

Beck suggests that *wh*-phrases and focused elements both introduce alternatives into the computation. However, unlike a focused element, a *wh*-phrase makes no ordinary semantic contribution while it has a well-defined focus semantic value as in (28b). Its ordinary semantic value is in fact undefined ((28a)).

(27) a. Who left? b. [Q [$_{\phi}$ who left]]
(28) a. [[who]]^{o} is undefined. b. [[who]]^{f} = D

The ordinary semantic value of the larger structure that contains the *wh*-phrase, labeled ϕ in (27b), is also undefined, while its focus semantic value is the set of alternatives given in (29b).

(29) a. [[ϕ]]^{o} is undefined.
b. [[ϕ]]^{f} = {p : p = λw. x left in w | $x \in D$}

It is the function of the Q operator to lift the focus semantic value of its sister node to the level of the ordinary semantics (see (30a)). This gives us the desired semantics for (27), given in (31).

(30) a. [[Q ϕ]]^{o} = [[ϕ]]^{f} b. [[Q ϕ]]^{f} = {[[Q ϕ]]^{o}}
(31) [[[Q [$_{\phi}$ who left]]]]^{o} = [[[$_{\phi}$ who left]]]^{f} = {p : p = λw. x left in w | $x \in D$}

In Rooth's (1992, 1996) focus theory, the focus operator ~ evaluates all foci. That is, whenever the contribution of focus is used in the semantics, the ~ operator is involved. The ~ operator introduces a presupposed alternative set C, which is constrained in the following way:

(32) a. [[~C ϕ]]^{o} is defined only if C is a subset of [[ϕ]]^{f} containing [[ϕ]]^{o} and at least one other element.
If defined, [[~C ϕ]]^{o} = [[ϕ]]^{o}.
b. [[~C ϕ]]^{f} = {[[~C ϕ]]^{o}}

The ~ operator uses both the ordinary and the focus semantic value of its sister node, and it evaluates all foci in its scope unselectively (see (32a)) and resets the focus semantic value of the whole structure to a singleton containing the ordinary semantic value (see (32b)).

Consider now (33a), a prototypical example of the intervention effect, and its LF structure in (33b):

(33) a. * Only $John_F$ invited who?
b. $[_{CP}$ Q $[_{IP3}$ $only_C$ $[_{IP2}$ ~C $[_{IP1}$ $John_F$ invited who]]]]

The category IP1 contains an element whose ordinary semantic value is undefined (i.e., *who*); hence IP1 does not have an ordinary semantic value. Similarly, the category labeled IP2 cannot have a well-defined ordinary semantic value. Then the focus value of IP2 cannot be defined, and this carries over to $[[IP3]]^o$ and $[[IP3]]^f$. It is precisely the focus semantic value of IP3 which should be the input to the Q operator; since it is undefined, the whole structure does not have an interpretation. A structure that cannot be assigned an interpretation is ungrammatical.[2] Hence, intervention effect examples are predicted bad as they are uninterpretable.

Beck (2006) proposes the general prediction in (34), essentially a reformulation of Kim's (2002a,b) empirical generalization (12), here repeated in (35):

(34) A *wh*-phrase may not have the ~ operator as its closest c-commanding operator.
*$[Q_i$ ... $[\sim C [_\phi$ ... wh_i ...]]] (Beck 2006)
(35) *$[_{CP}$ Q_i ... [FocP [... wh_i ...]]] (Kim 2002a,b)

Krifka (1999) suggests that expressions such as *at least*, *at most* or *less than* are focus-sensitive, similar to *only* in Rooth's (1985) semantics, and operate on a set of alternatives evoked by focus. In recent work, Penka (2006) proposes that the semantics of the particle *almost* is also analogous to that of *only* in the sense that *almost* evaluates alternatives in which the expression modified by *almost* is replaced by a value close by on the corresponding Horn scale. Interestingly, these expressions are all identified as harmful interveners for LF *wh*-movement in Beck (1996). So we could assume that any element whose interpretation involves alternatives gives rise to the intervention effect.

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2. Cf. Heim & Kratzer's (1998: 48) view of uninterpretability as one source of ungrammaticality: uninterpretable structures are those filtered out by the semantic component of the grammar. The idea is consistent with Chomsky's (1986, 1995) principle of Full Interpretation, requiring every element of PF and LF, the two interface levels of linguistic representation, to have an appropriate interpretation – being licensed in the relevant sense.

In principle, we expect the ~ operator to act as an intervener whenever alternative semantics is involved, for the properties of the ~ that cause the intervention effect in *wh*-constructions – unselectivity and resetting of focus semantic value – should trigger a similar minimality effect in other focus-related constructions.

(36) *General Minimality Effect* (cf. Beck 2006, Beck & Kim, to appear)
The evaluation by Op of alternatives introduced by an XP cannot skip an intervening ~ operator.
*[Op_1 ... [~C [$_\phi$ ... XP_1 ...]]]

When XP_1 is not a *wh*-phrase, this effect would not necessarily be observed as uninterpretability, i.e., ungrammaticality. Rather, it would consist in the absence of a certain interpretation, namely the one where the alternatives introduced by XP_1 are evaluated by Op_1.

4.2. Syntax of Focus Intervention Effects

4.2.1. *Wh*-Licensing

The standard assumption that the *wh*-phrase raises for semantic reasons at LF has always faced the problem that covert movement of *wh*-in-situ does not show the island effects observed for overt *wh*-movement. In the minimalist framework (Chomsky 2000, 2001 and most recently, Chomsky 2005) it is assumed that overt *wh*-movement is not triggered by the need to check some feature, but is merely driven by EPP (or *edge-feature*), a purely syntactic requirement on configuration which does not involve any feature matching. Feature checking is done by Agree at a distance, so there is no reason for *wh*-in-situ phrases to undergo any LF movement.

In the alternative semantics for questions proposed by Hamblin (1973) (which I adopt), *wh*-movement is not necessary. Hamblin suggests that there is no semantic reason for *wh*-movement, mentioning that in many languages, word order of an interrogative sentence is always that of the corresponding indicative sentence.

From this, I conclude that *wh*-phrases in-situ do not undergo any LF movement (featural or phrasal). Their features will be checked by an interrogative C via Agree at a distance.

4.2.2. Feature Checking

Feature checking is done by the Agree operation, which has the fol-

lowing properties (cf. Chomsky 2000, 2004):

(37) (i) Agree between a probe P and a goal G is based on the relation Matching under the locality condition of closest c-command, where Matching is feature identity.
(ii) Agree deletes the uninterpretable features of P and G, allowing derivations to converge at LF.

For the relation between an interrogative C and a *wh*-phrase, Chomsky (2000: 128) proposes that the *wh*-phrase has an uninterpretable [wh] feature (making it active) and an interpretable [Q] feature, which matches the uninterpretable [Q] feature of the interrogative complementizer.

(38) Chomsky's (2000) proposal about the relation between C and the *wh*-phrase
a. probe: [*u*Q] in C
b. goal: [*i*Q,*u*wh] in *wh*-phrase

Instead, I propose that a *wh*-phrase has an uninterpretable Q feature and an uninterpretable F(ocus) feature ([*u*Q,*u*F]) which both need to be checked against the interpretable features [*i*Q,*i*F] of the interrogative C. Only then can the structure containing the *wh*-phrase be assigned a proper interpretation at LF. This mirrors the semantics for questions.

(39) My proposal (mirrors the semantics):
a. probe: [*i*Q,*i*F] in C
b. goal: [*u*Q,*u*F] in *wh*-phrase (must be valued by C)
c. The probe must have a complete set of features matching those of the goal in order to delete its uninterpretable features.

The principle of Full Interpretation holds, such that an LF should contain only interpretable material. LFs with unchecked uninterpretable features are therefore ungrammatical.

4.2.3. Intervention Effects

On the syntactic side I assume that the Agree relation between the *wh*-phrase and the interrogative C is disturbed by an intervening Foc

operator. An intervention effect occurs whenever a focus phrase intervenes between an interrogative C and *wh*-in-situ, as shown in (40) with the relevant features:

(40) * [$_{CP}$ $C_{[iQ,iF]}$ [… $Foc_{[iF]}$ … [… $wh_{[uQ,uF]}$ …]]]

The *wh*-element has uninterpretable features [*u*Q,*u*F], which need to be checked against the interpretable features of a matching operator. Only the interrogative C has the complete set of interpretable features [*i*Q,*i*F] for the [*u*Q,*u*F] of the *wh*-in-situ and so only it can Agree with the *wh*-in-situ, eliminating all of the uninterpretable features.

The intervening focus operator (which comes with the focused element) has an interpretable focus feature *i*F, but it cannot license the *wh*-in-situ because it does not have the feature *i*Q. Even though Foc does not match on every feature with *wh*-in-situ and hence cannot be in an Agree relation with it, it does induce an intervention effect.[3]

A *wh*-phrase not licensed by a Q operator will be uninterpretable, since it can never have a well-defined ordinary semantic meaning; in fact, the Q operator must be the closest c-commanding operator, as it is the only operator which can lift the focus semantic value introduced by a *wh*-phrase to its ordinary semantic value.

What happens if we have move than one *wh*-in-situ? I propose that they are licensed together by the operation Multiple Agree. A single Q operator with the features [*i*Q,*i*F] can check and delete the uninterpretable features [*u*Q,*u*F] of all *wh*-phrases in its local domain. Multiple Agree with a single probe is a single simultaneous syntactic operation; Agree applies to all the matching goals at the same derivational point simultaneously.

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3. There seem to be many cases in which an intervening probe or a goal induces an intervention effect even though it does not have the full set of matching features of the remote goal. In recent work, Rizzi (2004) discusses such cases involving various types of overt movement and proposes to modify Relativized Minimality (RM) in terms of *feature class*, instead of *feature identity*. According to his new proposal, RM effects are expected to arise within the same feature class but not across classes. One such case of RM effects is the so-called "weak island effect": movement of a DP-specifier *how many/much* or an adjunct *wh*-phrase is blocked not only by an intervening *wh*-phrase in SpecCP, but also by an intervening negation, focus or a quantificational adverbial (see also Starke 2001).

(41) *Multiple Agree* (cf. Hiraiwa 2001, Chomsky 2004)
$\alpha > \beta > \gamma$
(Agree (α, β, γ), where β, γ is a probe and both β and γ are matching goals for α.)

$C_{[iQ,iF]}$ can check and delete the uninterpretable features of all *wh*-phrases in its domain:

(42) $[_{CP}\ C_{[iQ,iF]}\ [\ wh_{[uQ,uF]}\ [\ \ldots\ wh_{[uQ,uF]}\ \ldots\ ]]]$

The interpretation of the Korean multiple question (43a) will be (43b):

(43) a. Nwukwu-ka nwukwu-lul chotayha-ess-ni?
who-NOM who-ACC invite-PAST-Q
'Who invited whom?'
b. $\{p : p = \lambda w.\ x$ invited y in $w \mid x, y \in D\}$

5. Intervention Effects in Alternative Questions

Another construction sensitive to focus intervention is the alternative question (see Beck & Kim, to appear, for a detailed discussion of such intervention effects).

In English, a simple question like (44) is ambiguous between a yes-no question (Y/NQ) reading (expected answers: *yes/no*) and an alternative question (AltQ) reading (expected answers: *coffee/tea*).

(44) Did John drink coffee or tea?

The AltQ reading depends on intonation – both disjuncts in (44) must be focused. Note that (45), where a focus phrase c-commands the disjunctive phrase, is unacceptable as AltQ.

(45) ??Did **only John** drink coffee_F or tea_F? [*AltQ]

Similar effects can be found in German (see (46)) and Korean (see (47)). (46a) cannot be interpreted as AltQ. We see that the effect depends on the structural relationship between the disjunctive phrase and the intervener. If the disjuctive phrase is moved to a higher position than the focus phrase as in (46b), the AltQ reading is available.

(46) a. ?*Hat **nur** **Maria** den Jonas$_F$ oder die Ida$_F$ eingeladen?
has only Maria the Jonas or the Ida invited

b. Hat den Jonas$_F$ oder die Ida$_F$ **nur** **Maria** eingeladen?
has the Jonas or the Ida only Maria invited
'Did only Maria invite Jonas or Ida?'

(47) a. Mira-ka cha-lul masi-ess-ni animyen
Mira-NOM tea-ACC drink-PAST-Q if not
khephi-lul masi-ess-ni?
coffee-ACC drink-PAST-Q [√AltQ]
'Did Mira drink coffee or tea?'

b. * **MIRA-ka** cha-lul masi-ess-ni animyen
Mira-NOM tea-ACC drink-PAST-Q if not
khephi-lul masi-ess-ni?
coffee-ACC drink-PAST-Q [*AltQ]
'Did MIRA drink coffee or tea?'

The parallels with the *wh*-intervention effect are obvious, with the disjunctive phrase taking the place of the *wh*-phrase. Beck & Kim (to appear) show that the class of problematic interveners is in fact the same for both *wh*-questions and alternative quetions in a given language. Following von Stechow (1991), Beck & Kim assume that the disjunctive phrase in AltQs introduces a set of alternatives, which are evaluated by the Q operator; an intervening focus operator blocks the evaluation of the alternatives.

(48) [DisjP] in AltQ may not have the ~ operator as its closest c-commanding operator.
*[Q_i ... [~*C* [$_\phi$ ... [$_{DisjP}$ A or B]$_i$ ...]]]

Beck & Kim further argue that the intervention effect in AltQs follows as the Q operator has no alternatives left to evaluate. The consequence is that AltQs would not be subject to the *wh*-intervention effect, but they would be one instance of the general minimality effect for focus evaluation (36), repeated in (49):

(49) *General Minimality Effect* (cf. Beck 2006, Beck & Kim, to appear)
The evaluation by Op of alternatives introduced by an XP cannot skip an intervening ~ operator.
*[Op_1 ... [~C [$_\phi$ ... XP_1 ...]]]

6. Conclusion

To sum up, I have proposed a new generalization of the intervention effects, and an analysis which is based on the evaluation of focus alternatives. I introduced two constructions which are both sensitive to focus intervention, i.e., *wh*-questions and alternative questions. I showed that in both constructions, focus is involved, and that is why they are subject to the intervention effect induced by the focus operator. I have also provided some syntactic, semantic and phonological evidence for the Focus Intervention Effects.

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