

Intervention Effects in Questions

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Contents

Acknowledgements	vii
1 Introduction	1
2 Intervention Effects in <i>Wh</i>-Questions	5
2.1 Introduction	5
2.2 Intervention Effects in German	6
2.2.1 <i>Wh</i> -in-situ in German	6
2.2.2 Analysis of <i>Wh</i> -Intervention Effects in German	10
2.3 Intervention Effects in Korean	19
2.3.1 <i>Wh</i> -in-situ in Korean	22
2.3.2 Analysis of <i>Wh</i> -Intervention Effects in Korean	28
2.4 Intervention Effects Crosslinguistically	30
2.4.1 Turkish	30
2.4.2 Malayalam	33
2.4.3 English	36
2.4.4 Hungarian	41
2.4.5 French	46
2.5 Problems with the Minimal Quantified Structure Constraint	50
2.5.1 Overgeneralization	50
2.5.2 Why Should Intervention Effects Hold?	54

CONTENTS

2.5.3	Intervention Effects Are Focus Effects	54
2.6	Summary	55
3	Focus Intervention Effects	57
3.1	Introduction	57
3.2	Focus and WH	63
3.2.1	Syntactic Similarities	63
3.2.2	Phonological Similarities	67
3.2.3	Semantic Similarities	71
3.3	Analysis of Focus Intervention Effects	74
3.3.1	Semantics of Focus Intervention Effects	75
3.3.2	Syntax of Focus Intervention Effects	87
3.4	Conclusion	117
4	Intervention Effects in Alternative Questions	119
4.1	Introduction	119
4.2	The Phenomenon	122
4.2.1	Intervention Effects in German	123
4.2.2	Intervention Effects in Korean	126
4.2.3	Intervention Effects in English	129
4.2.4	Intervention Effects in Hungarian	130
4.2.5	Summary of the Facts and Consequences for Linguistic Theory	132
4.3	Analysis of Intervention Effects in Alternative Questions	133
4.3.1	Deriving the Effect in the Framework of Romero and Han (2003)	134
4.3.2	Deriving the Effect in the Framework of von Stechow (1991)	138
4.4	Are AltQs <i>Wh</i> -Questions?	142
4.4.1	Is the Disjunctive Phrase a <i>Wh</i> -Phrase?	142
4.4.2	Movement in Alternative Questions?	145

CONTENTS

4.4.3	Consequences	158
4.5	More on the Disjunction	163
4.5.1	The Focus Semantic Contribution of Disjunctions	163
4.5.2	Other Intervention Effects with Disjunctions?	166
4.6	Some Further Issues	168
4.6.1	The Size of the Disjuncts	168
4.6.2	Intervention Effects in AltQs and <i>Wh</i> -Questions Crosslin- guistically	173
4.7	Summary and Conclusions	174
5	Intervention Effects in NPI Licensing	175
5.1	Introduction	175
5.2	NPIs and NPI Licensing	176
5.3	Focus and NPI-Licensing	182
5.4	The Intervention Effect for NPIs	185
5.5	Summary	186
6	Conclusion	189
6.1	Summary of the Dissertation	189
6.2	Open Issues	192
	Bibliography	195

CONTENTS

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Chapter 1

Introduction

This dissertation is concerned with the phenomenon of intervention effects, observed in three different domains: *wh*-questions, alternative questions (AltQ) and Negative Polarity Item (NPI) licensing. This is illustrated by the contrasts in the following pairs of examples.

- (1) a. ?*Wann hat **nur Maria** *wen* eingeladen?
when has only Maria whom invited
b. Wann hat *wen* **nur Maria** eingeladen?
when has whom only Maria invited
'When did only Maria invite whom?'
- (2) a. ?*Hat **nur Maria** *den Jonas oder die Ida* eingeladen?
has only Maria the Jonas or the Ida invited
b. Hat *den Jonas oder die Ida* **nur Maria** eingeladen?
has the Jonas or the Ida only Maria invited
'Did only Maria invite Jonas or Ida?'
- (3) a. ?*weil niemand **nur für Otto** *einen Finger gerührt* hat
because nobody only for Otto a finger lifted has
b. weil **nur für Otto** niemand *einen Finger gerührt* hat
because only for Otto nobody a finger lifted has
'because nobody lifted a finger only for Otto'

CHAPTER 1. INTRODUCTION

The *wh*-in-situ phrase in *wh*-questions, the disjunctive phrase in an alternative question, and NPIs in negative sentences may not be c-commanded by a focus phrase such as *nur Maria* ‘only Maria’. This configuration is what is responsible for the ungrammaticality of the a.-examples. In contrast, the configurations in which the elements in question are not c-commanded by a focus phrase are grammatical, as shown by the b.-examples.

I propose in this dissertation that these three domains share some common properties, namely, they all involve focus-sensitive licensing, and are thus sensitive to an intervening focus phrase.

The overview of the dissertation is as follows.

In chapter 2, I discuss the phenomenon of intervention effects in *wh*-questions, brought to light in Beck’s (1996) discussion of German data, and Beck and Kim’s (1997) discussion of Korean data. The basic idea of their analysis is that quantifiers block LF *wh*-movement. I show that intervention effects are observed in many other languages, too, suggesting that the intervention effect has a universal character. I then point out some problems with the analysis proposed by Beck (1996) and Beck and Kim (1997).

In chapter 3, I propose a new generalization of the *wh*-intervention effects, namely that the core set of interveners, which is crosslinguistically stable, consists of focus phrases (and not quantifiers in general). Furthermore, I argue that the *wh*-intervention effect is actually an instance of the more general intervention effect, the *Focus Intervention Effect*, which says that in a focus-sensitive licensing construction, no independent focus phrase may intervene between the licensor Op and the licensee XP. I further propose that the domain of focus-sensitive licensing includes not only *wh*-licensing, but also AltQ-licensing and NPI-licensing.

In chapter 4, I show that alternative questions are also subject to the focus intervention effect, just like *wh*-questions. I provide evidence that the intervention effect in *wh*-questions and in alternative questions should receive a parallel analysis, in terms of focus-sensitivity.

In chapter 5, I discuss a third construction which is sensitive to the focus intervention effect: the licensing of Negative Polarity Items. I show that focus consistently blocks NPI licensing, with data from German and Korean. I propose that NPIs are also semantically deficient focus elements, which need to be associated with a NEG operator.

Finally, chapter 6 summarizes the intervention effects and brings up some topics for future research into the precise nature of the intervention effect.

A note on the material which is presented in this dissertation: Chapter 2 contains material from Beck and Kim (1997), and Chapter 4 is entirely based on Beck and Kim (2006).

CHAPTER 1. INTRODUCTION

Chapter 2

Intervention Effects in *Wh*-Questions

2.1 Introduction

In this chapter I will discuss the phenomenon of intervention effects in *wh*-questions, brought to light in Beck's (1996) discussion of German data and Beck and 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 and Kim (1997) is that an intervening quantifier blocks LF movement of *wh*-in-situ to an operator position.

In section 2.2, I introduce the intervention effects in German *wh*-constructions and their analysis proposed in Beck (1996), which involves her proposals of the 'Minimal Quantified Structure Constraint' (MQSC). In section 2.3, I show that similar intervention effects are observed in Korean, and argue that Beck's generalization applies to Korean, too. In section 2.4, it is shown that intervention effects are observed in many other languages, too, suggesting that the intervention effect has a universal character. Section 2.5 discusses some problems with

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

the MQSC analysis of the intervention effect. The MQSC basically says that quantificational expressions in general block LF movement. However, data from various languages suggests that this assumption is too strong, in the sense that not every quantifier creates an intervention effect. Finally, section 2.6 summarizes the survey of intervention effects in *wh*-questions.

2.2 Intervention Effects in German

In this section I introduce a restriction on LF movement suggested in Beck (1996), on the basis of *wh*-in-situ data from German.

2.2.1 *Wh*-in-situ in German

The data in (1) provide the crucial empirical motivation for the restriction I am going to introduce (Here and in what follows, interveners appear in **boldface** and the relevant *in situ* expressions appear in *italics*).

- (1) a. *Wen hat **niemand** *wo* gesehen?
whom has nobody where seen
'Where did nobody see whom?'
- b. *Was glaubt **niemand**, *wen* Karl gesehen hat?
what believes nobody whom Karl seen has
'Who does nobody believe that Karl saw?'
- c. *Wen hat **niemand** *alles* gesehen?
whom has nobody all seen
'Who-all did nobody see?'
- d. *Wen hat **keine Studentin** *von den Musikern* getroffen?
whom has no student of the musicians met
'Which of the musicians did no student meet?'

Beck (1996) refers to the expression in *italics* as the *in situ* expression, which, she claims, has to be moved at LF. (1-a) is a multiple question and (1-b) is a scope

2.2. INTERVENTION EFFECTS IN GERMAN

marking construction with *was* marking the scope of *wen* (see, e.g., von Stechow and Sternefeld 1988 and McDaniel 1989).¹ (1-c) is a *w-alles*-construction (see Reis 1992). In (1-d), a restriction semantically belonging to the *wh*-phrase (*von den Musikern* ‘of the musicians’) is split off and stays in situ at S-structure.

The examples in (2) show that the examples in (1) are ungrammatical due to the occurrence of a negative quantifier, since the same constructions are perfectly grammatical if the negative quantifier is replaced by a proper name (here, *Luise*).

- (2)
- a. Wen hat Luise *wo* gesehen?
whom has Luise where seen
‘Where did Luise see whom?’
 - b. Was glaubt Luise, *wen* Karl gesehen hat?
what believes Luise whom Karl seen has
‘Who does nobody believe that Karl saw?’
 - c. Wen hat Luise *alles* gesehen?
whom has Luise all seen
‘Who-all did Luise see?’
 - d. Wen hat Luise *von den Musikern* getroffen?
whom has Luise of the musicians met
‘Which of the musicians did Luise meet?’

In Beck (1996), this effect is described by the generalization in (3).

- (3) An intervening negation blocks LF movement.²

The idea is that in each of the examples in (2), the expression in italics, referred to as the *in situ* expression, has to be moved for semantic reasons from its S-structure position to an LF landing site outside the scope of negation. Apparently, just that movement is blocked by the intervening negation. Examples in (4) show

¹Here, the *wh*-phrase in the embedded SpecCP is not strictly speaking in situ, of course. I will still refer to it as an *in situ* expression for convenience.

²For informal reference, I will uniformly talk about *nicht* ‘not’, *niemand* ‘nobody’ and *kein* ‘no’ as negation.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

that what is problematic is indeed an LF relation, since the corresponding overt (i.e., S-structure) movement leads to grammatical results:

- (4) a. Wo hat **niemand** Karl gesehen?
where has nobody Karl seen
'Where did nobody see Karl?'
- b. Wen glaubt **niemand**, dass Karl gesehen hat?
whom believes nobody that Karl seen has
'Who does nobody believe that Karl saw?'
- c. Wen alles hat **niemand** gesehen?
whom all has nobody seen
'Who-all did nobody see?'
- d. Wen von den Musikern hat **keine Studentin** getroffen?
whom of the musicians has no student met
'Which of the musicians did no student meet?'

In the case of multiple *wh*-questions, minimal pairs like (5) and (6) can be found.

- (5) a. *Wer hat **niemanden** wo angetroffen?
who has nobody_{acc} where met
- b. Wer hat wo **niemanden** angetroffen?
who has where nobody_{acc} met
'Who didn't meet anybody where?'
- (6) a. *Welche Kinder haben **niemandem** welche Bilder zeigen wollen?
which children have nobody_{dat} which pictures show wanted
'Which children wanted to show nobody which pictures?'
- b. Welche Kinder haben welche Bilder **niemandem** zeigen wollen?
which children have which pictures nobody_{dat} show wanted
'Which children wanted to show which pictures to nobody?'

Beck (1996: 23) notes that (5-b) needs a good context (e.g., a conversation about deliveries in a pizza service). If a good context is provided, the sentence is fine. (5-a), on the other hand, is ungrammatical, no matter how good a context is provided. Similarly for the contrast in (6). (6-a) also demonstrates that the ungram-

2.2. INTERVENTION EFFECTS IN GERMAN

maticity of (5-a) has nothing to do with the status of *wo* ‘where’ as an adjunct. This is also illustrated in the next example with *wen* ‘whom’ in situ:

- (7) *Wann hat **niemand** *wen* eingeladen?
when has nobody whom invited
‘When did nobody invite whom?’

The generalization based on these data seems to be the following: If the in-situ expression is preceded and thereby c-commanded by negation at surface structure, the configuration is ungrammatical. If, on the other hand, the in-situ expression occurs structurally above the negation at surface structure, there is no problem. Beck concludes that the examples in (1) require a uniform treatment and suggests that for semantic reasons the in situ expressions have to be moved at LF to the SpecCP position of the matrix question and negation blocks that LF movement.

Beck (1996) further shows that not only negative expression, but quantified expressions in general induce intervention effects for LF movement in German. This is motivated by data such as (8). If a quantifier c-commands the *wh*-in-situ, the configuration is ungrammatical, as illustrated in the following (a)-examples. Note that when the *wh*-in-situ is scrambled overtly to a position above the intervening quantifier as in the (b.)-examples, the structure is well-formed.³

³Unlike Korean, which optionally allows *wh*-scrambling, German does not allow *wh*-scrambling in normal contexts (see Fanselow 1990, Müller and 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:

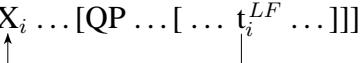
- (i) *Wen hat wo_i Karl t_i getroffen?
whom has where Karl met
‘Who did Karl meet where?’

It is interesting to note that there are some contexts in which German allows *wh*-scrambling. The intervention context such as (8) – (10) is one of those, and the otherwise impossible *wh*-scrambling is allowed to repair the ungrammaticality. See Heck and Müller (2000) for a promising optimality-theoretic analysis of the “repair-driven movements”.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- (8) a. *Wen hat **nur Karl** wo getroffen?
whom has only Karl where met
- b. Wen hat wo **nur Karl** getroffen?
whom has where only Karl met
'Who did only Karl meet where?'
- (9) a. *Wen haben **wenige** wo getroffen?
whom have few where met
- b. Wen haben wo **wenige** getroffen?
whom have where few met
'Who did few meet where?'
- (10) a. *Wen hat **fast jeder** wo getroffen?
whom has almost everyone where met
- b. Wen hat wo **fast jeder** getroffen?
whom has where almost everyone met
'Who did almost everyone meet where?'

Based on this observation, Beck (1996) proposes the generalization that an intervening quantifier blocks LF movement. Beck suggests that for semantic reasons, the in-situ *wh*-phrase undergoes covert movement to its scope position (i.e., to SpecCP) at LF, and that this "LF" movement cannot cross a *quantifier-induced barrier*. So the following configuration is ruled out, where t_i^{LF} stands for a trace created by LF-movement:

- (11) * [... X_i ... [QP ... [... t_i^{LF} ...]]]
- 

In the next subsection I will summarize Beck's (1996) motivation of LF movement and her analysis of intervention effects in German *wh*-questions.

2.2.2 Analysis of *Wh*-Intervention Effects in German

Beck (1996) assumes that LF is the level that is compositionally interpreted, and she also adopts a Hamblin/Karttunen semantics for questions (cf. Hamblin 1973,

2.2. INTERVENTION EFFECTS IN GERMAN

Karttunen 1977).

In both Hamblin's and Karttunen's semantics for questions, a question denotes a set of propositions, namely the set of all those propositions that are possible answers to the question. The difference between these approaches is that in Karttunen's semantics, those propositions are required to be true, while there is no such requirement in Hamblin's system. For example, if Mary, Sue and Jane are the people in the context, then the denotation of the question (12-a) will be the set of propositions informally given in (12-b) and in more formal terms in (12-c).

- (12) a. Who was at the party?
 b. {that Mary was at the party, that Sue was at the party, that Jane was at the party}
 c. $\lambda p \exists x [\text{person}_w(x) \ \& \ p = \lambda w' [x \text{ was at the party in } w']]$

In the Hamblin/Karttunen semantics for questions, (13-a) – (13-d) represent the interpretations that examples in (1-a) – (1-d) should have if they were well-formed:⁴

- (13) a. $\lambda p \exists x [\text{person}_w(x) \ \& \ \exists z [\text{place}_w(z) \ \& \ p = \lambda w' \neg \exists y [\text{person}_{w'}(y) \ \& \ \text{saw}_{w',z}(y, x)]]]$
 b. $\lambda p \exists x [\text{person}_w(x) \ \& \ p = \lambda w' \neg \exists y [\text{person}_{w'}(y) \ \& \ \text{believes}_{w'}(y, \lambda w'' [\text{saw}_{w''}(\text{karl}, x)]]]$
 c. $\text{alles}'(\lambda p \exists x [\text{person}_w(x) \ \& \ p = \lambda w' \neg \exists y [\text{person}_{w'}(y) \ \& \ \text{saw}_{w'}(y, x)]])$
 d. $\lambda p \exists x [\text{person}_w(x) \ \& \ x \in \text{the_musicians}'_w \ \& \ p = \lambda w' \neg \exists y [\text{student}_{w'}(y) \ \& \ \text{met}_{w'}(y, x)]]]$

(13-a) is the normal denotation for multiple questions. (13-b) is the denotation for long extraction, synonymous with the scope marking construction. An expression

⁴The semantic system used in Beck (1996) is exactly like Karttunen's, except that the truth requirement is dropped. For a detailed discussion of how the examples are compositionally interpreted, I would like to refer to Beck (1996).

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

like the *in situ* PP in (1-d) is understood as a restriction of the *wh*-phrase. (13-d) is the meaning that (1-d) actually has, just as (13-c) is the meaning of (1-c).

In order to derive the interpretations in (13), the *in situ* expression in (1), in each case, has to be moved from its S-structure position (structurally below the negation) to a position above the interrogative C^0 at the level of LF. These expressions have to be interpreted outside the scope of the interrogative operator (which shows up as “ $p =$ ” in the formulas above) and, consequently, outside the scope of the negative quantifier (which has to be interpreted within the scope of the interrogative operator). It is this movement that is blocked by the negative quantifier in (1). And the same explanation applies to the ungrammatical examples with other quantifiers in (8)–(10).

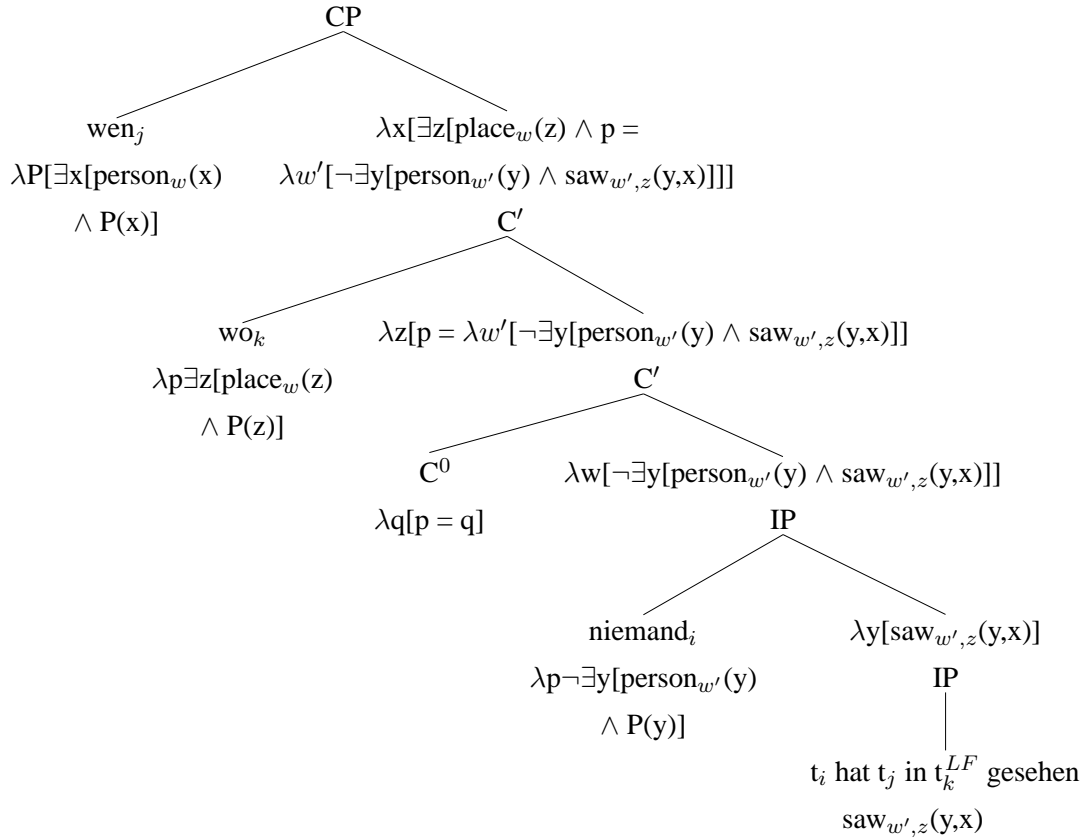
I will illustrate this for the case of the multiple question (1-a). In order to derive the interpretation (13-b), which is the usual Hamblin/Karttunen denotation for a multiple question, the example should have an LF roughly like that in (14) (see next page).

(14) is an LF for the interrogative in the style of LFs in von Stechow (1993). The interrogative operator (“ $\lambda q[p = q]$ ”) is associated with the C^0 position. In order to be interpreted as an interrogative *wh*-phrase, *wo* ‘where’ has to be interpreted outside the scope of this operator and, consequently, has to end up in a position structurally above the C^0 position at LF. It leaves a trace (t_k) in the scope of negation. However, the relation between *wo* and its LF trace is blocked by *nemand* ‘nobody’, according to generalization (3). The offending trace in (14) and in the following examples will be marked with the superscript “LF”, because it is essential to the analysis that this trace comes into existence only at LF.

The notion of LF here is that of so-called ‘transparent LF’ (see von Stechow 1993 for the term and Heim and Kratzer 1998, among others, for the concept); it is the direct input to compositional interpretation. Thus, claims about the LF landing site of an expression are motivated by the way that expression enters into semantic composition.

2.2. INTERVENTION EFFECTS IN GERMAN

- (14) $\lambda p[\exists x[\text{person}_w(x) \wedge \exists z[\text{place}_w(z) \wedge p = \lambda w'[\neg\exists y[\text{person}_{w'}(y) \wedge \text{saw}_{w',z}(y,x)]]]]]$



A similar point can be made for (1-b) – (1-d), for the LF landing sites of *wen* (in the scope marking construction), *alles* and *von den Musikern*, respectively. (15-a) – (15-d) are the LF representations assumed for (1-a) – (1-d).

- (15) a. [_{CP} wen_i wo_j [_C C⁰ [_{IP} niemand t_i t_j^{LF} gesehen hat]]]
- b. [_{CP} wen_i [_C C⁰ [_{IP} niemand glaubt [_{CP} t_i^{LF} [_{IP} Karl t_i gesehen hat]]]]]]]
- c. [_{CP} alles_j [_{CP} wen_i [_C C⁰ [_{IP} niemand t_i t_j^{LF} gesehen hat]]]]]
- d. [_{CP} [wen_i [von den Musikern]_j] [_C C⁰ [_{IP} keine Studentin t_i t_j^{LF} getroffen hat]]]]]

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

What we need to exclude are structures like (16) (where t_k^{LF} is a trace created by LF-movement):

$$(16) \quad [X_k \dots [\text{quantifier} [\dots t_k^{LF} \dots]]]$$

And this is formalized as a constraint on LF movement as follows:

- (17) a. *Quantifier-Induced Barrier (QUIB)*
 The first node that dominates a quantifier, its restriction, and its nuclear scope is a Quantifier-Induced Barrier.
- b. *Minimal Quantified Structure Constraint (MQSC)*
 If an LF trace β is dominated by a QUIB α , then the binder of β must also be dominated by α .

(Beck 1996: 64)

To put it in plain words, LF movement of *wh*-in-situ elements or other *in situ* expressions may not cross a c-commanding quantifier.

To see how the MQSC works, we take the examples in (5) and look at their LF representations, which are given in (18-a) and (18-b) respectively. At LF, the *wh*-in-situ element *wo* ‘where’ moves to SpecCP and leaves an LF trace t_j^{LF} .

- (18) a. $[_{CP} \text{wer}_i \text{wo}_j \quad [_C \text{C} [_{IP} t_i \text{niemanden } t_j^{LF} \text{ angetroffen hat}]]]$
 who where nobody_{acc} met has
 (= LF for (5-a))
- b. $[_{CP} \text{wer}_i \text{wo}_j \quad [_C \text{C} [_{IP} t_j^{LF} [_{IP} t_i \text{niemanden } t_j \text{ angetroffen hat}]]]]]$
 who where nobody_{acc} met has
 (= LF for (5-b))

The crucial difference between the LFs (18-a) and (18-b) lies in the positions of the trace left by LF movement of the *wh*-in-situ element *wo* (*wer* ‘who’ is moved overtly to SpecCP in both cases, so its trace does not carry the superscript *LF* and is not subject to the MQSC). In (18-a), the LF trace is located in a position

2.2. INTERVENTION EFFECTS IN GERMAN

c-commanded by the negative quantifier *niemanden* ‘nobody’, and in (18-b), it is outside the c-command domain of the quantifier. In (18-a), the intervening negative quantifier *niemanden* ‘nobody’ induces a QUIB, the IP. The LF trace t_j^{LF} of wo_j is dominated by this QUIB, but the binder of that trace is not. Thus (18-a) violates the MQSC. On the other hand, in the grammatical LF (18-b), there is no intervening quantifier between wo_j and its LF trace t_j^{LF} , thus there is no violation of the MQSC. The same analysis can be applied to the contrasts in (8) – (10).

In (19), the universal quantifier *jeder* ‘everyone’ c-commands the *wh*-in-situ *wo* ‘where’. Unlike the (a)-examples in (8)–(10), (19) is grammatical. The intervention of *jeder* does have an effect, though. (19) has only the so-called pair-list or distributive reading, which is paraphrased as in (19-a). (19) does not have the single (or individual) answer reading in (19-b), in which the universal quantifier is in the scope of the *wh*-question.

- (19) Wen hat **jeder** wo gesehen?
 whom has everyone where seen
 ‘Where did everyone see whom?’
- a. For each person x : who did x see where?
 b. *Which person and which place are such that everyone saw the person in that place?

Beck (1996) argues that in the reading (19-a), the universal quantifier *jeder* ‘everyone’ has scope over the entire question and hence is moved out of the way at LF, as illustrated in (20).

- (20) [_{CP} jeder_i [_{CP} wen_j wo_k [_C C [_{IP} t_i t_j t_k^{LF} gesehen hat]]]]

Here, *jeder* is raised to the CP-adjoined position and is not in a position to block the LF-movement of the *wh*-in-situ any more. And the LF-representation (20) generates only the distributive reading for the universal quantifier. So the MQSC can explain why (19) is grammatical only on the wide scope reading of the uni-

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

versal quantifier *jeder* ‘everyone’.

If *jeder* in (19) takes the narrow scope (the reading in (19-b)), (19) would have the LF-representation in (21):

(21) $[_{CP} \text{ wen}_j \text{ wo}_k [_C \text{ C } [_{IP} \text{ jeder } t_j t_k^{LF} \text{ gesehen hat }]]]$

In (21), *jeder* intervenes between wo_k in SpecCP and its LF trace t_k^{LF} , violating the MQSC.

The scope fact in (19) shows that the intervention effect is a constraint on LF which is sensitive to the scope position of the intervener.

One might ask why other quantificational interveners, such as negative quantifiers, do not have the possibility of having wide scope over the question (thus leading to an unambiguous grammatical interpretation, rather than ungrammaticality). Beck (1996) ascribes this to the fact that among the genuine quantifiers, *every* is the only one that can have a pair-list reading in questions, which rescues the examples in (19) and also in (22). The examples in (22) parallel those in (1), except for *jeder* ‘everyone’ or *jede Studentin* ‘every student’ being the intervening element, rather than a negative quantifier.

- (22) a. Was glaubt **jeder**, wen Karl gesehen hat?
 what believes everyone whom Karl seen has
 ‘Who does everyone believe that Karl saw?’
- b. Wen hat **jeder** alles gesehen?
 whom has everyone all seen
 whom has everyone all seen
 ‘Who-all did everyone see?’
- c. Wen hat **jede Studentin** von den Musikern getroffen?
 whom has every student of the musicians met
 ‘Which of the musicians did every student meet?’

Unlike (1), the examples in (22) are grammatical. But as in (19), the intervention of *jeder* does have an effect on the interpretation. As observed in Pafel (1991,

2.2. INTERVENTION EFFECTS IN GERMAN

1993a), (22-a–c) only have the pair-list or distributive reading paraphrased in (23-a–c).

- (23)
- a. For each person x : who does x believe that Karl saw?
 - b. For each person x : who-all did x see?
 - c. For each student x : which of the musicians did x meet?

There has been some discussion in the literature as to how to account for the pair-list reading (see, e.g., Engdahl 1986, Higginbotham 1991, and Chierchia 1993). Following Higginbotham (1991) and Chierchia (1993), Beck assumes that the pair-list reading is derived by giving the universal quantifier scope over the entire question, and that assigning wide scope to the quantifiers other than the universal quantifier (such as *fast jeder* ‘almost everyone’ or *niemand* ‘nobody’) over the entire question is not possible (cf. Chierchia 1993). Therefore, such expressions produce ungrammaticality rather than unambiguity when they intervene between *wh*-in-situ and C.

The fact that only universal quantifiers can take wide scope over the question has already been noted by Barss (1986: 428ff). In a question with a universal quantifier like (24), *everyone* can be interpreted with wide scope (as in (24-a)).

- (24) What did everyone buy?
- a. For every person x : what did x buy?
 - b. What is x such that everyone buy x ?

Now consider the example (25):

- (25) What did no one buy?

According to Barss, (25) has only one type of answer, the single answer, such as “A pair of green shoes”. This reflects the interpretation of (25) with *no one* having narrow scope with respect to *what*, i.e., “what is the thing x such that no

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

one bought x ?”. There is no possible distributed reading for the question in (25); there must be some semantic principle which blocks it.⁵

Suppose that *no one* were interpreted with wide scope, which could be approximately represented at LF as in (26):

(26) [no x : x is a person] [which y : y a thing] [x bought y]

The quantifier *no one*, having wide scope over the *wh*-operator, restricts the domain of discourse to a set having no members. So the question would have the meaning “for no x , tell me what x bought”. But this is a question which has no particular answer, as it would amount to a request to keep quiet about what anyone bought. This might be the reason why the quantifier *no one* cannot be understood with wide scope over an interrogative. Barss (1986: 429) suggests the following constraint:

⁵In fact, questions with negative quantifiers also allow functional (or relational) answers (in addition to single answers). An example is given in (i), taken from Chierchia (1993: 195).

- (i) Who does no Italian married man like?
- a. His mother-in-law.
 - b. *Giovanni, Maria; Paolo, Francesca; ...

For the functional readings, Chierchia (1993) adopts Engdahl’s (1986) semantic analysis, which involves quantifying over Skolem functions (i.e., functions from individuals to individuals). The logical form of the question in (i) is roughly as follows:

- (ii) Which function f is such that no Italian married man likes $f(x)$?

(ii) can be represented more formally as in (iii):

- (iii) $\lambda p \exists f [p = \lambda w. \neg \exists x [\text{person}_w(x) \wedge \text{love}_w(x, f(x))]]$
 where f is a variable of type $\langle e, e \rangle$

Note that in this representation, the negative quantifier does not scope over the *wh*-operator.

2.3. INTERVENTION EFFECTS IN KOREAN

(27) *The Answer Limitation Constraint*

A quantifier Q in a question must be interpreted to give rise to the maximal possible set of answers to the question.

This condition is supposed to entail that only universal quantifiers can have wide scope over interrogatives.⁶

2.3 Intervention Effects in Korean

Korean is a strictly head-final language in which lexical as well as functional heads come after the complements which they select. An example of a declarative sentence is given in (28).

- (28) Mira-ka sinmwun-ul ilk-ess-ta
Mira-NOM newspaper-ACC read-PAST-DEC
'Mira read a newspaper.'

⁶See also Pesetsky (2000: 64) for a possible explanation (along the same lines as Barss' constraint (27)) for why expressions like *no one*, *only NP*, as well as *almost every NP*, cannot be assigned wide scope over a question. He suggests that assigning wide scope to these expressions may run afoul of something like (i).

(i) *Unaskable Questions*

A clause interpreted as a question may not request anything less than a full answer.

As for why "almost everyone" cannot take scope over the question, Hagstrom (1998: 172) notes that it feels as if what is being asked is not well-defined; how many answers would be sufficient, as well as which particular instances of *x* are to be answered for, is left underspecified.

(ii) ?#For almost every man *x*, what does *x* lack?

See Chierchia (1993), Hagstrom (1998), and Krifka (2001, 2003) for some more discussion of the pair-list readings of quantifier/*wh*-questions.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

A *wh*-question formed by questioning the object is given in (29). Notice that the question word *mwues* ‘what’ remains in object position and that the fact that it is a question is indicated by a sentence-final particle *-ni* (which I will gloss as ‘Q’).

- (29) Mira-ka *mwues-ul* ilk-ess-ni?
Mira-NOM what-ACC read-PAST-Q
‘What did Mira read?’

The fact that the *wh*-object remains in the same position as the object in a declarative sentence places Korean in the “*wh*-in-situ” category of languages, different from languages like English or German which require movement of one question word to clause-initial position in *wh*-questions.

Another characteristic of Korean is that it allows relatively free word order derived by scrambling. So, for example, the object NP in (28) can be scrambled to a position above the subject:

- (30) Sinmwun-ul_i Mira-ka t_i ilk-ess-ta
newspaper-ACC Mira-NOM read-PAST-DEC
‘Mira read a newspaper.’

While Korean is a *wh*-in-situ language, *wh*-phrases can optionally be scrambled as other maximal categories. So, both (31-a) and (31-b) are well-formed and there is no semantic difference between these two examples.

- (31) a. Mira-ka *mwues-ul* ilk-ess-ni?
Mira-NOM what-ACC read-PAST-Q
b. *Mwues-ul*_i Mira-ka t_i ilk-ess-ni?
what-ACC Mira-NOM read-Past-Q
‘What did Mira read?’

Now consider the following contrast:

2.3. INTERVENTION EFFECTS IN KOREAN

- (32) a. ***Amwuto** *mwues-ul* sa-ci anh-ass-ni?
 anyone what-ACC buy-COMP not do-PAST-Q
 b. *Mwues-ul*_i **amwuto** t_i sa-ci anh-ass-ni?
 what-ACC anyone buy-COMP not do-PAST-Q
 ‘What did no one buy?’

Here, the *wh*-phrase has to be scrambled across the negative polarity item subject in order for the configuration to be grammatical.⁷

In a multiple question, all *wh*-phrases have to be scrambled to a position above the intervening negative polarity item (henceforth, NPI):

- (33) a. ***Amwuto** *nwukwu-lul eti-eyse* manna-ci anh-ass-ni?
 anyone who-ACC where-LOC meet-COMP not do-PAST-Q
 b. **Nwukwu-lul* **amwuto** *eti-eyse* manna-ci anh-ass-ni?
 who-ACC anyone where-LOC meet-COMP not do-PAST-Q
 c. **Eti-eyse* **amwuto** *nwukwu-lul* manna-ci anh-ass-ni?
 where-LOC anyone who-ACC meet-COMP not do-PAST-Q
 d. *Nwukwu-lul eti-eyse* **amwuto** manna-ci anh-ass-ni?
 who-ACC where-LOC anyone meet-COMP not do-PAST-Q
 e. *Eti-eyse* *nwukwu-lul* **amwuto** manna-ci anh-ass-ni?
 where-LOC who-ACC anyone meet-COMP not do-PAST-Q
 ‘Where did no one meet whom?’

This is strongly reminiscent of German data such as (5) from section 2.2.1, which is repeated in (34).

⁷The morpheme *ci* on the embedded verb is a verbal suffix which is selected by the negative verb *anh* ‘not do’. Korean has a series of nontensed verb endings. A tenseless verb is formed by suffixing onto the verb root a morpheme that has the properties of a type of complementizer (referred to as COMP in Sells 1995). I will assume that there is a kind of morphological selection between the negative verb *anh* and the embedded verb and just gloss the suffix *ci* as COMP, following Sells (1995). See Sells (1995) and also Cho and Sells (1995) for a detailed discussion of the verbal morphology in Korean.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- (34) (= (5))
- a. *Wer hat **niemanden** *wo* angetroffen?
who has nobody_{acc} where met
 - b. Wer hat *wo* **niemanden** angetroffen?
who has where nobody_{acc} met
'Who didn't meet anybody where?'

In this section I will provide an analysis for the intervention effects in Korean, along the lines of the analysis for German suggested in Beck (1996).

2.3.1 *Wh*-in-situ in Korean

As mentioned above, Korean does not have obligatory overt *wh*-movement. But unlike German, Korean allows optional scrambling of *wh*-phrases. (35-a) is a normal *wh*-question in the unmarked word order. In addition, Korean allows optional *wh*-scrambling as in (35-b). Both options are grammatical.

- (35)
- a. Mira-ka *mwues-ul* sa-ss-ni?
Mira-NOM what-ACC buy-PAST-Q
 - b. *Mwues-ul*_i Mira-ka t_i sa-ss-ni?
what-ACC Mira-NOM buy-PAST-Q
'What did Mira buy?'

This changes if we have a negative quantifier in the *wh*-questions. Korean uses a negative verb *anh* 'not do' and a negative polarity item *amwuto* 'anyone'.⁸ A

⁸While NPIs exhibit a subject/non-subject asymmetry in English, there is no such asymmetry in Korean. NPIs may appear in the subject position in Korean, as shown in (i).

- (i)
- a. Mira-nun amwukesto mek-ci anh-ass-ta
Mira-TOP anything eat-COMP not do-PAST-DEC
'Mira didn't eat anything.'
 - b. Amwuto sakwa-lul mek-ci anh-ass-ta
anyone apple-ACC eat-COMP not do-PAST-DEC
'No one ate apples.'

2.3. INTERVENTION EFFECTS IN KOREAN

declarative example is given in (36), (36-a) in the unmarked order and (36-b) with the scrambled object in a position above the subject. Both are grammatical.

- (36) a. Amwuto ku chayk-ul ilk-ci anh-ass-ta
anyone that book-ACC read-COMP not do-PAST-DEC
- b. Ku chayk-ul_i amwuto t_i ilk-ci anh-ass-ta
that book-ACC anyone read-COMP not do-PAST-DEC
'No one read that book.'

Now consider (37) with an NPI in the subject position c-commanding a *wh*-phrase in the object position (the problematic intervener is marked in **boldface**, and the *wh*-in-situ in *italics*):

- (37) a. ***Amwuto** *mwues-ul* ilk-ci anh-ass-ni?
anyone what-ACC read-COMP not do-PAST-Q
- b. *Mwues-ul*_i **amwuto** t_i ilk-ci anh-ass-ni?
what-ACC anyone read-COMP not do-PAST-Q
'What did no one read?'

Interestingly, the example in the unmarked word order (37-a) is ungrammatical. Only the scrambled order with the object *wh*-phrase preceding the subject NPI is a well-formed option.⁹

The same effect shows up with other types of *wh*-phrases, too.

- (38) a. ***Amwuto** *eti-ey* ka-ci anh-ass-ni?
anyone where-DIR go-COMP not do-PAST-Q

But it is not possible to have an NPI in the subject position in English:

- (ii) a. John didn't eat anything.
b. *Anyone didn't eat apples.

The absence of subject/non-subject asymmetry in NPI-licensing is observed in many other languages, too, e.g. Japanese, Hindi, Serbo-Croatian and Turkish.

⁹The same observation has also been made by Sohn (1995).

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- b. *Eti-ey_i* **amwuto** *t_i* ka-ci anh-ass-ni?
 where-DIR anyone go-COMP not do-PAST-Q
 ‘Where did no one go?’
- (39) a. ***Amwuto** *encey* ku-lul towa cwu-ci anh-ass-ni?
 anyone when he-ACC help give-COMP not do-PAST-Q
- b. *Encey* **amwuto** ku-lul towa cwu-ci anh-ass-ni?
 when anyone he-ACC help give-COMP not do-PAST-Q
 ‘When did no one help him?’

So, apparently we cannot have a *wh*-phrase c-commanded by an NPI at surface structure. Questions are fine as long as there is no *wh*-phrase c-commanded by an NPI. Consider now (40) with a subject *wh*-phrase and an NPI object in the basic word order.

- (40) *Nwukwu-ka* **amwuto** chotayha-ci anh-ass-ni?
 who-NOM anyone invite-COMP not do-PAST-Q
 ‘Who didn’t invite anyone?’

However, when the NPI object is scrambled to a position above the subject *wh*-phrase (hence c-commands it), the configuration is ungrammatical.

- (41) ***Amwuto_i** *nwukwu-ka* *t_i* chotayha-ci anh-ass-ni?
 anyone who-NOM invite-COMP not do-PAST-Q
 ‘Who didn’t invite anyone?’

(41) is ungrammatical due to the occurrence of a *wh*-phrase behind the scrambled NPI at surface structure, since scrambling an NPI over a definite expression (here, *Mira*) does not lead to ungrammaticality, as in (42).

- (42) **Amwuto_i** *Mira-ka* *t_i* chotayha-ci anh-ass-ta
 anyone Mira-NOM invite-COMP not do-PAST-DEC
 ‘Mira didn’t invite anyone.’

(43) shows the same effect in the double object construction.

2.3. INTERVENTION EFFECTS IN KOREAN

- (43) a. *Mira-ka **amwu-eykey-to** *mwues-ul* poye cwu-ci anh-ass-ni?
 Mira-NOM anyone-DAT what-ACC show-COMP not do-PAST-Q
- b. Mira-ka *mwues-ul* **amwu-eykey-to** poye cwu-ci anh-ass-ni?
 Mira-NOM what-ACC anyone-DAT show-COMP not do-PAST-Q
- c. *Mwues-ul* Mira-ka **amwu-eykey-to** poye cwu-ci anh-ass-ni?
 what-ACC Mira-NOM anyone-DAT show-COMP not do-PAST-Q
 ‘What didn’t Mira show to anyone?’

In the case of multiple *wh*-questions, all *wh*-phrases have to occur before the NPI.

- (44) a. ***Amwuto** *nwukwu-lul eti-eyse* manna-ci anh-ass-ni?
 anyone who-ACC where-LOC meet-COMP not do-PAST-Q
- b. **Nwukwu-lul* **amwuto** *eti-eyse* manna-ci anh-ass-ni?
 who-ACC anyone where-LOC meet-COMP not do-PAST-Q
- c. **Eti-eyse* **amwuto** *nwukwu-lul* manna-ci anh-ass-ni?
 where-LOC anyone who-ACC meet-COMP not do-PAST-Q
- d. *Nwukwu-lul eti-eyse* **amwuto** manna-ci anh-ass-ni?
 who-ACC where-LOC anyone meet-COMP not do-PAST-Q
- e. *Eti-eyse* *nwukwu-lul* **amwuto** manna-ci anh-ass-ni?
 where-LOC who-ACC anyone meet-COMP not do-PAST-Q
 ‘Where did no one meet whom?’

So, the generalization seems to be that *wh*-in-situ may not be c-commanded by a negative quantifier, and the following configuration at S-structure is out:¹⁰

¹⁰What is relevant for the intervention effect is a hierarchical c-command relation, not just a linear relation, between the intervener and the *wh*-phrase in situ. For example, (i) is grammatical, as the NPI is embedded in the complement clause of the complex NP construction. Although the NPI does precede the *wh*-in-situ, it does not c-command the latter, thus showing no intervention effect for the *wh*-in-situ.

- (i) [_{NP} [_{CP} **amwuto** ku chayk-ul ilk-ci anh-ass-ta-nun] sasil-i] *nwukwu-lul*
 anyone that book-ACC read-COMP not do-PAST-DEC-PN fact-NOM who-ACC
 kacang silmangsikhi-ess-ni?
 most disappoint-PAST-Q
 (Lit.) ‘The fact that nobody read the book disappointed whom most?’

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

(45) *[NPI [... *wh*-phrase ...]]

In addition to NPIs, phrases with focus particles such as *man* ‘only’ or *to* ‘also’ also show the same effects, and we observe the same repair effect by scrambling. This is illustrated in the following examples.

(46) a. ?***Mira-man** *nwukwu-lul* manna-ss-ni?
 Mira-only who-ACC meet-PAST-Q
 b. *Nwukwu-lul_i* **Mira-man** *t_i* manna-ss-ni?
 who-ACC Mira-only meet-PAST-Q
 ‘Who did only Mira meet?’

(47) a. ?***Mira-to** *nwukwu-lul* manna-ss-ni?
 Mira-also who-ACC meet-PAST-Q
 b. *Nwukwu-lul_i* **Mira-to** *t_i* manna-ss-ni?
 who-ACC Mira-also meet-PAST-Q
 ‘Who did Mira, too, meet?’

It is interesting to note that (contrastively) focused phrases exhibit the same intervention effect, which is illustrated in (48).

(48) a. ***MIRA-ka** *nwukwu-lul* phathi-ey chotayha-ess-ni?
 Mira-NOM who-ACC party-to invite-PAST-Q
 b. *Nwukwu-lul_i* **MIRA-ka** *t_i* phathi-ey chotayha-ess-ni?
 who-ACC Mira-NOM party-to invite-PAST-Q
 ‘Who did MIRA (not someone else) invite to the party?’

And finally, universal quantifiers such as *nwukwuna* ‘everyone’ seem to show a similar effect, although the effect is much weaker than the NPI elements or the focus phrases.¹¹ Here, too, the structure is well-formed when the object *wh*-phrase is preposed over the subject QP, as illustrated in (49-b).

¹¹Japanese seems to show a similar effect with ‘everyone’. As Watanabe (2000: 224, fn.17) notes, there are speakers who find (i-a) acceptable, contrary to Hoji’s (1985) claim:

2.3. INTERVENTION EFFECTS IN KOREAN

- (49) 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?’

Interestingly, universal quantifiers (like *nwukwuna* ‘everyone’ in (49)) do not seem to be able to induce a pair-list reading in Korean. What is available is only a single-answer reading or a functional reading.¹² So, for a question like (49-b), an appropriate answer will be, for example, either “Professor Johnson” (single answer) or “His supervisor” (functional answer). This seems to imply that the universal quantifier cannot take scope over the *wh*-phrase in Korean, in contrast to German *jeder* ‘everyone’.

The data discussed in this section seem to lead to the following generalization:

- (50) A *wh*-phrase in situ may not be c-commanded by a focussing or quantificational element in Korean.

Based on this observation, Beck and Kim (1997) conclude that in Korean, too, quantifiers block LF *wh*-movement.¹³

-
- (i) a. **?Daremo-ga nani-o katta no?*
 everyone-NOM what-ACC bought Q
- b. *Nani-o daremo-ga t katta no?*
 what-ACC everyone-NOM bought Q
 ‘What did everyone buy?’

¹²It is well-known that the corresponding English question *Which professor does everyone respect?* is ambiguous. The universal quantifier *everyone* can take either narrow scope below the *wh*-phrase (yielding a single answer) or wide scope over the *wh*-phrase (yielding a pair-list answer).

¹³See Hoji (1985) for a similar conclusion for Japanese and S.-W. Kim (1991) for Korean.

2.3.2 Analysis of *Wh*-Intervention Effects in Korean

Our general assumptions about Korean LFs will be the same as those made in section 2.2 for German, namely that the LFs will have to be compositionally interpreted to yield the appropriate semantics. Assuming a Hamblin/Karttunen semantics for interrogatives, *wh*-phrases will have to be moved at LF to SpecCP. C^0 is still associated with the interrogative operator, which in Korean is overtly realized by *ni*.

At S-structure the interrogative marker is reflected morphologically on the verb, but at LF it has to be separated for compositional interpretation. Consider (51):

- (51) Mira-ka *nwukwu-lul* manna-ss-ni?
 Mira-NOM who-ACC meet-PAST-Q
 ‘Who did Mira meet?’

In a Hamblin/Karttunen semantics for questions, (52-a) represents the interpretation that (51) should have, which can be paraphrased as in (52-b):

- (52) a. $\lambda p \exists x [\text{person}_w(x) \ \& \ p = \lambda w' \text{met}_{w'}(\text{mira}, x)]$
 b. For which x , x a person: Mira met x .

Let me now show how the contrast in examples like (46) (which is repeated as (53) below) can be accounted for by the same analysis proposed for German data.

- (53) (= (46))
 a. ?***Mira-man** *nwukwu-lul* manna-ss-ni?
 Mira-only who-ACC meet-PAST-Q
 b. *Nwukwu-lul_i* **Mira-man** t_i manna-ss-ni?
 who-ACC Mira-only meet-PAST-Q
 ‘Who did only Mira meet?’

2.3. INTERVENTION EFFECTS IN KOREAN

The following representations are the LFs that I assume for the examples in (53):

- (54) a. $[_{CP} \text{nwukwu-lul}_i [_C [_{IP} \text{Mira-man } t_i^{LF} \text{ manna-ss}]]\text{-ni}]$
 b. $[_{CP} \text{nwukwu-lul}_i [_C [_{IP} t_i^{LF} [_{IP} \text{Mira-man } t_i \text{ manna-ss}]]]\text{-ni}]$

At LF, the *wh*-in-situ element *nwukwu-lul* ‘whom’ is moved to the SpecCP position and leaves an LF trace t_i^{LF} . The crucial difference between the two LF representations lies in the position of this LF trace. In (54-a), which is the LF for the ungrammatical example (53-a), the LF trace is located in the c-command domain of the focus phrase but its binder is not (violating the MQSC); and in (54-b) it is outside the c-command domain of the focus phrase.

Consider next (49), an example with an intervening universal quantifier, repeated in (55):

- (55) a. $?(?)\text{Nwukwuna-ka enu kyoswu-lul conkyengha-ni?}$
 everyone-NOM which professor-ACC respect-Q
 b. $\text{Enu kyoswu-lul}_i \text{nwukwuna-ka } t_i \text{ conkyengha-ni?}$
 which professor-ACC everyone-NOM respect-Q
 ‘Which professor does everyone respect?’

For some unknown reason, questions with a universal quantifier like *nwukwuna* ‘everyone’ in Korean do not allow either a distributive reading or a pair-list reading. This means that it is not possible to assign wide scope to *nwukwuna* in (55-a) at the outer boundary of the question (which was possible in German case (19)). The quantifier can only be interpreted within the scope of the interrogative. So (55-a) will have an LF representation as in (56):

- (56) $[_{CP} \text{enu kyoswu-lul}_i [_C [_{IP} \text{nwukwuna-ka } t_i^{LF} \text{ conkyengha}]]\text{-ni}]$
 which professor-ACC everyone-NOM respect-Q

In this LF representation, the universal quantifier (here in boldface) intervenes between the *wh*-phrase in SpecCP and its LF trace, violating the MQSC. In the

grammatical example (55-b) where the *wh*-phrase precedes the quantifier at surface structure, there is no such intervention. And the *wh*-phrase scopes over the universal quantifier and allows only the single answer reading, i.e., ‘which *x*, *x* a professor is such that everyone respects *x*?’

2.4 Intervention Effects Crosslinguistically

The intervention effects that we have observed in German and Korean *wh*-questions can be found in a wide variety of languages. In addition to German and Korean, intervention effects are found in Bangla (Simpson and Bhattacharya 2003), Chinese (Kim 2002a,b), English (Pesetsky 2000), Dutch (de Swart 1992, Honcoop 1998), French (Chang 1997, Boeckx 1999, Cheng and Rooryck 2000, Zubizarreta 2003), Hindi/Urdu (Beck 1996), Hungarian (Lipták 2001), Japanese (Hoji 1985, Tanaka 1997, Hagstrom 1998), Malayalam (Kim 2002b), Passamaquoddy (Bruening and Lin 2001), Persian and Armenian (Megerdooian and Ganjavi 2001), and Turkish (Beck and Kim 1997). This seems to suggest that the intervention effect has a universal character.

I will introduce the *wh*-intervention phenomenon in some languages, which will be also relevant for discussion in a later chapter.

2.4.1 Turkish

Beck (1996) and Beck and Kim (1997) report that Turkish also shows intervention effects in *wh*-questions. The Turkish data presented in this subsection are taken from Beck and Kim (1997).

In Turkish, negation is incorporated into the finite verb, as illustrated in (57):

- (57) Can Jaklin’i gör-me-di.
 John Jaklin-ACC see-NEG-PAST
 ‘John didn’t see Jaklin.’

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

And as in Korean, a negative quantifier is expressed with NPI plus negation, as shown in (58):

- (58) a. Can kimse-yi gör-me-di.
John anyone-ACC see-NEG-PAST
b. ?Kimse-yi Can gör-me-di.
anyone-ACC John see-NEG-PAST
'John didn't see anyone.'

In this case, SOV order is more natural than OSV order. In (59) with an NPI subject, however, both linearizations are fine:

- (59) a. Kimse Jaklin'i gör-me-di.
anyone Jaklin-ACC see-NEG-PAST
b. Jaklin'i kimse gör-me-di.
Jaklin-ACC anyone see-NEG-PAST
'No one saw Jaklin.'

Now consider the interaction of *wh*-phrases with NPIs. Normally, *wh*-phrases in Turkish are attracted to the immediately preverbal position, though the subject *wh*-phrase *kim* 'who' can occur in situ or in the immediately preverbal position, but not in other positions, as the ungrammaticality of (60-c) shows.

- (60) a. *Kim* Can'i gördü?
who John-ACC saw
b. Can'i *kim* gördü?
John-ACC who saw
c. *Can'i gördü *kim*?
John-ACC saw who
d. *Kim* gördü Can'i?
who saw John-ACC
'Who saw John?'

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

However, it is very hard to scramble an object *wh*-word like *neyi* ‘what-ACC’ from its in-situ position, as the ungrammaticality of (61-b) shows.

- (61) a. Can *neyi* gördü?
John what-acc saw
b. **Neyi* Can gördü?
what-ACC John saw
‘What did John see?’

Interestingly, in the interaction with NPIs, this requirement must be dropped. For example, (62-a) is bad and (62-b) is okay, which comes as the reverse of what is expected on the basis of (61).

- (62) a. ***Kimse** *kimi* gör-me-di?
anyone who-ACC see-NEG-PAST
b. *Kimi* **kimse** gör-me-di?
who-ACC anyone see-NEG-PAST
‘What did nobody see?’

The same effect shows up with other types of *wh*-phrases. (63) and (64) show data with double objects and an adjunct *wh*-phrase:

- (63) a. *Can **kimse-ye** *hangi resim-ler-i* göster-me-di?
John anyone-DAT which picture-PL-ACC show-NEG-PAST
b. Can *hangi resim-ler-i* **kimse-ye** göster-me-di?
John which picture-PL-ACC anyone-DAT show-NEG-PAST
‘Which picture didn’t John show anyone?’
- (64) a. ***Kimse** *nereye* git-me-di?
anyone where go-NEG-PAST
b. *Nereye* **kimse** git-me-di?
where anyone go-NEG-PAST
‘Where did nobody go?’

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

Although the adjunct would normally occur preverbally, (64-a) is bad. The obvious generalization seems to be that in Turkish, too, *wh*-phrases may not be preceded by an NPI at surface structure. In this respect, Turkish behaves just like Korean, and it seems fair to say that the data are likely to be amenable to an analysis in terms of the MQSC.

2.4.2 Malayalam

Malayalam, a Dravidian language spoken in South India, seems to exhibit a similar intervention effect to that observed in Korean and Turkish *wh*-questions.¹⁴

In Malayalam, a *wh*-phrase must occur to the immediately preverbal position, which Jayaseelan (2001b, 2004) analyzes to be an IP-internal Focus position. The canonical order in Malayalam is Subject – Indirect Object – Direct Object – V. As the following sentence pairs show, *wh*-phrases always appear in the immediately preverbal position, which is considered as a typical focus position in many OV languages (examples from Jayaseelan 2004: 7):¹⁵

- (65) a. *nin-ne aarə talli?*
you-ACC who beat(Past)
'Who beat you?'
- b. **aarə nin-ne talli?*
who you-ACC beat(Past)
- (66) a. *nin-akkə ii pustakam aarə tannu?*
you-DAT this book who gave
'Who gave you this book?'

¹⁴Many thanks to M.T. Hany Babu for discussion of the Malayalam data. Examples are from Kim (2002b).

¹⁵In a multiple question, all the *wh*-phrases must be stacked in this position, as illustrated in (i):

- (i) *nin-ne aarə eppooL entinə talli?*
you-ACC who when why beat(Past)
'Who beat you why when?'

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- b. **aarə nin-akkə ii pustakam tannu?*
 who you-DAT this book gave

Jayaseelan (2004) also notes that Malayalam normally prefers to cleft a constituent question, placing the *wh*-phrase in the cleft focus, as shown in (67-a). Moreover, the focus-plus-copula can float rather freely into the the cleft clause, as shown in (67-b,c):

- (67) a. *aarə-aaNə [nin-ne talli-(y)atə]?*
 who-be you-ACC beat(Past)-NMZ
 b. *nin-ne aarə-aaNə talli-(y)atə?*
 you-ACC who-be beat(Past)-NMZ
 c. *nin-ne talli-(y)atə aarə-aaNə?*
 you-ACC beat(Past)-NMZ who-be
 ‘Who was it that beat you?’

In the cleft construction, the matrix verb is the copula, and in all the examples in (67), the *wh*-phrase comes immediately to the left of the copula. So even clefting in questions can be seen as a device for positioning the question word next to V.

Now consider (68), which is a well-formed *wh*-question.

- (68) *Lili eetə pustakam-aaNə waayicc-atə?*
 Lili which book-be read-NMZ
 ‘Which book did Lili read?’

Universal quantifiers like *ellaawarum* ‘everyone’ may appear in a position c-commanding the question word in Malayalam, as shown in (69):

- (69) **ellaawarum** *eetə pustakam-aaNə waayicc-atə?*
 everyone which book-be read-NMZ
 ‘Which book did everyone read?’

According to T.M. Hany Babu (p.c.), however, (69) prefers the “pair-list” reading,

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

in which the universal quantifier takes wide scope over the question operator. So (69) has the interpretation ‘For each person x : x read which book?’

And when the *wh*-phrase precedes the universal quantifier at surface structure as in (70), only the single *wh*-question reading is possible:

- (70) *eetə pustakam-aaNə **ellaawarum** waayicc-atə?*
 which book-be everyone read-NMZ
 ‘Which book is it that everyone read?’

But if there is a focus phrase c-commanding the *wh*-phrase, the example is unacceptable. And when the *wh*-phrase is scrambled to a position higher than the focus phrase, the sentence becomes grammatical. This is illustrated in (71) and (72).

- (71) a. ***Lili-yum** *eetə pustakam-aaNə waayicc-atə?*
 Lili-also which book-be read-NMZ
 b. *eetə pustakam-aaNə **Lili-yum** waayicc-atə?*
 which book-be Lili-also read-NMZ
 ‘Which book did Lili, too, read?’

- (72) a. ***Lili-maatram** *eetə pustakam-aaNə waayicc-atə?*
 Lili-only which book-be read-NMZ
 b. *eetə pustakam-aaNə **Lili-maatram** waayicc-atə?*
 which book-be Lili-only read-NMZ
 ‘Which book did only Lili read?’

Simply focused elements without any focus particle also show the same intervention effect. Here, too, overt scrambling of the *wh*-phrase across the intervener makes the sentence grammatical:

- (73) a. ***LILI-aaNə** *eetə pustakam waangi-yatə?*
 Lili-be which book bought-NMZ

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- b. *eetə pustakam-aaNə LILI waangi-yatə?*
which book-be Lili bought-NMZ
'Which book did LILI buy?'
(‘For which *x*, *x* a book: it is Lili that bought *x*.’)

And negative polarity items also induce intervention effects for *wh*-in-situ, which is shown in (74):

- (74) a. ***aarum** *eetə pustakam-aaNə waayikk-aa-te irunn-atə?*
anyone which book-be read-NEG-AUG AUX-NMZ
b. *eetə pustakam-aaNə aarum waayikk-aa-te irunn-atə?*
which book-be anyone read-NEG-AUG AUX-NMZ
'Which book did no one read?'
(*aar-um* = *aar* ‘who’ + *um* ‘also’)

Note that the NPIs in Malayalam consist of a *wh*-pronoun and a particle *um* meaning ‘also, even’.

Based on this, we could conclude that *wh*-in-situ elements in Malayalam behave quite similar to *wh*-in-situ in Korean.

2.4.3 English

Pesetsky (2000) observes that intervention effects are found in English *wh*-questions. It should be noted that such effects arise only under special circumstances, namely in otherwise permissible violations of the Superiority Condition.

Pesetsky shows that the Superiority effect is limited to *wh*-phrases in questions which are non-D-linked; the effect disappears with D-linked *which*-phrases. The contrast between (75) and (76) illustrates this (the underlined position indicates the extraction position of the *wh*-phrase).

- (75) *Superiority effect with non-D-linked wh-phrases*
a. *What did who read ___?

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

- b. *Who did Mary introduce whom to ___?

(76) *Superiority effect disappears with D-linked wh-phrases*

- a. Which book did which person read ___?
- b. Which boy did Mary introduce which girl to ___?

In the case of *which*-phrases, a Superiority violation does not induce ungrammaticality (see also Pesetsky 1987). However, if an intervener is added, as in (77-a,b), the example becomes unacceptable:

- (77) a. *Which book didn't which person read ___?
b. ??Which boy did **only Mary** introduce which girl to ___?

Examples which obey Superiority, in contrast, are all acceptable even with exactly the same type of intervener, as illustrated in (78-a,b):

- (78) a. Which person ___ didn't read which book?
b. Which girl did **only Mary** introduce ___ to which boy?

Pesetsky (2000) proposes to increase the inventory of covert (i.e., phonologically invisible) movement operations by allowing both covert phrasal *wh*-movement and *wh*-feature movement. Feature movement applies when a syntactic constraint enforces movement but phrasal movement does not happen. This permits him, among other things, to differentiate between English D-linked and non-D-linked *wh*-phrases: non-D-linked *wh*-phrases undergo phrasal movement and show Superiority effects. D-linked *wh*-phrases undergo feature movement instead and do not show Superiority effects.

One important property that distinguishes *wh*-feature movement from *wh*-phrasal movement in English is that feature movement leaves the semantic restriction of the *wh*-quantification in situ, whereas phrasal movement typically pied-pipes the restriction with the *wh*-phrase. Pesetsky further suggests that it

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

could be that “separation” of the sort in *wh*-feature movement is the cause of the intervention effect, and characterizes a generalized intervention effect constraint as in (79).

(79) *Intervention effect* (Pesetsky 2000: 67)

A semantic restriction on a quantifier (including *wh*) may not be separated from that quantifier by a scope-bearing element.

I should add that Pesetsky does not provide any answer to the question of *why* a constraint like (79) should hold (which he himself admits). He merely uses it as a diagnostic for instances of *wh*-feature movement. Whenever intervention effects are found with *wh*-in-situ, he argues that this can be taken to indicate that *wh*-feature movement has been forced to occur.

If the intervention effect indicates the necessary occurrence of *wh*-feature movement, the patterns in German suggest that in a German multiple question, all *wh*-phrases in situ undergo *wh*-feature movement rather than covert phrasal movement. In German, intervention effects are observed to occur whenever a *wh*-phrase in situ is c-commanded by a quantificational element, suggesting that *wh*-phrases in situ always undergo feature movement and never covert phrasal movement (which is not subject to intervention effects). In English, however, *wh*-phrases in situ have been observed to be subject to intervention effects only when they occur in an apparent violation of Superiority and *wh*-feature movement is forced.

However, there are cases of intervention effects which fall outside the scope of Pesetsky’s theory, like *wh*-separation constructions in German, which are intervention-sensitive for reasons other than *wh*-feature movement.

(80) ??Wen hat **niemand** [___ alles] gesehen?
whom has no one all seen
Intended: ‘Who all did no one see?’

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

- (81) ??Wen hat **keine Studentin** [____ von den Musikern] getroffen?
whom has no student of the musicians met
Intended: ‘Who among the musicians has no student met?’

Note that there is no *wh*-feature movement involved in these constructions, simply because the *wh*-elements are overtly moved to SpecCP and the stranded restriction of each *wh*-phrase does not have any *wh*-feature. Pesetsky even considers the German separation constructions to provide support for the generalization in (79), but as mentioned above, he does not provide any explanation of the effects. Moreover, intervention effects found in configurations like (80) and (81) cannot have anything to do with *wh*-feature movement.

There is another problem with Pesetsky’s generalization (79), the existence of straightforward counterexamples. Unlike a *wh*-split construction, a split NP construction (with a floating quantifier) do not show any intervention effect in German ((82)) and Korean ((83)), even though they should be instances of the separation construction according to (79). Note that the topicalized element in the following examples is the restriction of the stranded quantifier.¹⁶

¹⁶Split constructions receive only a reconstructed scope reading (examples from van Geenhoven 1998: 125):

- (i) a. Katzen_i hat jedes Kind fünf t_i gesehen.
cats has every child five seen
‘As for cats, every child saw five such animals.’
#‘There are five cats such that every child saw them.’
- b. Fünf Katzen_i hat jedes Kind t_i gesehen.
five cats has every child seen
‘For every child *x*: *x* saw five cats.’
‘There are five cats such that every child saw them.’

Usually topicalized quantifier can be interpreted either in its landing position or in its trace position, as in (i-b) (cf. Frey 1993, Pafel 1993b).

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

- (82) Linguistikbücher_i hat **nur Hans** / **niemand** alle t_i gelesen.
 linguistic books has only Hans nobody all read
 ‘Linguistic books, only Hans / nobody read all.’ (*only/nobody* > *all*)
- (83) Enehak chayk-un_i **Mira-man** t_i motwu ilk-ess-ta.
 linguistics books-TOP Mira-only all read-PAST-DEC
 ‘Linguistic books, only Mira read all.’ (*only* > *all*)

Scrambling of the NP restriction of the floating quantifier over the focus phrase does not seem to be subject to the intervention effect, either. The following examples is totally grammatical.

- (84) Minswu-nun enehak chayk-ul_i **Mira-eykey-man** t_i sey
 Minswu-TOP linguistics books-ACC Mira-DAT-only three
 kwen(-ul) cwu-ess-ta.
 CL-ACC give-PAST-DEC
 ‘Minwu gave only Mira three linguistics books.’ (*only* > *three*)

In the constructions (82)–(84), the semantic restriction on the floating quantifier is separated from that quantifier by a scope-bearing element. According to Pesetsky’s generalization (79), they should all be ungrammatical due to the intervener, contrary to the fact. Unlike *wh*-split constructions, this type of NP-split constructions does not seem to be subject to the intervention effect. It might be related to the fact that the fronted restriction is reconstructed to the (floating) quantifier position at LF. As reconstruction does not leave a trace (otherwise no such lowering operation would be possible due to the Proper Binding Condition on traces), there will be no intervention effect.

To sum up, intervention effects are also found in English *wh*-questions, even if under special circumstances, for which Pesetsky (2000) proposed the intervention effect constraint (79), which prohibits separation of a quantifier (including *wh*) and its restriction by a scope-bearing element. But I have shown that his constraint, as it stands, also rules out some grammatical cases, namely the separation of a quantifier and its restriction by a scope-bearing element in split NP constructions.

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

2.4.4 Hungarian

Hungarian is another language which shows intervention effects in *wh*-questions, as recently discussed in Lipták (2001). In Hungarian, *wh*-phrases have to be overtly moved to the designated focus position (the immediately preverbal position), below topics. They end up in exactly the same position which non-*wh*-foci occupy, and they are in complementary distribution with non-*wh*-foci as illustrated in (85) (see also É. Kiss 1987) (PV = preverb):¹⁷

- (85) a. PÉTERT hívtam meg.
Péter-ACC invited-1SG PV
'It was Péter whom I invited.'
- b. Kit hívtál meg?
who-ACC invited-2SG PV
'Who did you invite?'
- c. *PÉTERT ki hívta meg?
Péter-ACC who-NOM invite-3SG PV
'Who invited PÉTER?'
- d. *Ki PÉTERT hívta meg''?
who-NOM Péter-ACC invite-3SG PV
'Who invited PÉTER?' (Lipták 2001: 50)

¹⁷Focusing in Hungarian is always detectable from verb movement up to Foc⁰. The postverbal position of the aspectual verb particle *meg* shows that the verb has been raised, since in their declarative counterparts without any contrastive focus the same particle precedes the verb, as illustrated in (i):

- (i) Mindig meghívtam Pétert.
always PV-invited-1SG Péter-ACC
'I always invited Péter.'

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

(85-c,d) are ungrammatical. *Wh*-items cannot cooccur with a focus phrase in the same clause:¹⁸

¹⁸See Rizzi (1997, 2001b) for a similar complementary distribution of *wh*-elements and a focus in Italian main questions. He also interprets this incompatibility as showing that *wh*-elements in main questions move to SpecFocP, therefore they compete with focused elements for this position. In other words, *wh* and focus target the same position.

Note that the *wh*-movement and focus are not mutually exclusive in English or German, unlike in Hungarian.

- (i) a. Who did (only) JOHN meet?
b. Wen hat (nur) HANS getroffen?
who_{acc} has only Hans met
'Who did (only) HANS meet?'

In languages with focus movement, it has been noted that certain sentence-level adjunct *wh*-elements may cooccur with focused constituents (unlike other *wh*-elements). This has been noted for Hungarian (É. Kiss 1994), SLQ Zapotec (Lee 2001), and Italian (Rizzi 2001b). In Italian, for example, the sentential adjunct *perché* 'why' can cooccur with focus if it precedes the focused element (see the contrast between (ii-a) and (ii-b)):

- (ii) a. *Che cosa A GIANNI hanno detto (non a Piero)?
'What have they said TO GIANNI (and not to Piero)?'
b. Perché QUESTO avremmo dovuto dirgli, non qualcos'altro?
'Why should we have said THIS to him and not something else?' (Rizzi 2001b)

Similar examples from Hungarian are given in (iii):

- (iii) a. Miért/Hova jött el?
why/where-to came-3SG PREF
'Why/Where did he come along?'
b. *Hova MA jött el?
where-to today came-3SG PREF
'Where did he come along TODAY?'
c. Miért MA jött el?
why today came-3SG PREF
'Why did he come along TODAY?' (Surányi 2002)

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

Lipták (2001) argues that in Hungarian constituent questions, *wh*-items overtly front, but not all the way to SpecCP, rather to the canonical position for focus (FocP), which explains why *wh*-items and focus are in complementary distribution.¹⁹ She shows that this movement step is driven by the focus feature <+f> of the *wh*-items. She further proposes that apart from the <+f> feature *wh*-items

Rizzi (2001b) accounts for this contrast by assuming that *perché* ‘why’ is base-generated in Spec of IntP, which is higher than FocP, and can be followed (but not preceded by) phrases expressing contrastive focus, whereas regular *wh*-phrases cannot, since they compete with the focused elements for the same position (i.e., Spec of FocP).

¹⁹Although it is not possible to have a non-*wh* focus and a *wh*-phrase in the same simple clause, it is possible to have multiple *wh*-phrases in the same clause. In Hungarian multiple *wh*-questions, all the *wh*-phrases have to be fronted to the left of the verb to trigger pair-list answers (cf. Brody 1990, Puskás 2000). The fronted *wh*-phrases may be preceded by a topicalized constituent, as in (i-b), where the subject is *Zeta* is topicalized. But nothing can intervene between the *wh*-phrases as shown in (i-c).

- (i) a. Kinek mit adott Zeta?
who-DAT what-ACC give-PAST-3SG Zeta-NOM
- b. Zeta kinek mit adott?
Zeta-NOM who-DAT what-ACC give-PAST-3SG
- c. *Kinek Zeta mit adott?
who-DAT Zeta-NOM what-ACC give-PAST-3SG
‘What did Zeta give to whom?’ (Puskás 2000: 232f.)

See Jayaseelan (2001a) for similar facts in Malayalam. When a clause contains multiple *wh*-phrases, they are stacked up together in the immediately left-adjacent position to the verb.

Hungarian is different from Italian, which does not allow multiple *wh*-questions at all:

- (ii) *Mi domando chi ha incontrato chi.
‘I wonder who met who.’ (Rizzi 1982: 51)

Hungarian also allows multiple foci in a clause (cf. É. Kiss 1998b). So there seems to be some Italian-specific restriction that is involved both in constraining *wh*-words and foci to one.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

possess yet another feature, $\langle +wh \rangle$, which is also syntactically active.²⁰ *Wh*-items are only interpreted with an interrogative meaning if they are licensed by an interrogative C with the $\langle +wh \rangle$ feature. This licensing is syntactically done by feature-checking between an interrogative C and the *wh*-items. Following Chomsky (1995), she assumes the checking of the $\langle +wh \rangle$ feature in Hungarian to be a case of LF feature movement.

Although *wh*-phrases and non-*wh*-foci compete for the same position in Hungarian, there is one interesting way in which *wh*-phrases behave differently from non-*wh*-foci in their distribution. Non-*wh* foci are perfectly happy with a quantificational adverb to their left (as in (86-a)), where the adverb scopes over the focus). This is illustrated in (86):

- (86) a. Mindig PÉTERT hívtam meg. (∀ > focus)
 always Péter-ACC invited-1SG PV
 ‘At all times, I invited PÉTER.’
- b. PÉTERT hívtam meg mindig. (focus > ∀)
 Péter-ACC invited-1SG PV always
 ‘Péter was the only one I invited all the time.’

Wh-items, however, cannot be preceded by such quantificational adverbs. Quantifiers can only follow *wh*-items, with an interpretation in which the *wh*-item takes scope over the universal quantifier, as shown in (87) (Lipták 2001: 78):

- (87) a. ***Mindig** *kit* hívtál meg?
 always who-ACC invited-2SG PV

²⁰The idea that *wh*-movement is triggered by the need to check both $[+wh]$ and $[+focus]$ features is also proposed in Sabel (2000), on the basis of facts from German, Duala and Kikuyu. Sabel suggests different feature strengths for these two features – strong and weak, in the sense of the Minimalist Program (Chomsky 1995) – to account for partial *wh*-movement, full *wh*-movement and *wh*-in-situ, in those three languages. See also den Dikken & Giannakidou (2002).

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

- b. *Kit* hívtál meg **mindig**? (wh > ∇)
 who-ACC invited-2SG PV always
 ‘Who did you invite all the time?’

Nominal quantifiers like *mindeki* ‘everyone’ and negative indefinites (also termed n-words in the literature, cf. Laka 1990) like *senki* ‘no one’ show the same effects (László Molnárfi and Balázs Surányi, p.c.):

- (88) a. ***Mindenki** mit ivott?
 everyone-NOM what-ACC drank-3SG
 b. *Mit* ivott **mindenki**?
 what-ACC drank-3SG everyone-NOM
 ‘What did everyone drink?’
- (89) a. ***Senki** mit nem ivott?
 nobody-NOM what-ACC not drank-3SG
 b. *Mit* nem ivott **senki**?
 what-ACC not drank-3SG nobody-NOM
 ‘What did nobody drink?’

Lipták (2001: Ch. 2) proposes to explain the ungrammaticality of the Hungarian facts in (87-a) in terms of LF intervention effects (as proposed in Beck 1996): quantificational items cannot precede *wh*-items in Hungarian because they are harmful interveners and destroy the relation between the *wh*-item and C.

Lipták claims that interrogative pronouns in Hungarian possess two different features: <+f> and <+wh>. The presence of the <+wh> feature makes *wh*-items distinct from focus items, which only possess a <+f> feature. This difference explains the different syntactic patterning of the two items (namely the contrast between (86-a) and (87-a)). Foci only move to SpecFocP. *Wh*-items, on the other hand, beside moving to SpecFocP for reasons of <+f> feature checking, have a special syntactic requirement: they have to entertain a relation with a <+wh> head as well, which is the functional head C. The requirement to establish a relation with C causes *wh*-items to pattern differently from exclusive focus

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

in overt syntax, clearly visible in the behavior they exhibit with respect to quantifiers (as illustrated in (87)–(89)). In particular, Lipták postulates a structure of the type in (90) for (87-a), with *mindig* standing in the specifier position of a Distributive Phrase, intervening between the $C_{<+wh>}$ and the *wh*-phrase in SpecFocP.

(90) * $[_{CP} C_{<+wh>} [_{DistP} \textit{mindig} [_{FocP} \textit{kit}_{<+wh,+f>} [_{Foc} \textit{hívtál} [_{TP} \textit{meg}]]]]]]$

We can account for the contrast in (88) and (89) in terms of the same LF intervention effects. The intervening universal quantifier and negative word destroy the relation between the *wh*-item and the interrogative C.

2.4.5 French

In matrix questions with a single *wh*-phrase, French has the possibility of fronting of a *wh*-phrase or leaving it in situ (cf. Chang 1997, Boeckx 1999, Cheng and Rooryck 2000, Mathieu 1999, Butler and Mathieu 2004):

- (91) a. Marie a acheté quoi?
 Marie has bought what
- b. Qu_i ’ est-ce que Marie a acheté t_i ?
 what *est-ce* QUE Marie has bought
 ‘What did Marie buy?’

These data have led some researchers (Aoun, Hornstein and Sportiche 1981 and Lasnik and Saito 1992 to name a few) to assume that French has a “mixed” system with regard to the formation of *wh*-questions. On this view, French is like Chinese in that the *wh*-phrase can remain in situ, but also like English in that the *wh*-phrase can be moved overtly to SpecCP.

But it has been noticed more recently by Chang (1997) that there are some semantic and syntactic differences between the *wh*-phrases in situ and the fronted *wh*-phrases in French. Chang (1997) notes that French *wh*-in-situ questions are associated with a “strongly presupposed context”, while *wh*-questions involving

2.4. INTERVENTION EFFECTS CROSSLINGUISTICALLY

movement in French don't have the property; they are neutral *wh*-questions. The idea is that (91-a) is only felicitous if the speaker assumes that Marie bought something. So, according to Chang, it is not felicitous to answer a question like (91-a) by 'nothing' whereas it is a perfectly legitimate answer to (91-b).²¹

More interestingly, Chang also claims that there is another interesting restriction on French *wh*-phrases in situ. *Wh*-in-situ displays intervention effect with quantifiers, negation, or modals. In other words, *wh*-in-situ cannot be preceded by those elements; in such cases, only an echo interpretation is allowed (examples in (92) and (93) are from Chang 1997, cited in Cheng and Rooryck 2000).²²

(92) *Tous les étudiants ont rencontré qui?
all the students have met who
'Who did all the students meet?'

- (93) a. *Il n' a pas rencontré qui?
he NE has not met who
'Who didn't he meet?'
- b. *Il peut rencontrer qui?²³
he can meet-INF who
'Who can he meet?'
- c. *Il admire toujours qui?
he admires always who
'Who does he always admire?'
- d. *Personne n' admire qui?
nobody NE admires who
'Who does nobody admire?'

²¹But in a recent work, Mathieu (2004) reports that not all dialects of French contain in-situ *wh*-phrases that are presuppositional. In some variant of French *rien* 'nothing' is a perfectly good reply to the question in (91-a). So in those dialects of French there seems to be no necessary existential presupposition associated with the *wh*-in-situ questions.

²²Chang (1997) uses the notation '#' instead of '*' to indicate that the sentences can be interpreted as echo questions only.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

Interestingly, these effects are systematically absent from the fronted *wh*-construction. For example, negation blocks the licensing of the *wh*-in-situ in (94-a), but leaves the licensing of the moved *wh*-phrase in (94-b):

- (94) a. *Il ne voit pas qui?
 he NE see not who
 b. Qui_i’ est-ce qu’il ne voit pas t_i?
 who is-this that-he NE sees not
 ‘Who doesn’t he see?’ (Butler and Mathieu 2004: 35)

And as noted by Butler and Mathieu (2004: 35), focus markers such as *seulement* ‘only’ and *même* ‘even’ and the DPs with which they are associated also create intervention effects for *wh*-in-situ, but not for fronted *wh*-phrases, as seen in (95):

²³As von Stechow and Iatridou (2003: 181) note, modals do not appear to act as blocking interveners for *wh*-phrases in situ or stranded restrictions of *wh*-phrases in German, even though they are quantificational elements under standard semantic analyses.

- (i) Wen_i müsste Maria behauptet haben [[t_i von den Musikern] getroffen zu haben]?
 who must Maria claimed have of the musicians met to have
 ‘Who must Maria have claimed to have met of the musicians?’

von Stechow and Iatridou (2007: 465, fn.26) show that modals are not harmful interveners for D-linked *wh*-in-situ in English, either, quoting the examples from Pesetsky (2000) (his (99) on p.61):

- (ii) *Intervention effect with not – nonsubjects*
 a. Which issue should I not discuss ____ with which diplomat?
 b. ??Which diplomat should I not discuss which issue with ____?
 [cf. Which diplomat should I discuss which issue with ____?]

For Pesetsky (2000), the crucial point is that negation in (ii-b) blocks the pair-list reading, because it prevents the in-situ *wh*-phrase from raising at LF. He presents a minimal contrast without negation to show that the pair-list reading emerges without any problem. Interestingly, the example without an intervention effect still contains a deontic *should*, which obviously does not induce an intervention effect, even though it is a quantificational element under standard semantic analyses.

2.5. PROBLEMS WITH THE MQSC

- (95) a. *Seulement/même Jean fait quoi?
only/even Jean does what
- b. Qu_i’ est-ce que seulement/même Jean fait t_i?
what is-this that only/even Jean does
‘What does only/even JEAN do?’

Finally, the next examples from Zubizarreta (2003: 363f.) show that a contrastively focused element in the *wh*-in-situ construction gives rise to intervention effects.

- (96) a. *JEAN a parlé à qui? (mais pas Pierre)
‘JOHN talked to whom? (but not Pierre)’
- b. *Pierre a donné un LIVRE à qui? (mais pas un disque)
‘Pierre gave a BOOK to whom? (but not a record)’

Yet, the examples below show that contrastively focused elements do not give rise to intervention effects in the fronted *wh*-construction.

- (97) a. À qui est-ce que JEAN a parlé? (mais pas Pierre)
‘To whom did JEAN talk? (but not Pierre)’
- b. À qui est-ce que Pierre a donné un LIVRE? (mais pas un disque)
‘To whom did Pierre give a BOOK? (but not a record)’

In this subsection, I have shown that French has the possibility of fronting a *wh*-phrase or of leaving it in situ in matrix clauses. Interestingly, the *wh*-in-situ construction is subject to intervention effects, but not the fronted *wh*-construction.

2.5 Problems with the Minimal Quantified Structure Constraint

Although it seems quite natural to postulate a certain locality constraint for the syntactic licensing of *wh*-in-situ elements, it does not seem so trivial to identify what types of elements actually count as interveners. The Minimal Quantified Structure Constraint (MQSC) assumes that quantificational expressions in general block LF movement. But the data from various languages suggest that the constraint, as it stands, is too strong in the sense that not every quantifier seems to show the intervention effect. Furthermore, there seems to be some crosslinguistic variation among the interveners. For example, universal quantifiers and negation are interveners in German, but do not induce any intervention effect in Chinese. In the following I will illustrate these problems.

2.5.1 Overgeneralization

One problem with the claim made by Beck (1996) and Beck and Kim (1997) is overgeneralization. As briefly mentioned above, we have a somewhat weaker intervention effect with the universal quantifier *nwukwuna* ‘everyone’ (see (49-a)) in Korean. More problematic is the fact that no intervention effect is observed with some quantifiers. For example, the quantifier phrase *taypwupwun-uy NP* ‘most-GEN NP’ do not seem to induce any intervention effect. And quantificational adverbs such as *hangsang* ‘always’ and *cacwu* ‘often’ in Korean do not show any intervention effects, unlike in German. The following examples with these quantifiers c-commanding a *wh*-in-situ are all grammatical.

- (98) a. **Taypwupwun-uy haksayng-tul-i** *nwukwu-lul* hoycang-ulo
 most-GEN student-PL-NOM who-ACC president-as
 chwuchenha-ess-ni?
 recommend-PAST-Q
 ‘Who did most students recommend as president?’

2.5. PROBLEMS WITH THE MQSC

- b. For which x , x a person: most students recommended x as president.
- (99) a. Mira-nun **hangsang/cacwu** *nwukwu-lul* phathi-ey
 Mira-TOP always/often who-ACC party-to
 teyliko ka-ss-ni?
 take-PAST-Q
 ‘Who did Mira always/often take to the party?’
- b. For which x , x a person: it is always/often the case that Mira took x to the party.

Beck and Kim (1997) already mentioned that it is not the full class of quantificational expressions that blocks LF movement in Korean. But a full explanation as to what natural class can be made up out of the interveners in Korean has not been provided yet.

In Mandarin Chinese, another *wh*-in-situ language, ordinary quantifier NPs, quantificational adverbials, and negation do not show intervention effects for nominal *wh*-phrases. The following examples with these quantifiers c-commanding the nominal *wh*-in-situ are all grammatical (see Huang 1982: 263–267, Aoun and Li 1993a,b, and Soh 2005):²⁴

- (100) **Meige ren** dou mai-le *shenme*?²⁵
 every man all buy-ASP what
 ‘What did everybody buy?’
- (101) Zhangsan **changchang** mai *shenme*?
 Zhangsan often buy what
 ‘What does Zhangsan often buy?’
- (102) Zhangsan **bu** xiang mai *shenme*?
 Zhangsan not want buy what
 ‘What doesn’t Zhangsan want to buy?’

²⁴Soh (2005) observes that unlike nominal *wh*-phrases, adverbial *wh*-phrases in Mandarin Chinese (e.g., *weishenme* ‘reason-why’) do exhibit intervention effects when c-commanded by a quantificational element.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

According to Aoun and Li (1993a), (100) is ambiguous. Both a pair-list answer and a single answer are allowed. This implies that the Chinese universal quantifier *meigeren* (unlike German universal quantifier *jeder* or Japanese *daremo* ‘everyone’) does not exhibit an intervention effect.²⁶

Interestingly, however, focus phrases (including NPIs, which morphologically consist of *wh*-pronouns and the focus particle *ye* ‘also’) in Mandarin Chinese do show the intervention effect. Moreover, Mandarin Chinese seems to have a repair strategy to circumvent the intervention effect. This is illustrated in the following examples.²⁷

- (103) a. ?**Lili ye** kan-le *na-ben shu*?
Lili also read-ASP which-CL book
b. *Na-ben shu* **Lili ye** kan-le?
which-CL book Lili also read-ASP
‘Which book did Lili, too, read?’
- (104) 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?’
- (105) a. ?***Zhiyou Lili** kan-le *na-ben shu / shenme*?
only Lili read-ASP which-CL book what

²⁶Compare (100) with the Japanese example (i), which is judged unacceptable in Hoji (1985: Ch. 4):

- (i) ??*Daremo-ga nani-o kaimasita ka?*
everyone-NOM what-ACC bought Q
‘What did everyone buy?’

²⁷I would like to thank Lansun Chen and Hong Zhou for discussion of the Chinese data. See Wu (1999: 86) for a similar observation.

2.5. PROBLEMS WITH THE MQSC

- b. *Na-ben shu / shenme zhiyou* Lili kan-le?
which-CL book what only Lili read-ASP
'Which book/what did only Lili read?'
- (106) 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?'
(*shei ye* 'who also' meaning *anyone*)

According to recent analyses of NPIs (e.g., Lee & Horn 1994, Krifka 1995, Lahiri 1998), negative polarity items can be analyzed as focus phrases, 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).²⁸ It turns out that NPIs are very consistent interveners across languages.

Unlike Japanese or Korean, which exhibit a relatively free word order derived by scrambling, Chinese has a rather fixed word order. But exactly in the context where a focus phrase occurs in a position *c*-commanding the *wh*-in-situ element in the unmarked order, the *wh*-in-situ element has to be fronted to the sentence-initial position in order to derive a grammatical configuration. Irrespective of what kind of movement it could be, it seems important to note that focus phrases in Chinese show the intervention effect, while other quantificational expressions do not have such effect.

The fact that there is some parametric variation in what constitutes the set of problematic interveners seems to be a problem for Beck's (1996) MQSC analysis. This is unexpected as the property that was held responsible for making an expression induce intervention effect in her analysis was a semantic property (that of being a quantifier), which is not something we would expect to be subject to crosslinguistic variation. The question is how to account for this variation. And

²⁸This is the case in Mandarin Chinese, Hindi, Japanese, Korean, Malayalam, among others.

is it possible to identify a set of interveners that produce the intervention effect crosslinguistically?

2.5.2 Why Should Intervention Effects Hold?

It seems even more important to ask *why* this kind of intervention constraint should hold. We have seen that the intervention effect itself may well be universal, though subject to some crosslinguistic variation. But it is not clear how to account for the effect itself, namely, why quantifiers 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 positions of negation or quantificational elements, nor vice versa.

2.5.3 Intervention Effects Are Focus Effects

Faced with the overgeneralization problem mentioned above, one question is whether it is possible to distinguish a natural class of the interveners which show intervention effects across different languages. Based on data from different languages, I proposed in Kim (2002a,b) that the core set of interveners, which is crosslinguistically stable, consists of focus phrases. Other elements may or may not give rise to the intervention effect. The characterization of the core intervention effect is given in (107):

- (107) * $[_{CP} Q_i \dots [\text{FocP} [\dots \text{wh-phrases}_i \dots]]]$
 A focus phrase may not intervene between a *wh*-phrase and its licensing interrogative complementizer.

I call this generalization the *Focus Intervention Effect* and will provide a syntactic and semantic analysis for it in chapter 3. The question of why a constraint like (107) should hold will also be addressed and an explanation offered.

2.6. SUMMARY

2.6 Summary

In this chapter, I have introduced the phenomenon of intervention effects in German and Korean *wh*-questions discussed in Beck (1996) and Beck and Kim (1997) and its analysis in terms of the *Minimal Quantified Structure Constraint* (MQSC). The MQSC is based on the generalization that quantifiers block LF movement of *wh*-in-situ.

I have also shown that intervention effects are observed in a wide variety of languages, suggesting a universal character of the effect. Although the intervention effect itself may well be universal, its realization in different languages seems to be subject to some crosslinguistic variation. The set of interveners which produce the effect varies from language to language. For example, it is not the whole variety of quantifiers which produce the intervention effect in Korean; only a subset of the quantificational expressions which count as interveners in German are the ones that show the intervention effect in Korean. And Chinese does not show any intervention effects with ordinary quantifiers or negation while focus phrases do induce an intervention effect. This crosslinguistic variation with respect to the class of interveners seems to be a problem to the MQSC analysis of the intervention effects, as it assumes that quantificational expressions in general block LF movement of *wh*-in-situ.

Faced with this problem, one important question is whether it is possible to identify a set of interveners that produce the intervention effect crosslinguistically, and more importantly, we should ask *why* intervention effects should hold in the first place. In chapter 3 I will propose that the core set of interveners consist of focus phrases and motivate an analysis of intervention effects in terms of focus intervention.

CHAPTER 2. INTERVENTION EFFECTS IN *WH*-QUESTIONS

Chapter 3

Focus Intervention Effects

3.1 Introduction

We have seen in chapter 2 that the *wh*-intervention effects exist in a wide variety of languages. And despite its apparent universal character, the intervention effect shows some crosslinguistic variation.

Considering the crosslinguistic variation regarding harmful interveners for *wh*-licensing, I proposed in Kim (2002a,b) that the core set of interveners, which is crosslinguistically stable, consists of focus phrases (not quantifiers in general). The generalization is given in (1):¹

- (1) 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

¹By ‘ β intervenes between α and γ ’ I mean that β c-commands γ , and α c-commands both β and γ .

CHAPTER 3. FOCUS INTERVENTION EFFECTS

independent focus element blocks that association. Kim (2002b) assumes that *wh*-phrases are inherently focus phrases and carry the feature [+Foc] in addition to the [+wh] feature. They must be licensed by an interrogative C to be interpreted, where the licensing is done by Agree between the probe $C_{[+Q]}$ and the goal *wh*-in-situ.

I further proposed in Kim (2002b) that the *wh*-intervention effect is actually an instance of the more general intervention effect, as given in (2):

(2) *Focus Intervention Effect*

In a focus-sensitive licensing construction, no independent focus phrase may intervene between the licensor Op and the licensee XP.

*[Op₁ ... [FocP [... XP₁ ...]]]

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, or an NPI in a negative sentence. These are all dependent focus elements which have to be associated with a licensing operator in order to be properly interpreted (a Q operator for the first two cases, and NEG for NPIs). I proposed that the Q(uestion) 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 induce an intervention effect for *wh*-in-situ (Kim 2002a analyzes NPIs in Korean as focus phrases, extending Lahiri’s 1998 proposal):

- (3) 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 invite-COMP not do-PAST-Q
 ‘Who did no one invite?’

3.1. INTRODUCTION

- (4) 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?'
- (5) 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 (not someone else) invite?'

In Mandarin Chinese, focus phrases (including NPIs, which consist morphologically of a *wh*-pronoun and the focus particle *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 section 2.5.1 in chapter 2):

- (6) 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?'
- (7) a. ?***Zhiyou Lili** kan-le *na-ben shu*?
only Lili read-ASP which-CL book
b. *Na-ben shu* **zhiyou Lili** kan-le?
which-CL book only Lili read-ASP
'Which book did only Lili read?'

According to influential analyses of NPIs (e.g., Lee & Horn 1994, Krifka 1995, Lahiri 1998), they can be analyzed as focus phrases, 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). It turns out that

CHAPTER 3. FOCUS INTERVENTION EFFECTS

NPIs are very consistent interveners across languages.²

Zubizarreta (2003) seems to provide further evidence for focus-induced (rather than quantifier-induced) intervention effects. In contrast to the observation made by Chang (1997) (as illustrated in chapter 2), Zubizarreta (2003) claims that QPs like *chaque de NP* ‘each of NP’, *beaucoup de NPs* ‘many of NPs’, *tous NPs* ‘all of NPs’ can c-command a *wh*-in-situ in French; the question-answer pairs in (8) and (9) are all well-formed.

(8) *Chacun de NP* ‘Each of NP’

Q: Les enfants se sont mis à table. Chacun (d’entre eux) a droit à combien de pizzas?

‘The children have sat at the table. Each (of them) is entitled to how many pizzas?’

A: Chacun (d’entre eux) a droit à trois pizzas.

‘Each (of them) is entitled to three pizzas.’

(9) *Tous NPs* ‘All of NPs’

Q: Ils ont donné tous les bonbons à qui?

‘They gave all the candies to whom?’

A: Ils ont donné tous les bonbons à leur meilleur ami.

‘They gave all the candies to their best friends.’

²It can easily be seen why NPIs are the strongest interveners in Japanese/Korean. In the configuration (i), where NPI is intervening between $C_{[+Q]}$ and a *wh*-in-situ, not only the NPI blocks the licensing of *wh*-in-situ by C, the *wh*-in-situ itself also blocks the licensing of the NPI by its licensing negation.

(i) $[_{CP} C_{[+Q]} [_{IP} \dots \text{NPI} \dots \text{wh} \dots \text{NEG} \dots]]$

See Sells and Kim (2006) for analysis of NPI-licensing in Korean, in which it is proposed that an NPI should have negation in its immediate scope.

3.1. INTRODUCTION

Interestingly, Zubizarreta observes that (floated) quantifiers do give rise to an intervention effect in the French *wh*-in-situ construction if they are contrastively focused. This is illustrated by the contrast in (10-a) and (10-b):

- (10) a. Ils ont tous mangé quoi?
 ‘They have all eaten what?’
 b. *Ils ont TOUS mangé quoi?
 ‘They have ALL eaten what?’

The examples in (11) from Zubizarreta (2003) also show that contrastively focused elements give rise to an intervention effect in the French *wh*-in-situ construction.

- (11) a. *JEAN a parlé à qui? (mais pas Pierre)
 ‘JOHN talked to whom? (but not Pierre)’
 b. *Pierre a donné un LIVRE à qui? (mais pas un disque)
 ‘Pierre gave a BOOK to whom? (but not a record)’

Based on this, Zubizarreta proposes the generalization that the elements that create an intervention effect in the French *wh*-in-situ construction are exactly the contrastively focused elements.

In this chapter I propose that an intervention effect occurs whenever a focus sensitive operator intervenes between the interrogative *C* and the *wh*-phrase in-situ. I also propose that *wh*-in-situ phrases do not undergo any LF movement (featural or phrasal). The standard assumption (for example, in Government-Binding Theory) 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 especially, Chomsky 2008) 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*-

CHAPTER 3. FOCUS INTERVENTION EFFECTS

feature), a purely syntactic requirement on configuration (i.e., to have an overtly filled specifier) 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), LF *wh*-movement is not necessary, either. Hamblin (1973) suggests that there is actually no semantic reason for *wh*-movement, mentioning that in many languages, the word order of an interrogative sentence is always that of the corresponding indicative sentence. Given this, there is no syntactic or semantic reason to assume that *wh*-in-situ phrases undergo any movement at LF.

For the semantics of focus elements and *wh*-elements, Beck (2006) proposes (following Hamblin 1973 and Rooth 1992) that *wh*-phrases and focus make use of the same interpretational mechanism, and therefore focus may interfere with a *wh*-in-situ. She suggests that *wh*-phrases and focused phrases both introduce alternatives into the computation. However, unlike focus, *wh*-phrases do not have any ordinary semantic value. It is the function of the question operator Q to lift the focus semantic value of the *wh*-phrase to the level of ordinary semantics. This process can be understood as to be parallel to the traditional syntactic *wh*-licensing by the abstract Q-morpheme (Baker 1970). Beck argues that intervention effects follow from focus interpretation. More specifically, an intervention effect occurs whenever a focus sensitive operator other than the question operator tries to evaluate a constituent containing a *wh*-phrase – the resulting LF fails to have an ordinary semantic interpretation.

Syntactically, the effect can be analyzed as a case of intervention effect induced by the intervening focus operator which has the interpretable focus feature F (*i*F, following Pesetsky & Torrego's 2004 notation). I assume that the interrogative C has both an interpretable Q feature (*i*Q) and an interpretable F feature (*i*F), and that a *wh*-phrase has uninterpretable Q and F features (*u*Q, *u*F). Now the *wh*-phrase has to be licensed by the interrogative C by the operation Agree, but the intervening Focus with the interpretable F feature blocks the Agree relation

3.2. FOCUS AND WH

between the two, as illustrated in (12).

$$(12) \quad *[_{CP} C_{[iQ, iF]} [\dots \text{Foc}_{[iF]} \dots [\dots \text{wh}_{[uQ, uF]} \dots]]]$$

The structure of this chapter is as follows. In section 3.2, I introduce some similarities between focus elements and *wh*-elements in order to motivate why focus blocks the licensing of *wh*-in-situ. In section 3.3, I provide a semantic account and a syntactic account of focus intervention effects. Conclusions are drawn in section 3.4.

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

Wh-elements in questions and focused items share similarities in their overt syntax in a number of languages. Some languages require *wh*-phrases to appear in the designated structural position for (contrastive) focus (for example, Hungarian (Brody 1990), Basque (Ortiz de Urbina 1995, 1999), Chadic (Tuller 1992), Malayalam (Jayaseelan 1999, 2003) and Serbo-Croatian (Stjepanović 2003)). *Wh*-movement in these languages is argued to be an instance of focus movement. The underlying idea is that *wh*-phrases bear a focus feature that makes them target the same position as other focused constituents.

Horvath (1986) suggested that *wh*-fronting in a number of languages can be analyzed as focus movement. This analysis has been convincingly applied to Aghem, Basque, Hungarian, and Quechua (see e.g., Horvath 1986, Rochemont 1986, É. Kiss 1995), among other languages. In Hungarian and Serbo-Croatian,

CHAPTER 3. FOCUS INTERVENTION EFFECTS

for example, *wh*-phrases appear in the positions in which contrastively focused phrases occur.³ So the trigger for *wh*-movement in these languages seems to be a focus feature rather than a *wh*-feature (see also Bošković 1998, 2002 and Stjepanović 2003). Horvath (1986) claims that if a language has a special position for contrastively focused phrases, *wh*-phrases will move to that position. Her work establishes a correlation between movement of *wh*-phrases and movement of contrastively focused non-*wh* phrases, whereby a number of languages that overtly move non-*wh*-phrases with this type of focus are analyzed as having focus fronting of *wh*-phrases. This seems plausible, given the similarity in the interpretation of *wh*-phrases and contrastively focused phrases (see Rooth's 1985 semantics for focus which is nearly identical to Hamblin's 1973 semantics for questions). The correspondence between focus movement and the overt movement of *wh*-phrases in languages like Aghem, Basque, and Hungarian led Horvath to conclude that *wh*-phrases are inherently focused.

Lipták (2001) argues convincingly that in Hungarian constituent questions, *wh*-items overtly raise to the canonical position for focus (FocP) (not all the way to SpecCP), which explains why *wh*-items and focus are in complementary distribution. A similar complementary distribution of a *wh*-phrase and focus is also observed in Italian by Rizzi (2001b), which led him to assume that *wh*-phrases move to Spec of FocP; therefore they compete with focused constituents for this position.⁴

³Contrastive focus, also referred to as identificational or narrow focus, expresses exhaustive identification and is accompanied by emphatic stress. It is important to distinguish it from simple new informational focus, also referred to as presentational or wide focus. For discussion of the two classes of foci, see É. Kiss (1998a).

⁴Note that there is no such complementary distribution in English or German.

- (i) a. Who did JOHN meet?
- b. Wen hat (nur) HANS getroffen?
 who has only Hans met
 'Who did (only) HANS meet?'

3.2. FOCUS AND WH

In addition to the fact that in many languages, *wh*-phrases and contrastive focus occupy the same surface syntactic position, it is also observed that focus and *wh*-phrases in-situ share the syntactic property of being insensitive to island constraints (see Rooth 1996).⁵ As exemplified in (13-a), an occurrence of *only* outside the NP modified by the relative clause can readily associate with a focus inside the relative clause. This distinguishes focus from quantifiers, which cannot take scope outside their embedding noun phrases. The scope of the quantifiers in (13-b) is restricted to the relative clause.⁶ Similarly, in (13-c) the second occurrence of *who* is structurally embedded in an island, but semantically has scope at the level of the *wh*-complement of *tell*.

- (13) a. Dr. Svenson only rejected the proposal that [John]_F submitted.
b. Dr. Svenson rejected the proposal that no student/almost every student submitted.
c. Tell me who rejected the proposal that who submitted.
- (Rooth 1996: 283f.)

⁵Rooth (1996) also notes that similar insensitivity to islands can be observed for indefinites (cf. Abusch 1994). For instance, the indefinite NP in italics in (i) can take scope outside the containing NP:

- (i) Dr. Svenson usually rejects [_{NP} the first three proposals that *a student* submits]
- (Rooth 1996: 284)

See Reinhart's (1997) choice function analysis for the indefinite NP taking wide scope.

⁶Similarly, (i) lacks a reading where for each book there is a possibly different student who thinks John will buy it.

- (i) Some student thinks that John will buy every book.

This shows that QR is constrained by finite clause boundaries. See among others Rodman (1976) and May (1977, 1985). See also von Stechow & Iatridou (2003) and Cecchetto (2004) for some discussion.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

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):

(14) *Tell me who John rejected the proposal that t submitted.

Rooth (1985) notes that these data refute the scoping (i.e., via LF movement) approach to the logical form of focus, since that approach requires logical forms where the focused phrase has been moved out of an island.⁷ This concern has led Rooth (1985) to develop an in-situ theory of focus interpretation, in which a focused constituent such as *John_F* in (13-a) need not undergo movement to the position of the focus sensitive operator *only*. Interestingly, Rooth's (1985) focus semantics turns out to be nearly identical to Hamblin's (1973) semantics for questions, which seems to support the idea to draw a parallel between focus and *wh*. The semantic parallels between focus and *wh*-elements will be discussed in detail in 3.2.3.

Wh-in-situ in English multiple questions as in (13-c) does not display island effects, either. This fact has always been a problem for the standard assumption in the generative grammar that *wh*-in-situ has to move to interrogative SpecCP to create an operator-variable structure at LF. Traditional GB accounts (e.g., Huang 1982, Lasnik and Saito 1984) attribute the absence of island effects of *wh*-in-situ to a special fact about LF *wh*-movement.⁸ In recent approaches to *wh*-in-situ, however, especially in the approach developed by Reinhart (1992, 1997, 1998), it is assumed that *wh*-in-situ does not move at LF but is interpreted in-situ as a choice function variable, which is long-distance bound by the question existential oper-

⁷Proponents of movement analysis of contrastive focus (which goes back a proposal by Chomsky 1976) and *wh*-in-situ (see e.g., Huang 1982) would have to assume that there are two kinds of LF-movement, one that obeys island constraints (e.g., QR) and one that does not (LF *wh*-movement and focus movement). Huang (1982) proposed such an asymmetry between overt and covert (LF) *wh*-movements: only overt *wh*-movement is subject to Subjacency.

⁸More specifically, Huang (1982) and Lasnik and Saito (1984) conclude that Subjacency does not apply to LF movement.

3.2. FOCUS AND WH

ator. Another approach to the island insensitivity of *wh*-in-situ has been explored in terms of alternative semantics by Hamblin (1973), under which the *wh*-phrase is interpreted to denote a set of alternatives (e.g., Ramchand 1997, Kratzer and Shimoyama 2002, Beck 2006). Both choice function analysis and alternative semantics analysis for *wh*-in-situ assume that no movement of *wh*-in-situ is involved and therefore there is no violation of island constraints.

To sum up, it has been shown that there are some syntactic parallels between focus and *wh*: (i) in many languages, *wh*-phrases overtly undergo movement to the position which is designated for focus elements, suggesting that *wh*-movement in these languages is an instance of focus movement; (ii) in cases where focus and *wh* remain in-situ (as in the English examples in (13)), they are both able to take scope out of a syntactic island.

3.2.2 Phonological Similarities

Phonologically, a *wh*-element carries a pitch accent which is characteristic of focused elements. An often-noted property of *wh*-elements is that they have to carry focal stress in order to receive a question word meaning, especially when they stay in-situ.⁹ This can be illustrated in the German examples in (15). With no focal

⁹This is also noted in Chomsky (1995: 387, note 69). So in examples like (i), the in-situ *wh*-phrase has focal stress (and might have wide scope under a focus interpretation); the example degrades when that property is removed.

- (i) a. Who saw *whát*?
b. Whom did you persuade to do *whát*?

Note also that although primary stress falls on *wh*-in-situ, a secondary stress (as in the single *wh*-question) is assigned to the fronted *wh*-phrase (cf. Kennedy 2005: 21).

In German, too, *wh*-in-situ has to carry a pitch accent (typical of focus) while the *wh*-phrase in SpecCP can, but need not, be stressed if additional focusing is intended. (Caroline Féry, p.c.).

Zubizarreta (1998: 92ff.) notes that if focus is defined as the nonpresupposed part of the sentence (cf. Jackendoff 1972), then the focus of a question is the *wh*-phrase, by definition. It is then

CHAPTER 3. FOCUS INTERVENTION EFFECTS

stress, the *wh*-in-situ gets an indefinite reading, as seen in (15-b):¹⁰

- (15) a. Wer hat WAS gelesen?
who has what read
'Who read what?'

remarkable that the fronted *wh*-phrase in a question such as (ii) does not, and may not, bear NS (nuclear stress).

- (ii) a. What did John réad?
b. *Whát did John read?

To account for this, Zubizarreta suggests that in Germanic and Romance the difference between fronted and in-situ *wh*-phrases is in the way they are licensed. She proposes that while a fronted *wh*-phrase is licensed syntactically, by virtue of occupying the specifier position of a functional category with the feature [+wh] (i.e., via the feature-checking mechanism), *wh*-in-situ is licensed prosodically, i.e., bearing nuclear stress (NS), illustrated in (iii):

- (iii) a. Who ate whát?
b. Who knows what whó bought?
cf. *Who knows what who bóught? (Zubizarreta 1998: 95)

Ginzburg & Sag (2000: 250) also suggest the following generalization:

- (iv) In a multiple *wh*-interrogative, all *wh*-phrases except the first must be accented.

Thus, in all the examples in (v) the noninitial *wh*-words are focused.

- (v) a. What did whó take whére?
b. Who gave whát to whóm?
c. Who said whát about whén?

See also Bolinger (1978).

¹⁰This seems to show that in-situ question *wh*-words have the feature [+focus] in addition to the feature [+wh], as proposed by Lipták (2001) among others. Indefinite *wh*-words, on the other hand, have the feature [+wh] but lack the feature [+focus]. See den Dikken (2003) for the feature composition of *wh*-constituents.

3.2. FOCUS AND WH

- 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 interrogative pronouns. Without focal stress, the *wh*-word is interpreted as an indefinite, as illustrated in (16) (cf. Choe 1985):¹¹

¹¹Note that in declarative sentences, *mwues-ul* 'what-ACC' can only be interpreted as an indefinite pronoun:

- (i) a. Konghang-eyse nwu(kwu)-ka Mira-lul chac-ko iss-ess-ta.
airport-LOC who-NOM Mira-ACC look for be-PAST-DEC
'Someone was looking for Mira at the airport.'
- b. Mira-nun mwues-ul masi-ess-ta.
Mira-TOP what-ACC drink-PAST-DEC
'Mira drank something.'

In colloquial German, too, *wh*-pronouns are variants of indefinite pronouns in certain contexts, as in (ii). Note that the *wh*-pronouns cannot be focused in these contexts.

- (ii) a. Ich habe was/etwas gegessen.
I have what/something eaten
'I ate something.'
- b. Da hat wer/jemand angerufen.
there has who/someone called
'Someone called.'
- c. Ist da was/etwas passiert?
Is there what/something happened
'Did something happen?'

Haider (2004: 153) notes that German provides independent evidence for the obligatory operator status of a *wh*-element in a functional spec-position since in-situ *wh*-elements can be either interpreted as indefinite pronouns or *wh*-expression:

- (iii) a. Wie oft hat wer angerufen? (ambiguous)
how often has who phoned-up
'How often did someone call?' - 'Who called how often?'

CHAPTER 3. FOCUS INTERVENTION EFFECTS

- (16) 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?’

In the case of multiple *wh*-question as in (17), all *wh*-words have to carry focal stress to get the multiple *wh*-question reading:

- (17) NWUKWU-ka MWUES-ul sa-ss-ni?
 who-NOM what-ACC buy-PAST-Q
 ‘Who bought what?’

This shows that focal stress has the function of distinguishing between the question word meaning and the indefinite existential meaning of *wh*-pronouns in German and Korean.¹²

Other languages corroborate this view: Deguchi and Kitagawa (2002) and Ishihara (2002) show that Japanese *wh*-questions always exhibit focus intona-

-
- b. Wer hat oft angerufen*(?)
 Who has often called?
 ‘Who has called often?’ vs. *‘Someone has often called.’

If the *wh*-pronoun is moved to SpecCP, it cannot be interpreted as an indefinite pronoun. By virtue of being in the SpecCP position, it is bound to function as an operator.

Wh-phrases in Persian can also be interpreted either as a question pronoun or as an indefinite NP depending on presence vs. absence of stress (cf. Karimi 2003).

¹²The same strategy is used to disambiguate *wh*-pronouns in Chinese (cf. Xu 1990: 357):

- (i) a. Zheli QUE-LE shenme
 here is missing something
 ‘There is something missing here.’
- b. Zheli que-le SHENME?
 here is missing what
 ‘What is missing here?’

3.2. FOCUS AND WH

tion (i.e., all interrogative *wh*-words are focused in Japanese); Hayes and 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 the semantics 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. In Rooth's system, a focus marked constituent triggers the existence of a nontrivial alternative set that is available for use by certain focus sensitive operators (like *only* or *even*). This alternative set for a sentence with a focus marked constituent is basically Hamblin's (1973) set of possible answers to the parallel question. A focused constituent in a sentence evokes alternatives in a similar way as a *wh*-word does in a question. Analyses of *wh*-questions in terms of Hamblin's alternative semantics have been explored by, e.g., Ramchand (1997), Kratzer and Shimoyama (2002).

In recent work, Beck (2006) also suggests that both *wh*-phrases and focus make use of the semantic mechanism that introduces alternatives (following Hamblin 1973 and Rooth 1985, 1992). The idea is that *wh*-phrases and focus are interpreted in an analogous way.

To illustrate the connection between the semantics of focus and the semantics of questions, let's first consider the sentence in (18) with the subject NP *John* focused. Rooth (1985, 1992) suggests that the sentence is associated with two semantic objects: first, there is the (ordinary) semantic value of the sentence (written $[[\cdot]]^\circ$), which is the single proposition in (19) – the set of possible worlds in (19-a) and given informally in (19-b).

(18) [John]_F left.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

- (19) a. $\lambda w. \text{John left in } w$
 b. that John left

Besides this proposition, the ordinary semantic value, the sentence (18) makes salient a set of alternative propositions – for example, the set in (20-a). This is the focus semantic value (to be marked $[[\cdot]]^f$) of the sentence (18). Informally, the focus semantic value for a phrase of category *S* is the set of propositions obtainable from the ordinary semantic value by replacing the/each focus with an alternative of the same type. The focus semantic value for (18) will be the set of all propositions of the form ‘*x* left’, where the variable *x* ranges over the alternatives for *John*. This is stated more generally in (20-b) and in a more formal terms in (20-c) (where where *D* is the domain of individuals):

- (20) a. {that John left, that Bill left, that Amelie left, ... }
 b. {that *x* left | $x \in D$ }
 c. $\{p : p = \lambda w. x \text{ left in } w \mid x \in D\}$

The focus value of a sentence without a focused constituent is simply the singleton set containing its ordinary semantic value.

Now consider the question in (21), which differs minimally from the focus example in (18) in that the *wh*-phrase takes the place of the focused item. According to Hamblin’s (1973) analysis of questions, the meaning of a question is a set of propositions corresponding to potential answers to the question, both true and false ones.¹³ A sample set is given in (22-a). More generally, this is the set of propositions in (22-b) (and in more formal terms in (22-c)).

- (21) Who left?

- (22) a. {that John left, that Bill left, that Amelie left, ... }

¹³Karttunen (1977) added the qualification that only those alternatives which are in fact true (i.e., only true answers to the question) belong to the interrogative meaning.

3.2. FOCUS AND WH

- b. $\{\text{that } x \text{ left} \mid x \in D\}$
- c. $\{p : p = \lambda w. x \text{ left in } w \mid x \in D\}$

It is obvious that the focus semantic value of the sentence (18) is identical to the ordinary semantic value of the question (21).¹⁴ The *wh*-phrase, like the focused element, triggers the introduction of alternatives – in that respect, their semantic roles are the same. In contrast to a focused phrase, however, introducing alternatives seems to be the only semantic role of a *wh*-phrase. The *wh*-phrase has nothing corresponding to the ordinary semantic value of the focused element.

Beck (2006) follows Rooth (1985, 1992) in attributing a twofold semantic contribution to focused expressions: their ordinary semantic value on the one hand, and a set of alternatives of the same type, i.e., their focus semantic value, on the other. A *wh*-phrase shares with focus only the second type of contribution. Beck

¹⁴Given this, a simple constraint forcing question-answer congruence can be stated as follows: the focus semantic value of the answer has to be identical to the meaning of the question (i.e., $\llbracket Q \rrbracket^o = \llbracket A \rrbracket^f$).

Rooth (1992) proposes a more refined version of question-answer constraint: the ordinary semantic value of a question is a subset of the focus semantic value of a corresponding answer, as stated in (i).

- (i) *Question–Answer Constraint*: In a question–answer pair $\langle Q, A \rangle$, $\llbracket Q \rrbracket^o \subseteq \llbracket A \rrbracket^f$

This is so, since in a question-answer pair as in (ii),

- (ii) Q: Who left?
A: $[\text{John}]_F$ left.

the ordinary semantic value of the question in (ii) includes only propositions based on the choices for x which are people, as given in (iii):

- (iii) $\{\text{that } x \text{ left} \mid x \in D \wedge \text{person}(x)\}$

But for present purposes, we may ignore this difference.

suggests that unlike focus, the *wh*-phrase makes no ordinary semantic contribution.¹⁵ In this sense, the *wh*-phrase is a semantically deficient focus element, as proposed by Kim (2002b). Beck (2006) proposes that the ordinary semantic value of the *wh*-phrase is in fact undefined. Since *wh*-phrases occur in expressions that have a perfectly well-defined ordinary semantic value, something must rescue the structure as a whole from undefinedness; this is precisely the role of the question operator Q. On her analysis, the LF of (21) is (23), and the question operator Q lifts the focus semantic value of a *wh*-phrase to the level of ordinary semantics. This process can be understood as to be parallel to the traditional syntactic *wh*-licensing by the abstract Q-morpheme (as proposed by Baker 1970).

(23) [Q [who left]]

Note that the idea that *wh*-words introduce alternatives and that the question operator maps these into the ordinary semantic value has also been proposed by von Stechow (1991).

To sum up, it is obvious that there is some interesting semantic parallel between the semantics of focus and the semantics of questions. In alternative semantics analysis (as proposed by Hamblin 1973 and Rooth 1985, 1992), both *wh*-words and focus make use of the semantic mechanism that introduces alternatives.

3.3 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

¹⁵See Ramchand (1997) for a similar idea for question words in Bengali.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

based on focus semantics, which will be introduced in 3.3.1. In section 3.3.2, I will show how the intervention effects can be analyzed in the syntax, building on my previous proposals.

3.3.1 Semantics of Focus Intervention Effects

For the semantics of focus elements and *wh*-elements, Beck (2006) proposes that *wh*-phrases and focus make use of the same interpretational mechanism; therefore focus may interfere with a *wh*-in-situ. She suggests that *wh*-phrases and focus both introduce alternatives into the computation, but that *wh*-phrases do not have any ordinary semantic value, unlike focus. It is the function of the question operator Q to lift the focus semantic value of the *wh*-phrase to the level of ordinary semantics, a process which can be understood as parallel to the traditional syntactic *wh*-licensing by the abstract Q-morpheme (an idea going back to Katz & Postal 1964; see also Baker 1970). Beck argues that an intervention effect occurs whenever a focus sensitive operator other than the question operator tries to evaluate a constituent containing a *wh*-phrase – the resulting LF fails to have an ordinary semantic interpretation.

The Idea

Consider (24-a), a prototypical intervention effect example, and its LF structure (24-b), in which the C position is filled with a question operator Q, for the *wh* to associate with. The structure contains a focused phrase and an operator (*only* in the example) that associates with focus.

- (24) a. *Only John_F invited who?
b. *[Q ... [Op [_φ ... XP_F ... *wh* ...]]]

The strategy pursued in Beck (2006) is to derive the ungrammaticality of such structures from the interpretation component of the grammar. To do this, one

CHAPTER 3. FOCUS INTERVENTION EFFECTS

must specify how questions on the one hand and association with focus on the other hand are interpreted compositionally, and then the interaction between these operations.

Let us first look at the focus semantics. According to Rooth's (1985, 1992) alternative semantics for focus, a focused constituent is marked by a focus *F* in the syntactic representation, which is interpreted phonologically by the placement of a pitch accent on the constituent, and semantically by the compositional rules which assign interpretations to linguistic expressions. Consider (25) with focus on *John*. Rooth proposes that this example is associated with two semantic objects: first, there is the ordinary semantic value (written as $[[\cdot]]^o$), which is the single proposition in (26).

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

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

In addition to the ordinary semantic value, (25) makes salient a set of alternative propositions – e.g., the set in (27). This is the focus semantic value (written as $[[\cdot]]^f$) of the example. Informally, the focus semantic value for a sentence is the set of propositions obtainable from the ordinary semantic value by replacing the/each focus with an alternative of the same type. The focus semantic value for (25) will be the set of all propositions of the form ‘*x* left’, where the variable *x* ranges over the alternatives for *John*.

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

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

For questions, the standard semantic theory (Hamblin 1973, Karttunen 1977) holds that the denotation of a question is the set of possible answers to the question, as illustrated in (29) for (28).

(28) Who left?

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

Note that the focus semantic value of (25) is identical to the ordinary semantic meaning of the question in (28). A *wh*-phrase, like a focus, triggers the introduction of alternatives, and in that respect, their semantic roles are the same. However, unlike focus, *wh*-phrases do not have any ordinary semantic value. Beck (2006) proposes that the ordinary semantic value of the *wh*-phrase is in fact undefined, and that it is the function of the question operator Q to lift the focus semantic value of the *wh*-phrase to the level of ordinary semantics. LF structure for (28) is given in (30):

(30) [Q [who left]]

Things go wrong when there is a focus in the question whose contribution is evaluated within the question, i.e. within the scope of the Q operator, as schematized in (31):

(31) *[Q ... [Op [ϕ ... XP_F ... *wh*...]]]

For the focus on XP to be evaluated within the scope of the Q operator means that there is a focus sensitive operator, here: Op, which uses the semantic contribution of the focus. Op could be *only* or *even* or the like, or in Rooth's (1992) more indirect framework for association with focus, it could be the focus operator \sim . When focus is evaluated at the level of a phrase ϕ , focus semantic values enter into

ordinary semantics. For example, in order to derive the semantics of ‘Only John left’, we need to consider both the proposition ‘John left’, and alternative propositions of the form ‘ x left’ for alternatives x to *John*. This means that with all focus sensitive operators (other than the question operator), we use the ordinary as well as the focus semantic values of ϕ . Moreover, the effect of focus is neutralized, i.e. for external purposes the expression ϕ behaves as if all foci had been reset to their ordinary semantics. The problem that arises with (31) is that the *wh*-phrase has no ordinary semantic value. Thus the ordinary semantic value of ϕ is undefined. This undefinedness is inherited by the larger structure. But since the focus semantic value has been reset to the ordinary semantic value, the sister node of the Q operator has neither a well-defined ordinary nor a well-defined focus semantic value. Not even the Q operator can save the structure from undefinedness. This is why structures like (31) are unacceptable. We now move on to the explicit semantic proposal by Beck (2006).

The System

We begin with (32-a), which is associated with the LF structure in (32-b) (cf. Rooth 1992):¹⁶

- (32) a. [only [John_F left]]
 b. [only_C [~ C [_α John_F left]]]

The two semantic values of *John_F* are shown in (33) (where D is the domain of individuals). Compositional interpretation integrates both into the larger structure,

¹⁶Beck (2006) assumes that focus sensitive operators like *only* are attached to verbal projection and clausal nodes (extended verbal projections), as argued in Büring & Hartmann (2001) and suggested earlier in Jacobs (1983) for German. This holds even for the cases of apparent DP adjunction in many of the intervention data. The same should hold for ~ operator. As for the possible adjunction sites for the ~ operator, Rooth (1992) assumes that it is freely adjoined to phrases in LF.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

yielding (34) for the category labeled α in (32-b):

- (33) a. $\llbracket \text{John}_F \rrbracket^o = \text{John}$ ordinary semantic value
 b. $\llbracket \text{John}_F \rrbracket^f = D = \{\text{John, Bill, Amelie, } \dots\}$ focus semantic value
- (34) a. $\llbracket \alpha \rrbracket^o = \lambda w. \text{ John left in } w$
 b. $\llbracket \alpha \rrbracket^f = \{\lambda p : p = \lambda w. x \text{ left in } w \mid x \in D\}$
 $= \{\text{that John left, that Bill left, that Amelie left, } \dots\}$

According to Rooth (1992, 1996), focus evokes a set of alternative propositions in a presuppositional way. This idea is implemented by using a focus interpretation operator \sim which introduces a presupposed alternative set, as follows.¹⁷

- (35) a. $\llbracket \sim C \phi \rrbracket^o$ is defined only if C is a subset of $\llbracket \phi \rrbracket^f$ containing $\llbracket \phi \rrbracket^o$ and at least one other element.
 If defined, $\llbracket \sim C \phi \rrbracket^o = \llbracket \phi \rrbracket^o$.
 b. $\llbracket \sim C \phi \rrbracket^f = \{\llbracket \sim C \phi \rrbracket^o\}$

In Rooth’s theory, whenever the contribution of focus is used in the semantics, the focus interpretation operator \sim is involved. The \sim operator adjoined to a syntactic phrase ϕ is a purely presuppositional operator: it introduces a presupposed alternative set C whose interpretation is constrained to be a subset of the focus semantic value of ϕ , containing the ordinary value of ϕ and at least one other element. Note that the \sim operator uses both the ordinary and the focus semantic value of its sister node, and it evaluates all foci in its scope unselectively (clause (35-a)) and neutralizes their contribution by resetting the focus semantic value of the whole structure to a singleton containing the ordinary semantic value (clause (35-b)).

¹⁷(35) is the definition stated in Rooth (1992, 1996). Beck (2006) leaves out the clause “containing both $\llbracket \phi \rrbracket^o$ and at least one other element” from the definition. I adopt Rooth’s definition as otherwise we cannot guarantee that the proposition expressed by ϕ is a member of C , which is necessary to interpret sentences like *Only John_F left*.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

A focusing adverb quantifies over propositions and, like other quantifiers in natural language, its domain is restricted. The Roothian idea of association with focus is implemented as follows: the restriction of the adverb is a variable coindexed with the presuppositional variable C introduced by the \sim operator. The semantics of *only* is given in (36). *Only* is an operator that takes two arguments, a contextually determined set of propositions C and the proposition p expressed by the sentence ϕ (see Rooth 1996):

$$(36) \quad \llbracket \text{only}_C \phi \rrbracket^o = 1 \text{ iff for all propositions } p \in C, \text{ if } p \text{ is true, then } p = \llbracket \phi \rrbracket^o.$$

Only says that among the propositions in the set C , the single true one is the one corresponding to the ordinary semantic value of ϕ . Accordingly, (32-a) means that among the relevant propositions in C , the only true one is the proposition that John left.

For the interrogative, its LF structure is given in (37-b), with the Q operator.

- (37) a. Who left?
 b. [Q [ϕ who left]]

Now Beck assumes that while a *wh*-phrase has a well-defined focus semantic value in (38-b), its ordinary semantic value is undefined (see (38-a)). Both interpretive properties project to the larger structure that contains the *wh*-phrase, labeled ϕ in (37-b). The ordinary semantic value of ϕ is also undefined, while its focus semantic value is the set of alternatives given in (39-b).

- (38) a. $\llbracket \text{who} \rrbracket^o$ is undefined.
 b. $\llbracket \text{who} \rrbracket^f = D$

- (39) a. $\llbracket \phi \rrbracket^o$ is undefined.
 b. $\llbracket \phi \rrbracket^f = \{p : p = \lambda w. x \text{ left in } w \mid x \in D\}$

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

(39-b) is already the semantic object we want for the ordinary semantics of the question (cf. Hamblin 1973). It is the task of the question operator Q to lift the focus semantic value of its sister node to the level of the ordinary semantics. This gives us the desired semantics for the example.

$$(40) \quad \begin{array}{l} \text{a. } \llbracket \text{Q } \phi \rrbracket^o = \llbracket \phi \rrbracket^f \\ \text{b. } \llbracket \text{Q } \phi \rrbracket^f = \{ \llbracket \text{Q } \phi \rrbracket^o \} \end{array}$$

$$(41) \quad \llbracket \llbracket \text{Q } [\phi \text{ who left}] \rrbracket \rrbracket^o = \llbracket [\phi \text{ who left}] \rrbracket^f = \{ p : p = \lambda w. x \text{ left in } w \mid x \in D \}$$

The Q operator is a focus sensitive operator which operates on the focus semantic value of the clause containing *wh* to produce the ordinary semantic value for the question as a whole.¹⁸ So there are two focus sensitive operators in the framework proposed here: Q and \sim .

The Intervention Effect

We are concerned with (42-a) and the LF structure in (42-b). The Q operator is associated with the *wh*-phrase, *John_F* wants to associate with *only* via the \sim operator, and the Q operator takes scope over *only*.

$$(42) \quad \begin{array}{l} \text{a. } * \text{Only John}_{\text{F}} \text{ invited who?} \\ \text{b. } [_{\text{CP}} \text{Q } [_{\text{IP}_3} \text{only}_C [_{\text{IP}_2} \sim C [_{\text{IP}_1} \text{John}_{\text{F}} \text{ invited who}]]]] \end{array}$$

The category IP_1 contains an element whose ordinary semantic value is undefined (namely, *who*); hence IP_1 does not have an ordinary semantic value. Similarly, the

¹⁸See von Stechow (1991) for a similar idea. Portner and Zanuttini (2000: 220) also suggest that the Q morpheme is a focus sensitive element which operates on $\llbracket \text{IP} \rrbracket^f$, the focus semantic value of IP, to produce the ordinary semantic value for the question as a whole:

$$(i) \quad \llbracket \text{Q}(\text{IP}) \rrbracket^o = \{ p : p \text{ is true and } p \in \llbracket \text{IP} \rrbracket^f \}$$

This seems to be essentially the same idea as Beck's (2006).

CHAPTER 3. FOCUS INTERVENTION EFFECTS

category labeled IP_2 cannot have a well-defined ordinary semantic value. Then the focus semantic value of IP_2 cannot be defined (due to the semantic definition of the \sim operator in (35-b)). So are both $\llbracket IP_3 \rrbracket^o$ and $\llbracket IP_3 \rrbracket^f$. It is precisely the focus semantic value of IP_3 which should be the input to the question operator; since it is undefined, the whole structure does not have an interpretation. These steps are shown in (43):

- (43) $\llbracket IP_1 \rrbracket^o$ is undefined.
 $\llbracket IP_2 \rrbracket^o$ is undefined, hence $\llbracket IP_2 \rrbracket^f$ is undefined.
 $\llbracket IP_3 \rrbracket^o$ and $\llbracket IP_3 \rrbracket^f$ are both undefined.
 $\llbracket CP \rrbracket^o$ is undefined.

A structure that cannot be assigned an interpretation is not grammatical:¹⁹

- (44) *Principle of Interpretability* (Beck 2006: 16)
 An LF must have an ordinary semantic interpretation.

Hence, intervention effect examples are predicted ungrammatical as they are uninterpretable.

The focus operator \sim extends to cases that involve no particle such as *only*. Consider the Korean example (45-a), which is ungrammatical due to the intervening focus element *MIRA*, and its structure (45-b):

- (45) a. ***MIRA-ka** *nwukwu-lul* chotayha-ess-ni?
 Mira-NOM who-ACC invite-PAST-Q
 ‘Who did MIRA invite?’
 b. $[_{CP} Q [_{IP_2} \sim C [_{IP_1} Mira_F \text{ invited who}]]]$

¹⁹Cf. 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.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

In (45-b), $[[IP_1]]^o$ is undefined since the *wh*-phrase's ordinary semantics is undefined. Accordingly, $[[IP_2]]^o$ is undefined; but then $[[IP_2]]^f$ is also undefined. $[[IP_2]]^f$ is the input to the question operator, but is undefined, so there is no coherent interpretation, and thus ungrammaticality.²⁰

Overt movement (here, scrambling) of the *wh*-phrase across the problematic intervener circumvents the intervention effect. The trace left behind by the *wh*-phrase is an ordinary variable, and as such, does not interfere with the formation and evaluation of alternative sets. The crucial category ϕ in (46-b) has well-defined ordinary and focus semantic values, which happen to contain an ordinary variable bound from the outside.

- (46) a. *Nwukwu-lul_i Mira-man t_i chotayha-ess-ni?*
 who-ACC Mira-only invite-PAST-Q
 'Who did only Mira invite?'
 b. $[Q [nwukwu-lul_i [\phi \text{ Mira}_F\text{-man } t_i \text{ chotayha-ess-ni}]]]$
 $[[\phi]]^o = \text{that only Mira invited } x$
 $[[\phi]]^f = \{\text{that only Mira invited } x\}$

²⁰Beck (2006) notes that the intervention effect disappears when the question with an intervening focus element is embedded and the focus element can be associated with a focusing adverb in the matrix clause, as illustrated by the contrast in (i-a) and (i-b):

- (i) a. ??*Wen hat LUISE wo gesehen?*
 who_{acc} has Luise where seen
 'Where did LUISE see who?'
 b. *Ich habe mich (nur) gefragt, wen LUISE wo gesehen hat.*
 I have myself (only) asked who_{acc} Luise where seen has
 'I (only) wondered where LUISE saw who.'

Her interpretation of this is that focus on *Luise* needs to be evaluated in both cases, but (i-a) offers no obvious adjunction site for the \sim operator outside the scope of Q. Adjunction within the scope of Q leads to the intervention effect. In (i-b), on the other hand, focus can be (if *only* associates with *Luise*: has to be) evaluated outside of the scope of the embedded Q. The example is well-formed. Thus, it is not focus that intervenes, but evaluation of focus.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

These facts indicate that the *wh*-phrase in (46) is interpreted in its moved position, and that alternatives are introduced by the *wh*-phrase.

A *wh*-phrase which is not c-commanded by a coindexed Q operator will be uninterpretable, since the expression it is contained in can never have a well-defined ordinary interpretation; in fact, the Q operator must be the closest c-commanding operator. If the *wh*-phrase is c-commanded by an intervening focus sensitive operator (here: the \sim operator), the result will be uninterpretability, despite the (higher) c-commanding Q operator. The \sim operator makes use of both the ordinary semantic value and the focus semantic value of its sister node, and it resets the focus semantics to the ordinary semantics. However, the unlicensed *wh* will have the consequence that the sister to the \sim operator has no ordinary semantic value. Beck (2006) proposes the general prediction in (47), which is essentially a reformulation of Kim's (2002a,b) empirical generalization (1), here repeated in (48):

(47) A *wh*-phrase may not have the \sim operator as its closest c-commanding potential binder.

* $[Q_i \dots [\sim C [\phi \dots wh_i \dots]]]$ (Beck 2006)

(48) A focus phrase may not intervene between a *wh*-phrase and its licensing complementizer.

* $[_{CP} Q_i \dots [FocP [\dots wh_i \dots]]]$ (Kim 2002a,b)

Regarding the class of interveners, Beck assumes that problematic interveners in a given language are the expressions that are accompanied by a \sim operator.

Some comments on this assumption are in order. I have shown in chapter 2 that some quantifiers in Korean (e.g., *hangsang* 'always', *cacwu* 'often') do not induce intervention effects for *wh*-in-situ. Under Beck's (2006) analysis, this would mean that while quantifiers in German (which are assumed to be harmful interveners) always come with a \sim operator, those quantifiers in Korean do not necessarily come with a \sim operator.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

However, it seems to me that this still does not solve the problem of crosslinguistic variation regarding problematic interveners. Why should one and the same quantifier come with a \sim operator in one language but not in another?

For example, the interpretation of the quantificational adverb *hangsang* ‘always’ in Korean seems to be sensitive to focus just like English *always* or German *immer*, but it does not induce intervention effect for *wh*-in-situ.

Some relevant examples in which quantifiers give rise to focus affected readings are given below (cf. Rooth 1985).

- (49) a. Mary always takes John to the MOVIES.
 \approx If Mary takes John anywhere, she takes him to the movies.
 b. Mary always takes JOHN to the movies.
 \approx If Mary takes anyone to the movies, she takes John to the movies.

Exactly the same focus effect in interpretation can be observed in Korean with the quantificational adverb *hangsang* ‘always’.

- (50) a. Mira-nun hangsang Minswu-lul YENHWAKWAN-ey
 Mira-TOP always MinswuACC cinema-to
 teyliko ka-n-ta
 take-PRES-DEC
 ‘Mira always takes Minswu to the CINEMA.’
 (\approx ‘If Mira takes Minswu anywhere, she takes him to the cinema.’)
 b. Mira-nun hangsang MINSWU-lul yenghwakwan-ey
 Mira-TOP always Minswu-ACC cinema-to
 teyliko ka-n-ta
 take-PRES-DEC
 ‘Mira always takes MINSWU to the cinema.’
 (\approx ‘If Mira takes anyone to the cinema, she takes Minswu to the cinema.’)

CHAPTER 3. FOCUS INTERVENTION EFFECTS

However, this should not be the case in Beck's (2006) analysis. She proposes the following generalization:

(51) (= Beck's (79))

If an element Y is an intervener in language X , then any focus contained in the scope of Y should have the same options of focus evaluation as a focus contained in the scope of an obligatorily focus-sensitive item (like 'only') in X . *If Y is not an intervener in X , then Y does not have to come with a \sim operator, and a focus contained in the scope of Y should be completely free in its evaluation.* [emphasis mine]

As shown in (50), the quantificational adverb *hangsang* 'always' evaluates the focus in its scope just like English *always* or German *immer*, even though it is not a harmful intervener for *wh*-licensing in Korean. It seems to me that the right generalization should be something like the following:

(52) If an expression X is an intervener in a given language, then X gives rise to a focus-affected reading in that language.

NOT: If an expression X gives rise to a focus-affected reading in a given language, it is an intervener in that language.

But as far as I can see, we still cannot explain why the set of problematic interveners varies between languages. Kim's (2002a,b) generalization that the core set of interveners, which is crosslinguistically stable, consists of focus phrases (not quantifiers in general) seems to hold in any case.

The General View of Intervention Effects

In principle, we could expect that the \sim operator acts as an intervener whenever alternative semantics is involved, because the properties of the \sim that cause the intervention effect in *wh*-constructions – unselectivity and resetting of focus se-

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

semantic value – should trigger a similar minimality effect in other focus-related constructions. This is stated as the *General Minimality Effect*, which excludes constellations of the form in (53), where the \sim operator (i.e., the operator evaluating focus alternatives) intervenes in the evaluation of the alternatives introduced by XP_1 , because it prevents the alternatives introduced by XP_1 from being passed up to the position where they could be evaluated by Op_1 :

(53) *General Minimality Effect* (cf. Beck 2006, Beck & Kim 2006)

The evaluation of alternatives introduced by an XP cannot skip an intervening \sim operator.

*[$Op_1 \dots [\sim C [\phi \dots XP_1 \dots]]$]

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 .

3.3.2 Syntax of Focus Intervention Effects

As noted above, in Kim (2002b) I proposed that in focus-sensitive licensing, no independent focus element should intervene between the licensor and the licensee. The domain of ‘focus-sensitive licensing’ includes *wh*-licensing, AltQ-licensing, and NPI-licensing. In all of these cases, we have a focus element which needs to be licensed by some operator in order to be interpreted. In this subsection I will provide a syntactic analysis of *wh*-licensing and the intervention effects.

***Wh*-Licensing**

For a long time, the standard assumption in Generative Grammar (especially the classical Government-Binding model) was that *wh*-phrases have to move to an operator position for semantic reasons, more precisely, for reasons of scope. The *wh*-phrase must be in a position taking scope over the whole sentence (cf.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

Chomsky 1976, 1977, 1981, Higginbotham and May 1981, Lasnik and Saito 1984, 1992, and May 1985). In various languages, including Chinese and Korean among others, *wh*-phrases do not move to some operator position in overt syntax. Huang (1982) proposes that *wh*-phrases in *wh*-in-situ languages, even though they do not move in overt syntax, nevertheless undergo movement at LF to the specifier position of an interrogative C (cf. also May 1985 and Rizzi's 1996 *Wh*-Criterion).²¹ But the LF movement assumption 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 2008) 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* EF), a purely syntactic requirement on configuration which does not involve any feature matching.²² In languages like English, the interrogative C head has an EPP feature, thus triggering an overt *wh*-movement. The interrogative C in *wh*-in-situ languages, on the other hand, does not have any EPP feature, so there is no reason for overt movement. Feature checking is done by Agree at a distance, so there is no reason for LF *wh*-movement, either.

²¹Rizzi (1996) proposes that the *Wh*-Criterion apply universally at LF. So it forces each overtly in-situ *wh*-expression (both in *wh*-movement languages and *wh*-in-situ languages) to raise covertly. Semantically, the LF position of the *wh*-phrase corresponds to its scope position. The *Wh*-Criterion is stated as follows (see May 1985, Rizzi 1996):

- (i) a. A *wh*-operator must be in a Spec-Head configuration with a $C_{[+wh]}$.
- b. A $C_{[+wh]}$ must be in a Spec-Head configuration with a *wh*-operator.

²²It should be noted here that Chomsky (2000, 2001, 2008) proposed different versions of the role of EPP for dislocation. I will not discuss it in detail here but just refer to Grewendorf (2005) for an overview. What is relevant for my discussion is that overt *wh*-movement is not triggered by *wh*-feature checking, but by the need to satisfy the EPP property of the phase head, as proposed in Chomsky (2008).

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

In the alternative semantics for questions proposed by Hamblin (1973) (which I adopt), *wh*-movement is not necessary, either. The association between a *wh*-phrase and the questions operator is done ‘at a distance’ without any covert *wh*-movement. Hamblin (1973) suggests that there is actually no semantic reason for *wh*-movement, mentioning that in many languages, the 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.²³

Feature Checking

Feature checking is done by the Agree operation, which has the following properties (cf. Chomsky 2000, 2004):

- (54) (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.

²³The underlying motivation for the *Wh*-Criterion is scope assignment for *wh*-phrases; the scope of a *wh*-phrase is marked in syntax by the presence of a [+Q] head. But there is no principled motivation for this proposal, especially for the Spec-Head relationship. In my approach, *wh*-phrases simply have to be licensed by an interrogative complementizer via Agree in order to be interpreted. “Licensing” can be understood as “making interpretable” in some sense.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

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

- (56) 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 (\approx *Maximize Matching Effects* proposed by Chomsky 2001).

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

It seems natural to assume that it is the question feature [Q] on C that is interpretable, not the feature on the *wh*-phrase. I will illustrate why.

As Pesetsky and Torrego (2004) and Rizzi (2004a) note, it is the interrogative C, rather than the *wh*-phrase in SpecCP, which “types” a clause as interrogative (cf. Cheng 1991). The behavior of clauses which host intermediate steps of successive-cyclic *wh*-movement supports this alternative, since it is clear that it is the interpretability of the C which contributes to the typing of the clause, not the *wh*-phrase in its specifier position, as illustrated in (57) (leaving out the irrelevant intermediate traces at the outer Spec of *v*):

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

(57) [_{CP} What_i do you think [_{CP} t'_i that John likes t_i]]?

The embedded CP is a declarative clause, selected by the verb *think* which cannot embed a [+Q] complement clause.

The Q feature is expressed by special complementizers like *if* in English, *ob* in German, and various questions particles in different languages. In Korean, for example, the Q-morpheme (which is analyzed as a morphological realization of the interrogative C) has the same form for both *wh*-questions and Yes/No-questions, and it types the clause as interrogative. A *wh*-pronoun can be interpreted as an interrogative pronoun only if there is a licensing Q-morpheme. In the absence of such Q-morpheme, it is interpreted as an indefinite pronoun. This is illustrated in (58-a,b):

- (58) a. Mina-nun *nwukwu*-lul manna-ss-ni?
Mina-TOP who-ACC meet-PAST-Q
'Who did Mina meet?'
b. Mina-nun *nwukwu*-lul manna-ss-ta
Mina-TOP who-ACC meet-PAST-DEC
'Mina met somebody.'

Other evidence for C having an interpretable Q feature comes from multiple *wh*-questions. Multiple occurrences of *wh*-phrases are all linked to a single interrogative C and are interpreted as expressing a "single" *n*-ary Q-operator binding the multiple *wh*-variables.

(59) Who bought what?

- (60) Nwukwu-ka mwues-ul sa-ss-ni?
who-NOM what-ACC buy-PAST-Q
'Who bought what?'
'For which pair *x, y* is it the case that *x* bought *y*.'

CHAPTER 3. FOCUS INTERVENTION EFFECTS

Kratzer (2005) also proposes that a *wh*-pronoun carries an uninterpretable [Q] feature which has to Agree with the interpretable [Q] feature of the interrogative Q operator. She further suggests that from the perspective of Hamblin semantics, multiple *wh*-questions are a case of interrogative concord. Her main proposal is that the *wh*-words themselves are indefinites which introduce sets of individual alternatives. Their *wh*-features are uninterpretable and only indicate agreement with an abstract element present in clause structure, in this case the Q operator, residing somewhere in the left periphery of the sentence. The idea that *wh*-words are interpreted in situ and are related to a single abstract question morpheme was actually explicitly proposed in Baker (1970) (see Kratzer 2005: 126).

Note also that the presence of a *wh*-pronoun is not an idiosyncratic property of only interrogatives. In English, for example, a *wh*-pronoun can also introduce a relative clause:

(61) This is the man *who* teaches me the guitar.

Here, too, it must be the [Rel] feature on C which determines the type of the clause it introduces, not the *wh*-pronoun in its Spec position. I will assume that the *wh*-pronoun in this case has an uninterpretable [Rel] feature which must enter an Agree relation with an interpretable [Rel] on C.

To sum up, it seems reasonable to assume that the interrogative C has the interpretable Q feature, not the *wh*-phrase, since it is the C which makes a crucial contribution to the semantic interpretation of the clause it heads.

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 the interrogative C and the *wh*-phrase in-situ, as shown in (62) with the relevant features:

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

$$(62) \quad *[\text{CP } \underbrace{\text{C}_{[iQ, iF]} [\dots \text{Foc}_{[iF]} \dots [\dots \text{wh}_{[uQ, uF]} \dots]}_{\uparrow}]]$$

The *wh*-element has uninterpretable features $[uQ, uF]$, which must be checked by the interpretable features of a matching operator. Only the interrogative C has the complete set of interpretable features $[iQ, iF]$ for the $[uQ, uF]$ of the *wh*-in-situ and so only it can Agree with the *wh*-in-situ, deleting all uninterpretable features.

The intervening focus operator (which comes with the focused element) has an interpretable focus feature *iF*, but it cannot Agree with the *wh*-in-situ because it does not have the feature *iQ*. 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.

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

Intervention effects can be explained both in syntax (failure of Agree) and semantics (failure of interpretation).

The following examples from section 3.3.1 show that it is an intervening probe (the focus operator or a focus sensitive adverb) which induces an intervention effect, not an intervening goal (the focused element itself). The intervention effect disappears when a question with an intervening focus element is embedded, and the focus element can be associated with a focus sensitive adverb in the matrix clause, as illustrated by the contrast in (63-a) and (63-b):

- (63) a. ??Wen hat LUISE wo gesehen?
 who_{acc} has Luise where seen
 ‘Where did LUISE see who?’
- b. Ich habe mich (nur) gefragt, wen LUISE wo gesehen hat.
 I have myself (only) asked who_{acc} Luise where seen has
 ‘I (only) wondered where LUISE saw who.’

CHAPTER 3. FOCUS INTERVENTION EFFECTS

Focus on *Luise* needs to be evaluated in both cases, but (63-a) offers no obvious adjunction site for the focus operator \sim outside the scope of Q. Adjunction within the scope of Q leads to an intervention effect. In (64-b), on the other hand, focus can be evaluated outside of the scope of the embedded Q (and if *only* associates with *Luise*, it has to be). The example is well-formed; thus, it is not an intervening goal (the focused element itself) that induces an intervention effect, but a probe (the focus operator which evaluates focus).²⁴

Most speakers who I consulted found examples like (64-b) in German or (65-b) in English rather marginal, where the focus-sensitive adverb *only* associates with a *wh*-element (here marked in italics).

- (64) a. *Wen* hat Maria eingeladen?
who_{acc} has Maria invited
'Who did Maria invite?'
- b. ?*Nur *wen* hat Maria eingeladen?
only who_{acc} has Maria invited
'Only whom did Maria invite?'

²⁴Pesetsky (2000: 62) provides a very similar example. For instance, (i) cannot have a pair-list reading due to the intervening focus phrase *only Mary*. But the acceptability of the pair-list reading reemerges as long as *only Mary* receives matrix scope (some degree of focal stress on *only Mary* facilitates this reading), as in (ii):

- (i) ??Which boy did only Mary introduce which girl to ___?
- (ii) Sue asked which boy only Mary introduced which girl to ____.
[i.e., Mary is the only person such that Sue asked which boy this person introduced which girl to.]

This shows that the intervention effect is sensitive to the scope (LF position) of the intervener. This seems parallel to the case with a universal quantifier in German, discussed in chapter 2, section 2.2.2. Recall that the intervention effect disappears if the universal quantifier takes wide scope over the entire question at LF.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- (65) a. Who bought what?
b. ?*Who bought only *what*?

The same effect is observed in Korean, as illustrated in (66-b). The sentence sounds very strange to my ears.

- (66) a. Mina-nun nwukwu-lul chotayha-ess-ni?
Mina-TOP who-ACC invite-PAST-Q
'Who did Mina invite?'
b. ?*Mina-nun *nwukwu*-man(-ul) chotayha-ess-ni?
Mina-TOP who-only(-ACC) invite-PAST-Q
'Only whom did Mina invite?'

My interpretation of this is that the *wh*-phrase is in the scope of an intervening focus-sensitive operator (a probe) and the latter will block the Agree relation between the *wh* and the Q operator. As the intervening focus-sensitive operator does not have the complete set of interpretable features [*i*Q,*i*F], it cannot delete the uninterpretable features [*i*Q,*i*F] of the *wh*-phrase. As a result, the *wh*-phrase cannot be assigned any interpretation at LF, violating the principle of Full Interpretation. This is another case of intervention effects induced by an intervening probe (here, a focus sensitive operator *only*).

Now one might ask why an intervening probe blocks Agree between a goal and a more remote probe even though it does not have the full set of features of the goal. This seems to contrast with the cases where a defective probe does not show an intervention effect for Agree, discussed in Chomsky (2000, 2001). Chomsky observes that no intervention effect is induced if the intervening goal or probe does not have *all* the relevant matching features. He discusses examples with an intervening expletive Expl and an intervening nonfinite raising T. They are both defective in the sense that they do not have the full set of ϕ -features. Chomsky further argues that due to this defective property, neither of them can induce an intervention effect for Agree with a remote goal or a probe.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

Let me illustrate this with defective T, selected either by C or V. If selected by C, it has a full complement of ϕ -features; if by V, it is *defective* (cf. Chomsky 2000: 102). According to Chomsky, deletion of features is a “one fell swoop” operation, dealing with the entire ϕ -set; its features cannot selectively delete. So only a probe with a full complement of ϕ -features is capable of deleting the feature that activates the matched goal. In the case of raising as in (67), nonfinite raising T is defective (T_{def}) in that it has only an uninterpretable [person] feature.

(67) John_i seems [_{TP} t'_i to [_{VP} t_i like horses]]

Movement of DP headed by *John* to [Spec, T_{def}] will delete only the ϕ -set of T (= uninterpretable [person]) but not the (uninterpretable) structural Case feature of DP; so the DP can undergo further movement and agreement with the matrix finite T.

But there seem to be many cases in which an intervening probe or a goal does induce an intervention effect even though it does not have the full set of matching features of the remote goal. In recent work, Rizzi (2004b) discusses such cases involving various types of overt movement and proposes to modify Relativized Minimality in terms of *feature class*, instead of *feature identity*. According to his new proposal, Relativized Minimality (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).²⁵ Rizzi (2004b) proposes that these expressions belong to the same feature class (i.e., “quantificational”) and exhibit an RM effect for *wh*-movement. This can be illustrated in the following examples from Starke (2001: 5). A *wh*-

²⁵Similar effects are found in NPI-licensing, too. It is not only an intervening NEG operator which induces an intervention effect; other quantifiers or scalar expressions also block NPI-licensing. See Chierchia (2004) for some discussion.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

movement of an adverbial *how* such as (68) is blocked if a negation (69-a), a focalized element (69-b), another *wh*-element (69-c), or a quantificational adverb (69-d) intervenes.

- (68) How_{*i*} do you think that I should cook this stuff t_{*i*}?
- (69) a. *How_{*i*} don't you think that I should cook this stuff t_{*i*}?
b. *How_{*i*} do you think that, **THIS STUFF**, I should cook t_{*i*}, not those eggplants over there?
c. *How_{*i*} do you wonder **why** I should cook this stuff t_{*i*}?
d. ?*How_{*i*} should I **often** cook this stuff t_{*i*}?

Rizzi (2004b) shows convincingly that on the one hand his earlier RM analysis (i.e., Rizzi 1990) based on the A/A'-distinction is too strict as not all intervening A'-specifiers trigger a minimality effect on A'-chains. But on the other hand, Chomsky's (1995) Minimal Link Condition, which is based on feature identity, is too liberal to capture minimality effects involving featurally distinct positions (negation and *wh*, for instance) as shown in (69). Note that an intervening negation or a quantificational adverb does not have the complete set of features of the *wh*-element. Still negation or a quantificational adverb induces an intervention effect for extraction of *how many/much* or *wh*-adjuncts. Based on these facts, Rizzi (2004b) suggests that the theory of locality needs a more refined typology of structural positions and proposes that Relativized Minimality should be defined in terms of a feature class, not feature identity. The feature classes proposed by Rizzi (2004b) are listed in (70).

- (70) a. Argumental: person, number, gender, case
b. Quantificational: Wh, Neg, measure, focus, ...
c. Modifier: evaluative, epistemic, Neg, frequentative, celerative, measure, manner, ...
d. Topic

CHAPTER 3. FOCUS INTERVENTION EFFECTS

The argumental features of (70-a) are the traditional ϕ -features and define the A-positions. Note that the class of A'-positions is split into several subclasses in (70-b)–(70-d). Rizzi (2004b) then concludes that RM effects are found only within the same featural class but not across classes.

To sum up, there are many cases in which an intervening element (be it a probe or a goal) which does not have the full set of matching features can induce an intervention effect. The intervention effect for the *wh*-in-situ induced by an intervening focus operator which I discuss in this chapter is also one such case. There are several classes of examples which are problematic to Chomsky's (2000, 2001) assumption that only a probe or a goal with a full set of matching features induces an intervention effect.

Beck (2006) proposes that the cause of the focus intervention effect lies in the “unselectivity” of the focus operator, which evaluates ALL focus semantic values in its domain. This means that a higher Q operator would end up with nothing to operate on (recall that Q operates on the focus semantic values of its sister category), and then the whole structure cannot be interpreted as a question. If this is correct, it would mean that the *iF* of Foc does not allow any *uF* in its domain to pass it without evaluation – Foc “catches” all focus alternatives.

This behavior is crucially different from that of the Q operator itself, as we know from the “Baker ambiguity” (also absence of *Wh*-Island effects in Chinese (cf. Huang 1982, Tsai 1999) and in some dialects of Japanese (cf. Ishihara 2002)). Sentence (71) is ambiguous: in-situ *what* may take either the embedded scope (a felicitous answer in (71-a)) or the matrix scope paired with *who* (a felicitous answer in (71-b)).^{26,27}

²⁶There have been some dissenting views regarding the possibilities of a wide scope reading of *what* (Kuno and Robinson 1972), but the majority of linguists (Chomsky 1973, Lasnik and Saito 1984, 1992, Pesetsky 1987) seem to agree with Baker. See Pesetsky (1987: 123, fn. 12) and references therein.

²⁷Note that the scope of the *wh*-phrase moved to a specifier position of an interrogative C in the overt syntax is frozen at its surface position. So *where* in the embedded SpecCP in (71) takes only

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- (71) Who remembers where we bought what?
- a. *Mary* remembers where we bought what.
 - b. *Mary* remembers where we bought the *wine*, and *John* remembers where we bought *tea*.

The situation with *wh*-in-situ contrasts with overt movement out of an embedded interrogative clause, which is not possible in English (violating the *Wh*-Island Constraint (cf. Chomsky 1973)):

- (72) ?*What_{*i*} do you remember where we bought t_{*i*}?

It is not clear how the asymmetry between “overt” and “covert” *wh*-scoping can be accounted for in the current minimalist framework. Chomsky (2000: 128) suggests that the *Wh*-Island Constraint is a defective intervention effect: the [Q] feature of an already checked *wh*-phrase (e.g., *where* in (72)) bars attraction of lower [Q] although the blocking element itself cannot move or check the unin-

the embedded scope and cannot take the matrix scope. So answers like (i) are not possible:

- (i) *John* remembers what we bought in *Frankfurt*, *Mary* remembers what we bought in *Düsseldorf*, ...
- (ii) Who remembers what we bought where?
does have the meaning in (i) but lacks the one in (71-b).

Some syntactic principle requires that a *wh*-word that has *wh*-moved overtly cannot undergo further covert *wh*-movement. In Baker’s system, there must be syntactic principles ensuring that an overtly *wh*-moved item cannot be coindexed with a Q-morpheme besides the one it has moved to.

This can be analyzed as a case of the operator freezing effect proposed by Bošković (2008):

- (iii) Operator in operator-variable chains cannot undergo further operator movement.

See also Lasnik and Saito (1992) and Rizzi (2004a).

CHAPTER 3. FOCUS INTERVENTION EFFECTS

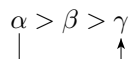
interpretable feature of the probe.²⁸ But then the question is why there is no such intervention effect in (71).

Another problem with the defective intervention analysis of the *wh*-island effect is that not only *wh*-movement out of a *wh*-island but also topicalization out of a *wh*-island leads to ungrammaticality in English, as illustrated in (73):²⁹

(73) ?*That doctor_i, I wonder where_j John met t_i t_j.

²⁸Defective intervention has it that an intervening goal (defined in terms of c-command) will bar the probe from entering in an Agree relation with a lower goal which bears an unchecked feature, even if the intervening goal is defective in the sense of not bearing an unchecked feature matching that of the probe (Chomsky 2000: 123). This situation is illustrated schematically in (i), where α is the probe, β is the inactive (defective) goal, γ is the active (non-defective) goal, and $>$ represents c-command.

(i) *The Defective Intervention Constraint* (Chomsky 2000, 2004)



(*Agree (α, γ), β and γ are matching goals for the probe α , and β is inactive due to a prior Agree with some other probe.)

²⁹As noted by Fanselow (1987: 56–64) and Müller and Sternefeld (1993), topicalization of an object across a *wh*-island is only mildly deviant (a subjacency-like effect) in German, as illustrated in (i) (examples are from Müller and Sternefeld 1993: 485):

(i) ??Radios_i weiß ich nicht [_{CP} wie_j (daß) [_{IP} man t_j t_i repariert]]
 radios_{acc} know I not how that one repairs

However, extraction of a *wh*-phrase across a (topic or *wh*-) island or topicalization across a topic element is always bad:

- (ii) a. *Was_i glaubst du [_{CP} gestern_j hat [_{IP} Ede t_j t_i repariert]]?
 what_{acc} believe you yesterday has Ede repaired
- b. *Welches Radio_i weißt du nicht [_{CP} wie_j (daß) [_{IP} man t_j t_i repariert]]?
 which radio_{acc} know you not how that one repairs
- c. *Radios_i weiß ich nicht [_{CP} gestern_j hat [_{IP} Ede t_j t_i repariert]]
 radios_{acc} know I not yesterday has Ede repaired

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

It is obvious that the intervening *wh*-phrase *where* does not share a feature with the topic phrase *that doctor* which can be probed by the matrix Top(ic) head. In fact, the *wh*-phrase should carry a focus feature if any, and definitely not a topic feature. As the *wh*-phrase cannot count as a closer goal for topicalization (for the probe of Top(ic) head), it should not bar attraction of *that doctor* to [Spec, TopP] in (73).

Note that a topic element also creates a strict island for both topicalization and *wh*-movement in the Germanic languages (the so-called “topic island effect”). The following examples from English (see Lasnik and Saito 1992) and German (Müller and Sternefeld 1993) illustrate the topic island effect for *wh*-movement.

- (74) a. *What_i do you think that for Ben’s car_j, Mary will pay t_i t_j?
 b. *Ich weiß, wen_i du sagtest [_{CP} Ede_j habe_k [_{IP} t_j t_i getroffen t_k]]
 I know who_{acc} you said Ede has_{subj} met

These illustrate the same problem for Chomsky’s (2000) defective intervention analysis: Why should the topic element, which does not have any features in common with the *wh*-phrase, block *wh*-movement?³⁰ These observations show that the *Wh*-Island Constraint cannot not be analyzed as an instance of the Defective Intervention Effect.

What we have to assume to account for the *wh*-island condition seems to be that movement is subject to a locality condition and that C allows only one specifier in English or German. Then movement is impossible from inside a clause whose SpecCP is occupied by a distinct *wh*-phrase (due to locality or the Phase Impenetrability Condition PIC).

See Müller and Sternefeld (1993) for an analysis of this contrast, based on the assumption that topics head their own topic phrase (TopP), and that long topicalization is successive cyclic movement through the embedded SpecTopP, not through the embedded SpecCP.

Günther Grewendorf (p.c.) suggested to me that such a contrast can be explained by the ban on improper movement in terms of the hierarchy of movement types (see Grewendorf 2003).

³⁰This is also problematic for Rizzi’s (2004b) proposal as Topic does not belong to the same featural class as *wh*. See (70) above.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

Nissenbaum (2000: 223) claims that there is no such thing as a *wh*-island, and derives the ungrammaticality of examples like (72) from the following (*wh*-spellout) parameter setting for languages like English:

- (75) English *wh*-movement: Apply spellout after exactly one *wh*-phrase raises to the periphery of an interrogative clause.

The deviance of so-called *wh*-island violations is claimed to result from violating the sequence of operations imposed by the spellout parameter setting. The movement itself is not blocked. (75) imposes the ordering of the three steps shown in (77) for the sentence that is embedded in (76). Since *what* is assigned a pronunciation *in-situ* (step two in (77)), there is no way for the chain to be re-assigned a pronunciation at the head.

- (76) ?*What did you ask who bought?

- (77) Three steps in the derivation of “Who bought what”:

- a. Step one: *raise who* [_{CP} who_i C⁰ [who_i bought what]]
- b. Step two: *spellout the internal domain*
[_{CP} who_i C⁰ [“<who>_i **bought what**”]]
- c. Step three: *raise what*
[_{CP} who_i <what>_j C⁰ [“<who>_i **bought what**”]]

Consequently, (76) – which embeds this sentence – cannot be derived without violating the spellout parameter (75) (or, alternatively, violating superiority).³¹

³¹Chomsky’s (1973: 246) formulation of the Superiority Condition is shown in (i):

- (i) *The Superiority Condition*
- a. No rule can involve X, Y in the structure
 ... X ... [... Z ... WYV ...] ...,
 where the rule applies ambiguously to Z and Y, and Z is superior to Y.
 - b. The category A is ‘superior’ to the category B if every major category dominating A dominates B as well but not conversely.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

Nissenbaum claims that the covert movement out of an *wh*-clause itself is not blocked, based on the observation that not all languages exhibit *wh*-island effects.

However, the grammaticality of examples like (78), noted by Lasnik and Saito (1992: 118), seems to be a problem for Nissenbaum's analysis.

(78) Who wonders what who bought t?

Nissenbaum (2000) assumes that superiority (= attract closest) constrains the order of movements. But then, at the point of derivation of the embedded CP, (78) should involve a superiority violation and the derivation will be ruled out.

Notice that (78) is grammatical but with a restricted interpretation. The *wh*-in-situ *who* in the embedded clause may only take matrix scope, not embedded scope; that is, it contrasts with *what* in Baker's (1970) example (71) above. This is suggested by the fact that (79-a) is an appropriate answer to (78), but (79-b) is not.

(79) a. *Mary* wonders what *Bill* bought, and *Sue* wonders what *Tom* bought.
b. *Mary* wonders what who bought.

With the embedded scope reading for *who*, it has exactly the status of the examples in (80), which are ungrammatical due to a superiority violation (or a violation of the economy principle Shortest Move in the minimalist framework):

(80) a. *John wonders what who bought t.
b. *What did who buy t?

In order to capture this type of contrast, Baker (1970) proposed a Q morpheme in interrogative Comp; scope of a *wh*-phrase might be represented via coindexation with matrix or embedded Q, so that *what* in (71) would be coindexed with either matrix or embedded Q, whereas *who* in (78) would be coindexed only with matrix Q. But it is not clear why *who* in (78) cannot be coindexed with the embedded Q

CHAPTER 3. FOCUS INTERVENTION EFFECTS

in Baker's system.

To account for the contrast between the grammaticality of (78) and the ungrammaticality of (80), Lasnik and Saito (1992) proposed the *Operator Disjointness Condition*, reformulated by Epstein (1998) as a more natural principle of scope marking: the *Scope Marking Condition* (SMC):

(81) *The Operator Disjointness Condition* (Lasnik and Saito 1992: 120–121)

- a. A *wh*-phrase X in [Spec, CP] is O-disjoint (operator-disjoint) from a *wh*-phrase Y if the assignment of the index of X to Y would result in the local A'-binding of Y by X (at S-Structure).
- b. If two *wh*-phrases X and Y are O-disjoint, then they cannot undergo Absorption.

(82) *Scope-Marking Condition* (Epstein 1998: 190)

In the LF component, a *wh*-in-situ Y can adjoin to a *wh*-chain X only if X c-commanded Y at S-Structure.

By the *Scope-Marking Condition*, the *wh*-in-situ *who* in (78) cannot adjoin to *what* in the embedded [Spec, CP] for the same reason that a similar adjunction cannot occur in (80): all members of the *wh*-chain $\langle \textit{what}, t \rangle$ do not c-command *who* at S-structure. The *wh*-chain headed by *who* in matrix [Spec, CP] does, however, c-command the *wh*-in-situ *who*, so that the latter term can be adjoined at the matrix level. The scope of the *wh*-in-situ *who* is therefore at the matrix level, yielding an interpretation associated with answer (79-a). In contrast, the SMC will permit scope marking for *what* in (71) at both the embedded and the matrix levels, because all members of the *wh*-chains headed by both *who* and *where* c-command *what* at S-structure.

The contrast between (71) (the *wh*-in-situ *what* can take either matrix or embedded scope) and (78) (the *wh*-in-situ *who* can only take matrix scope) shows that the economy strategy (i.e., Shortest Move or Attract Closest) involved in superi-

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

ority is interpretation-dependent, i.e., it determines the most economical way relative to interpretative goals. As Fox (1995) puts it, the reference set for economy includes only derivations that end up with the same interpretations (see Reinhart 2006 for more discussion). These are instances of economy which have an effect at the semantic interface (see Kitahara 1993, Reinhart 1995, Sternefeld 1996).³² The intervening subject *wh*-phrase *who* in (78) does not block the extraction of the lower *wh*-phrase *what* as long as it does not take the same scope as the latter.

In my analysis, too, the Baker ambiguity is unexpected as the C of the embedded CP has a full set of features [*i*Q,*i*F] which would match the uninterpretable features of *wh*-in-situ. We would then expect the *wh*-in-situ to Agree only with the closer embedded C under locality, but never with the matrix C.

- (83) [_{CP} who₁ C_[*i*Q,*i*F] [_{IP} t₁ remembers [_{CP} where₂ C_[*i*Q,*i*F] [_{IP} we bought what_[*u*Q,*u*F] t₂]]]]]

To account for the Baker ambiguity, Beck (2006) assumes that the Q operator is “selective”, unlike the focus operator, in the sense that it only binds the variables that it is coindexed with. This is compatible with Baker’s (1970) syntactic analysis of the ambiguity, illustrated in (84). Baker proposes to represent the scope of *wh*-phrases by coindexing the *wh*-phrase with the Q morpheme in the Comp of an interrogative clause.

- (84) a. [Q₁ who₁ [t₁ remembers [Q_{2,3} where₂ [we bought what₃ t₂]]]]
 b. [Q_{1,3} who₁ [t₁ remembers [Q₂ where₂ [we bought what₃ t₂]]]]

Beck (2006) further notes that the “selectivity” of the Q operator also accounts for the cases of focus inside a question as in (85) from English and in (86), a parallel example from German.

³²This observation shows that Nissenbaum’s PF analysis (see (75)) cannot be the correct way to account for the superiority effects, for PF cannot see the different interpretations involved.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

- (85) a. I only wonder who BILL invited.
 b. [only_C [~ C [I wonder [Q₁ [who₁ Bill_F invited]]]]] (LF)
- (86) Ich habe mich (nur) gefragt, wen LUISE wo gesehen hat.
 I have myself (only) asked who_{acc} Luise where seen has
 ‘I (only) wondered where LUISE saw who.’

The intervening Q operator only binds the variable it is coindexed with. It does not bind the variables introduced by focus on *Bill* in (85) or *Luise* in (86).

But neither Baker’s (1970) nor Beck’s (2006) analysis says anything about what determines the indexing of the Q morpheme (or the Q operator).³³

The Role of Prosody in Multiple *Wh*-Questions

One extra factor to consider is prosody, which plays an important role for the interpretation of the Baker-sentences. The apparent ambiguity of a Baker-sentence like (87) is actually dependent on the focal prosody. The embedded *wh*-phrase in-situ can take matrix scope *only if* it carries focal stress. Otherwise it is interpreted as taking embedded scope (see Erteschik-Shir 1986, Zubizarreta 1998, Kennedy 2005).

³³Before moving on, I mention an interesting observation about Baker-sentences made by Dayal (1996, 2002). According to Baker (1970), questions such as (i-a) allow a list reading which pairs the matrix subject and the embedded object (i-b). Dayal (1996, 2002) notes that such readings only appear when the higher *wh*-word is in the same clause as an embedded multiple question (a configuration she calls the “*wh*-triangle”); the list reading disappears when an intermediate clause separates them, as in (ii).

- (i) a. Which student knows where Mary bought which book?
 b. *John* knows where Mary bought *Aspects* and *Bill* knows where she bought *Barriers*.
- (ii) Which student said that John knows where Mary bought which book?

Dayal (1996) proposes that the list reading of (i) arises not from movement of the embedded *wh*-word in this case, but rather from QR of the entire embedded question into the main clause. See Dayal (2002) for a recent analysis of this phenomenon.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- (87) Who remembers where we bought what?
- a. Who remembers where we bought what?
(‘For which x , x knows where we bought what.’)
 - b. Who remembers where we bought what?
(‘For which $\langle x, y \rangle$, x knows where we bought y .’)

Chomsky (1995, 2008) also notes that in multiple *wh*-questions, the in-situ *wh*-phrase has focal stress and might have wide scope under a focus interpretation. Interestingly, the pair-list interpretation disappears if stress is shifted, as in (88):

- (88) Who NEVER saw what?

This also looks like an instance of a focus intervention effect.

Zubizarreta (1998) notes that in interrogatives involving *wh*-phrases (which she considers to be inherently focused words), Nuclear Stress is contained within the presupposed part of the sentence, but not the focused part.

- (89) a. What did John read?
b. **Whát* did John read?

Based on this, she argues that in both Germanic and Romance, focus is licensed syntactically in questions, in contrast with focus in statements, which is licensed prosodically. This leads her to make the following claim (p. 92):

- (90) A fronted *wh*-phrase is licensed by virtue of occupying the specifier position of a functional category with the feature [+wh] (i.e., via the feature-checking mechanism).

On the other hand, a *wh*-in-situ in (91) bears Nuclear Stress, indicating that a *wh*-in-situ is licensed prosodically (rather than in terms of feature-checking).

CHAPTER 3. FOCUS INTERVENTION EFFECTS

(91) Who bought what?

She therefore assumes the following (p. 93, (168)):

(92) In the languages under discussion [i.e., German, English, Spanish and French], a *wh*-phrase is licensed either syntactically, but not both.³⁴

At least in English, the Superiority Condition also seems to play a role. Unlike (92), the following example is surprisingly not ambiguous. The embedded subject *wh*-in-situ in (93) must take matrix scope. It also has to be focused, otherwise the example is very marked (see (94)) (Peter Sells, p.c.). Without this focal stress, the *wh*-phrase cannot take matrix scope, but if it takes embedded scope, the example will be an instance of a superiority violation, just like (95).

(93) Who knows what *whó* bought?

a. **John* does. (= John know what who bought.)

b. *John* knows what *Mary* bought, *Lilly* knows what *Jane* bought, ...

(94) *Who knows what who bought?

(95) *John knows what who bought.

Earlier, in section 3.2.2 I have mentioned that in languages like German or Korean in which the *wh*-pronouns can be ambiguous between interrogative and indefinite interpretation, the focal stress on the *wh*-in-situ has a disambiguating role, here repeated in (96) (German) and in (97) (Korean) (stress marked with '):

(96) a. Wer hat wás gelesen?
who has what read
'Who read what?'

³⁴This assumption seems to be a bit too strong for German as a fronted *wh*-phrase in SpecCP in German can, though need not, be stressed if some additional focusing is intended (Caroline Féry, p.c.).

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- b. Wer hat was gelesen?
who has what read
'Who read something/anything?'
- (97) a. Mira-ka mwués-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?'

Note that with an intervening focus phrase (here, *nur dem Hans*, the *wh*-in-situ can only be interpreted as indefinite NP. Under this interpretation, (98) is grammatical.

- (98) Wer hat nur dem Hans was gezeigt?
who_{nom} has only the_{dat} Hans what showed
'Who showed only Hans something/anything?'

But if we put focal stress on the in-situ *wh*-pronoun (which allows the *wh*-pronoun be interpreted as a question word), (98) becomes ungrammatical. This is so because the intervening focus phrase blocks the Agree relation between the interrogative C and the *wh*-in-situ (a focus intervention effect).

It is claimed in the literature (cf. Nishigauchi 1990, Watanabe 1992) that Japanese exhibits *wh*-island effects at LF. Accordingly, an example like (99) is unambiguous. It can only have the reading (99-a), but not (99-b):

- (99) John-wa [Mary-ga nani-o katta ka] kikimasita ka?
John-TOP Mary-NOM what-ACC bought Q asked Q
a. 'Did John ask what Mary bought?'
b. 'What did John ask whether Mary bought?'

In this respect, Japanese differs from Chinese, which is claimed to lack the *wh*-island effect (originally noted by Huang 1982). It should be noted that the judge-

CHAPTER 3. FOCUS INTERVENTION EFFECTS

ment status of *wh*-island effect in Japanese reported in the literature varies from re-searcher to researcher. For example, Takahashi (1993) finds (99) ambiguous with respect to the scope of the *wh*-phrase *nani-o* as in (99-a,b) whereas for Watanabe (1992), (99) can only have the embedded scope for the *wh*-phrase.

There is some interesting recent work on the *wh*-island effects in Japanese which take the prosody of the *wh*-questions more seriously (e.g., Deguchi & Kitagawa 2002, Ishihara 2002, and Hirotsu 2003). What is interesting for our discussion is the observation that examples like (99) are indeed ambiguous in Japanese and the choice of *wh*-scope is associated with specific patterns of prosody of the *wh*-construction. Deguchi & Kitagawa (2002) and Ishihara (2002) claim that a *wh*-phrase takes embedded scope when deaccenting triggered by the *wh*-phrase ends on the embedded Q-marker, as in (100-a). When the domain of deaccenting extends to the matrix Q-marker, as in (100-b), the *wh*-phrase takes matrix scope (underlining indicates the domain of deaccenting).

- (100) a. John-wa Mary-ga nani-o katta ka kikimasita ka?
 John-TOP Mary-NOM what-ACC bought Q asked Q
 'Did John ask what Mary bought?'
 b. John-wa Mary-ga nani-o katta ka kikimasita ka?
 John-TOP Mary-NOM what-ACC bought Q asked Q
 'What did John ask whether Mary bought?'

The point that both Ishihara (2002) and Deguchi & Kitagawa (2002) make is that the ambiguity in (99) is resolved by constraints on the syntax-phonology interface.

As far as I can see, prosody seems to play an important role in Korean questions, too. The following example is ambiguous. The *wh*-phrase in the embedded clause can take either embedded scope ((101-a)) or matrix scope ((101-b)):

- (101) Mira-nun [Yuna-ka nwukwu-lul phathi-ey chotayha-ess-nunci]
 Mira-TOP Yuna-NOM who-ACC party-to invite-PAST-Q
 alko siphe ha-ni?
 know want to-Q

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- a. ‘Does Mira want to know who Yuna invited to the party?’
- b. ‘Who does Mira want to know whether Yuna invited to the party?’

To get the matrix scope, the *wh*-phrase has to be pronounced with heavy focal stress. Without the stress, it cannot take matrix scope, only embedded scope. This is reminiscent of the prosody pattern in the Baker-sentences that I mentioned above. We have seen that the *wh*-phrase in-situ in the embedded clause can take matrix scope only if it has focal stress.

To sum up, there is a large literature on phenomena involving *wh*-questions, but very few studies have paid attention to the prosody of the relevant examples. I have shown in this subsection that we need to consider the prosody of the *wh*-questions to provide a better analysis of the *wh*-scope marking. This is certainly a promising interface area (syntax-semantics-phonology) for future research.

Absence of Intervention Effects with Overt Movement

Another question to be answered is why overt movement (*wh*-scrambling or *wh*-movement) is not itself subject to any Intervention Effect.

Let me first note that unlike Japanese and Korean, which optionally allow *wh*-scrambling, German does not allow *wh*-scrambling in normal contexts (see Fanselow 1990, Müller and Sternefeld 1993, Grewendorf and Sabel 1999, among others). So, the example (102) is ungrammatical, where the *wh*-in-situ element *wo* has undergone scrambling to a SpecvP position:³⁵

- (102) *Wen_i hat [_{vP} wo_j [_{vP} Karl t_i t_j getroffen]]?
who_{acc} has where Karl met
‘Who did Karl meet where?’

But if there is a quantifier or a focus phrase c-commanding the *wh*-in-situ, it may scramble to a higher position. In fact, scrambling of the *wh*-in-situ “re-

³⁵Note that subject NPs can stay in a vP-internal position (cf. Haider 1993). I assume that the EPP feature of T is optional in German (following Heck and Müller 2000).

CHAPTER 3. FOCUS INTERVENTION EFFECTS

pairs” the ungrammaticality resulting from an intervention effect, as illustrated in (103-a,b):³⁶

- (103) a. *Wen_i hat [_{VP} **nur Karl** t_i wo getroffen]?
 who_{acc} has only Karl where met
- b. Wen_i hat [_{VP} wo_j [_{VP} **nur Karl** t_i t_j getroffen]]?
 who_{acc} has where only Karl met
 ‘Who did only Karl meet where?’

The same effect is observed with a *wh*-in-situ in an embedded clause:

- (104) a. *Wer hat gesagt, dass wen_i der Mann t_i mag?
 who_{nom} has said that who_{acc} the man likes
- b. *Wer hat gesagt, dass **niemand** wen mag?
 who_{nom} has said that nobody who_{acc} likes
- c. Wer hat gesagt, dass wen_i **niemand** t_i mag?
 who_{nom} has said that who_{acc} nobody likes

Here again, (104-a) is ungrammatical due to the scrambling of the *wh*-phrase *wen*. But if there is an quantifier in the subject position, the *wh*-phrase has to scramble to the left of the subject, as in (104-c). Otherwise, the example is ungrammatical ((104-b)).

The main question to be tackled is why overt movement – be it *wh*-movement (as in (105-a)) or *wh*-scrambling (as in (105-b)) – is not subject to intervention effects.

- (105) a. Wen_i hat **nur Karl** t_i eingeladen?
 b. Wen_i hat wo_j **nur Karl** t_i t_j getroffen?

³⁶Heck and Müller (2000) call this type of movement “repair-driven movement”, meaning movement operations that are normally impossible in a language, but become possible and, in fact, obligatory if they provide the only way to satisfy a high-ranked syntactic constraint.

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

Consider first overt *wh*-movement. If overt *wh*-movement to SpecCP in (105-a) is triggered to check uninterpretable features on the *wh*-phrase against the interpretable features of the probe C, the intervening focus phrase should induce an intervention effect.

On this point, following Chomsky (2008), I assume that overt movement is triggered only by the edge-feature EF (or EPP) of a phase head (or by the “inherited” EF of a category selected by a phase head). The EF-probe does not require feature matching, and hence there is no Agree. The EF of a phase head PH can seek any DP in the phase and raise it to the edge of the phase (Spec-PH). For this movement, there are no intervention effects. Departing from his earlier assumption in Chomsky (2000, 2001) that Agree is a subcomponent of Move (i.e., Move = Agree + Merge), Chomsky (2008) dissociates Move and Agree. Feature checking is done by Agree at distance and movement is in the system only to satisfy the EPP property of a phase head.

Chomsky (2000, 2001, 2008) assumes that a probe can search for a goal only in its c-command domain; so specifiers and adjuncts are not in the search domain. Accordingly, there is no Agree relation possible between a Head and its Spec.³⁷ That means that uninterpretable features of a *wh*-phrase can only be checked against the interpretable features of the interrogative C when it is in the c-command domain of the latter. Movement can be only local, constrained by the condition in (106) (next page). The basic idea is that XP can move out of a phase only if it first moves to the Spec of the phase.

³⁷It should be noted that there are cases which seem to show that we should also allow that a probe on a Head may find a goal in its Spec position. Baker (2003) shows that in some Bantu languages agreement is only possible with an element dislocated into a higher position than the probe. Another case which seems to need Spec-Head agreement (requiring movement) is past participle agreement in Romance observed by Kayne (1989), which is possible only with a displaced element, not with an internal element in-situ. The standard view, following Kayne (1989), is that these facts show that an argument must move to (or through) the appropriate Spec position in order to establish the necessary Spec-Head relation for agreement checking.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

(106) *Phase Impenetrability Condition (PIC; Chomsky 2001: 13)*

For strong phase HP with head H, the domain of a head H of a phase HP is not accessible to operations outside HP; only H and its *edge* are accessible to such operations.

(the *edge* being the residue outside of H', either specifiers (Specs) of H or elements adjoined to HP)

Consider now the example (107), with the derivation steps as follows:

(107) Wen hat **nur Karl** eingeladen?

- a. [_{CP} C [_{TP} [_{vP} **nur Karl** wen eingeladen] hat]]
- b. [_{CP} C [_{TP} [_{vP} wen_i [_{vP} **nur Karl** t_i eingeladen]] hat]]
- c. [_{CP} wen_i hat [_{vP} t'_i [_{vP} **nur Karl** t_i eingeladen]]]

Given the PIC, we can assume that *wh*-movement of the object in (107) proceeds via the edge of the phase *vP* (i.e., the outer Spec of *v*), triggered by the EPP of the phase head *v*. At the edge of *vP*, *wen* is accessible to the phase head C, and the uninterpretable features [*uQ,uF*] of *wen* are checked against the interpretable features [*iQ,iF*] of the matching probe (i.e., the interrogative C) via Agree at this step of the derivation ((107-b)). The EPP (or edge-feature) of C seeks the object *wen* in the outer Spec of *v* and raises it to SpecCP.

Now consider examples where a *wh*-phrase undergoes scrambling over an intervener, circumventing the intervention effect.

(108) a. *Wen_i hat [_{vP} **nur Karl** t_i wo getroffen]? [German]
 who_{acc} has only Karl where met

b. Wen_i hat [_{vP} wo_j [_{vP} nur Karl t_i t_j getroffen]]?
 who_{acc} has where only Karl met

(109) a. ?***Mira-man** nwukwu-lul chotayha-ess-ni? [Korean]
 Mira-only who-ACC invite-PAST-Q

3.3. ANALYSIS OF FOCUS INTERVENTION EFFECTS

- b. Nwukwu-lul_i **Mira-man** t_i chotayha-ess-ni?
who-ACC Mira-only invite-PAST-Q

I assume that in German and Korean (and also Japanese), scrambling is EPP-driven movement to the outer Spec of vP (cf. Grewendorf 2001, Kitahara 2002, Ko 2007, Heck and Müller 2006).³⁸ Scrambling may occur optionally, meaning that a head may optionally acquire an EPP property which triggers scrambling. As no feature checking is involved in scrambling, the intervening focus phrase does not block the movement of the *wh*-phrase. The phase head v can seek any DP in the phase and raise it to its Spec position. After raising to the edge of v , the *wh*-phrase is accessible to the next phase head C. C with the interpretable features $[iQ, iF]$ can Agree with the goal *wh*-phrase with uninterpretable features $[uQ, uF]$.

Multiple *Wh*-in-situ: Multiple Agree

What happens if we have more than one *wh*-in-situ, as in (110)?

- (110) Nwukwu-ka nwukwu-eykey mwues-ul cwu-ess-ni?
who-NOM who-DAT what-ACC give-PAST-Q
'Who gave what to whom?'

In multiple *wh*-questions, the *wh*-phrases are all linked to a single Q operator in $C_{[+Q]}$ and are interpreted as expressing a "single" n -ary Q-operator binding the multiple *wh*-variables. For example, *Who bought what?* is a question about a pair $\langle x, y \rangle$ such that x bought y .³⁹

³⁸Haider and Rosengren (2003) also claim that scrambling in German is not feature-driven movement, showing that there is no context in which a phrase *must* be scrambled. Scrambling can have effects at the semantics/pragmatics interface, but they take the interpretation effects to be *epiphenomena* of scrambling, and not the cause.

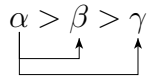
Similarly, Miyagawa (2001, 2005) claims that clause-internal scrambling in Japanese is triggered by an EPP-feature on T, while long-distance scrambling is not triggered by an EPP-feature, but by focus.

³⁹This is similar to the case of multiple foci associated with one focus-sensitive operator like *only*, which Krifka (1991) calls 'complex focus'.

CHAPTER 3. FOCUS INTERVENTION EFFECTS

I propose that multiple occurrences of *wh*-expressions are licensed by the operation Multiple Agree. A single Q operator is able to license all *wh*-elements carrying $[uQ, uF]$ within its local domain.⁴⁰ Multiple Agree (multiple feature checking) with a single probe is a single simultaneous syntactic operation; Agree applies to all the matched goals at the same derivational point simultaneously (Hiraiwa 2001). Adopting Hiraiwa’s idea, Chomsky (2004: 115) proposes: “In DbP, it is assumed that G must be the closest matching H, but there is good reason to believe that like others, this property must be relativized to phases, so that P can find any matching G in the phase PH that it heads, simultaneously deleting uninterpretable features. It follows that intervention effects will hold only if the intervening element is not rendered inactive by P itself.”

(111) *Multiple Agree* (cf. Hiraiwa 2001, 2005, Chomsky 2004)



(Agree (α, β, γ) , where α is a probe and both β and γ are matching goals for α .)

Since Agree between the probe feature α and the multiple goal features β and γ is derivationally simultaneous, the intervening goal β is not yet inactive at the point

(i) John only introduced MARY to BILL.

(i) has the interpretation ‘the only pair $\langle x, y \rangle$ such that John introduced x to y is $\langle \text{Mary}, \text{Bill} \rangle$ ’ (cf. Rooth 1985 and Krifka 1991).

⁴⁰Multiple NPI licensing might undergo the same checking mechanism, i.e., Multiple Agree. There is only one semantic negation in (i-a,b):

- (i) a. Nobody gave anything to anybody.
- b. John didn’t show anything to anybody.

The single negation simultaneously checks several occurrences of NPIs via Multiple Agree (just as in multiple *wh*-questions). See von Stechow (2005) for a similar idea and some discussion.

3.4. CONCLUSION

of the derivation where the probe α enters into an Agree relation with the lower goal γ . Consequently, no defective intervention effect arises.

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

$$(112) \quad [_{CP} C_{[iQ,iF]} [\overset{\uparrow}{wh}_{[uQ,uF]} [\dots \overset{\uparrow}{wh}_{[uQ,uF]} \dots]]]$$

The interpretation of the multiple question (113-a) will be (113-b):

- (113) a. Nwukwu-ka nwukwu-lul chotayha-ess-ni? [Korean]
 who-NOM who-ACC invite-PAST-Q
 ‘Who invited who?’
 b. $\{p : p = \lambda w. x \text{ invited } y \text{ in } w \mid x, y \in D\}$

So, if $D = \{\text{Mary, Tom, Grace}\}$, then the question will denote the following set of alternative propositions (ignoring the possibility of collective arguments):

- (114) {that Mary invited Tom, that Mary invited Grace, that Tom invited Grace, that Tom invited Mary, that Grace invited Mary, that Grace invited Tom}

3.4 Conclusion

In this chapter I have argued that intervention effects are triggered by the presence of focus elements, and I have presented accounts of these effects both in terms of a semantic account and a syntactic account. The syntactic account is based on the possibility or impossibility of the relevant Agree relations being formed in syntax. Overt movement does not induce an intervention effect because the part of movement which crosses the intervener can be non-feature-driven movement (movement triggered by an EPP- or EF-feature, as in Chomsky 2008). *Wh*-in-

CHAPTER 3. FOCUS INTERVENTION EFFECTS

situ is licensed by ‘Agree at a distance’, and here the intervention effects may arise. The scope of an in-situ *wh* is determined by a variety of factors, including the interaction with Superiority for overtly-moved *wh*-phrases, and the syntax-prosody mapping. Typically, a *wh*-phrase must have focal stress in order to be interpreted with wide scope.

Chapter 4

Intervention Effects in Alternative Questions

4.1 Introduction

Alternative questions exhibit intervention effects, in that the disjunctive phrase may not be c-commanded by a focusing or quantificational element. This seems to hold crosslinguistically. In this chapter I provide an analysis of this phenomenon that combines a focus semantic explanation of intervention effects in questions with an analysis of alternative questions in which the disjunctive phrase makes available appropriate alternatives in a way similar to a *wh*-phrase.

An alternative question (AltQ, for short) is a question like (1) below, where two alternatives are mentioned in the question in the form of a disjunction. An acceptable answer to the question is one of the alternatives.

- (1) a. Is Ning's baby a girl or a boy?
b. Answers: Ning's baby is a girl.
 Ning's baby is a boy.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

I adopt the standard Hamblin/Karttunen semantics of questions (Hamblin 1973, Karttunen 1977), according to which the meaning of the question is the set of possible answers to the question. In the example, this is the set of propositions in (2-a), given more informally in (2-b).

- (2) a. $\{p : p = [\lambda w. \text{Ning's baby is a girl in } w] \vee p = [\lambda w. \text{Ning's baby is a boy in } w]\}$
b. {that Ning's baby is a girl, that Ning's baby is a boy}

I chose in (1) an example in which the only pragmatically plausible interpretation is as an AltQ, for illustration. This is not normally the case, however. In examples like (3), an ambiguity arises between an interpretation as an AltQ and an interpretation as a Yes/No-question (Y/NQ, for short).

- (3) Did Sally teach syntax or semantics?

Below, I specify the question meaning, an example answer and a paraphrase for both interpretations.

- (4) Alternative Question Reading
a. Question meaning: {that John drank coffee, that John drank tea}
b. Example answer: Coffee
c. Paraphrase: Which of coffee and tea did John drink?
- (5) Yes/No-Question Reading
a. Question meaning: {that John drank coffee or tea,
that John didn't drink coffee or tea}
b. Example answer: Yes
c. Paraphrase: Is it the case that John drank coffee or tea or not?

Intonation seems to play a disambiguating role. In alternative questions, the alter-

4.1. INTRODUCTION

natives in the disjunctive phrase must be contrastively focused ((3'a)). Intonation suggests that focus assignment in (3) on the AltQ reading is as in (3'b). See Bartels (1999) and Han and Romero (2004a) for discussion.

- (3') a. Did Sally teach SYNTAX or SEMANTICS?
b. Did Sally teach [syntax]_F or [semantics]_F?

Han (1999) and Han and Romero (2001, 2004a) observe that the AltQ interpretation is lost in such questions when a preposed negation is added, as in (6).

- (6) Didn't Sally teach syntax or semantics?
a. Yes.
b. #Semantics. [*AltQ]

To this I add the observation that elements like *only* can have a similar effect: (7-a) does not have an AltQ interpretation, in contrast to (7-b) without *only*. Note that there is nothing wrong with the meaning that would arise if (7-a) were interpreted as an AltQ. That meaning is paraphrased in (7-c).

- (7) a. #Does only John like Mary or Susan? [*AltQ]
b. Does John like Mary or Susan?
c. Is it Mary or Susan who only John likes?

The issue I address in this chapter is when the AltQ interpretation disappears, and why this happens. I argue that (6) and (7-a) are instances of the intervention effect in questions observed in Beck (1996) for German *wh*-questions, Beck and Kim (1997) for Korean *wh*-questions, and Pesetsky (2000) for English *wh*-questions. The AltQ reading disappears when a problematic intervener prevents association of the disjunctive phrase with a licensing interrogative complementizer. The analysis I propose has interesting consequences for the analysis of AltQs as well as the analysis of the intervention effect in questions. Most importantly perhaps, I

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

argue for an analysis of intervention and an analysis of AltQs that does not rely on movement.

The structure of this chapter is as follows. In section 4.2 I will collect the relevant data on AltQs and compare them to data on *wh*-questions. Important parallels will emerge. Section 4.3 develops a compositional semantics of AltQs on the basis of which the intervention effect in AltQs is explained, using Beck's (2006) theory. Section 4.4 is devoted to the question of how alike AltQs and *wh*-questions are. I explore consequences of the proposed analysis related to disjunction in section 4.5. Section 4.6 points out some questions for future research and section 4.7 presents the conclusions.

4.2 The Phenomenon

This section presents a crosslinguistic overview of intervention effects in *wh*-questions and in alternative questions. To date, I have collected data from four languages: English, German, Hungarian and Korean. Before we proceed, a comment on the use of the term "intervention": I discuss intervention effects in the sense of Beck (1996), Beck and Kim (1997) and Kim (2002ba,b) (also Hagstrom 1998, Pesetsky 2000 and others), namely effects described by the generalization in (10) below: empirically, a focusing or quantificational element somehow interfering with a *wh*-phrase c-commanded by it. I do not address minimality effects in the syntactically wider sense discussed for example in Rizzi (1990, 2001a), which have also sometimes been referred to as intervention effects, and which include minimality constraints on head movement, A-movement etc. In this delimitation of my project, I assume that intervention effects in questions are best grouped with a different set of effects; those are focus related minimality effects, which also show up with focus sensitive particles and NPI licensing (as proposed in Kim 2002b, Beck 2006, and Beck and Kim 2006).

4.2. THE PHENOMENON

4.2.1 Intervention Effects in German

Wh-intervention effects in German

The data below illustrate the *wh*-intervention effect in German described in Beck (1996). An intervener like *nur* ('only') may not c-command a *wh*-phrase in situ (8-a) (disregard the reading of *wen* as an indefinite). Contrast this with the well-formed (8-b) without the intervener. (8-c) shows that the effect depends on the structural relationship between the intervener and the *wh*-phrase: when the *wh*-phrase precedes and c-commands the intervener, the question is fine. In this thesis, I represent the peculiar way in which intervention effects are unacceptable with '?*' (unless a particular example gives rise to a different judgement).

- (8) a. ?*Wann hat nur Maria wen eingeladen?
when has only Maria whom invited
- b. Wann hat Maria wen eingeladen?
when has Maria whom invited
- c. Wann hat wen nur Maria eingeladen?
when has whom only Maria invited
'When did (only) Maria invite whom?'

There is a whole class of elements that trigger the same effect as *nur* in German, including in particular nominal and adverbial quantifiers. Some illustration is given in (9). For a more comprehensive empirical overview of the relevant German data (including a discussion of the various problematic interveners and the role of scrambling), see Beck (1996) and also Pesetsky (2000).

- (9) a. ?*Wann hat niemand wen eingeladen?
when has nobody whom invited
'When did nobody invite whom?'
- b. ?*Wann hat fast jeder wen eingeladen?
when has almost everyone whom invited
'When did almost everyone invite whom?'

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- c. #Wer hat oft wen eingeladen? [perhaps OK on a single-pair
 who has often whom invited reading]
 ‘Who often invited whom?’

On the basis of such data, I formulate the empirical generalization given in (10) (formulation adopted from Kim 2002b). By ‘ β intervenes between α and γ ’ I mean that β c-commands γ , and α c-commands both β and γ , as illustrated in (10-b); I write ‘Q’ for the interrogative complementizer and ‘Op’ for the intervener.

- (10) A focusing or quantificational element may not intervene between a *wh*-phrase and its licensing complementizer.
- a. $*[_{CP} Q_i \dots [Op [\dots wh_i \dots]]]$
 b. $[\alpha \dots [\beta [\dots \gamma \dots]]]$

AltQ-intervention effects in German

The data in (11) are completely parallel to those in (8), with the disjunctive phrase taking the place of the *wh*-phrase in situ. The judgements reported refer to the AltQ-reading only, in this and the following paradigms; questions marked ungrammatical under the AltQ reading may still have an acceptable Y/NQ interpretation. We see that intervening *nur* causes the same intervention effect ((11-a) vs. (11-b)) and that the effect depends on the structural relationship between the disjunctive phrase and the intervener ((11-a) vs. (11-c)).

- (11) a. ?*Hat nur Maria den Jonas oder die Ida eingeladen?
 has only Maria the Jonas or the Ida invited
- b. Hat Maria den Jonas oder die Ida eingeladen?
 has Maria the Jonas or the Ida invited
- c. Hat den Jonas oder die Ida nur Maria eingeladen?
 has the Jonas or the Ida only Maria invited
 ‘Did (only) Maria invite Jonas or Ida?’

4.2. THE PHENOMENON

AltQs permit more variation regarding their syntactic shape than *wh*-questions, in that the disjuncts can be various kinds of category. (12)-(13) illustrate that this does not make a difference for the intervention effect. As we see in (14), the various interveners that create an intervention effect in *wh*-questions in German do so in AltQs as well.

- (12) a. Hat Peter Kaffee getrunken oder Kuchen gegessen?
has Peter coffee drunk or cake eaten
'Did Peter drink coffee or eat cake?'
- b. ?*Hat nur Peter Kaffee getrunken oder Kuchen gegessen?
has only Peter coffee drunk or cake eaten
'Did only Peter drink coffee or eat cake?'
- (13) a. Hat Peter das Buch gekauft oder geliehen?
has Peter the book bought or borrowed
'Did Peter buy or borrow the book?'
- b. ?*Hat nur Peter das Buch gekauft oder geliehen?
has only Peter the book bought or borrowed
'Did only Peter buy or borrow the book?'
- (14) a. ??Hat niemand Kaffee getrunken oder Kuchen gegessen?
has nobody coffee drunk or cake eaten
'Did nobody drink coffee or eat cake?'
- b. ??Hat fast jeder Kaffee getrunken oder Kuchen gegessen?
has almost everyone coffee drunk or cake eaten
'Did almost everyone drink coffee or eat cake?'
- c. #Hat Peter oft Kaffee getrunken oder Kuchen gegessen?
has Peter often coffee drunk or cake eaten
'Did Peter often drink coffee or eat cake?'

Thus we come to the generalization in (15). The effect is quite parallel to *wh*-questions, with the disjunctive phrase taking the place of the *wh*-phrase. It seems to me that this is true crosslinguistically; I will look at a few more languages to see this.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (15) A focusing or quantificational element may not intervene between a disjunctive phrase and its licensing complementizer.

*[_{CP} Q ... [Op [... [A or B] ...]]]

4.2.2 Intervention Effects in Korean

Wh-intervention effects in Korean

Beck and Kim (1997) point out the analogy between Korean data like (16) and German data like (8). In Korean, too, a *wh*-phrase in situ may not be c-commanded by an intervener. The relevant data are simpler since Korean is a *wh*-in-situ language.

- (16) a. ?*Mira-man nwukwu-lul chotayha-ess-ni?
Mira-only who-ACC invite-PAST-Q
b. Mira-nun nwukwu-lul chotayha-ess-ni?
Mira-TOP who-ACC invite-PAST-Q
c. Nwukwu-lul Mira-man chotayha-ess-ni?
who-ACC Mira-only invite-PAST-Q
'Who did (only) Mira invite?'

(17) and (18) below shows that *-man* 'only' is not unique in triggering a *wh*-intervention effect in Korean. (18) shows that a contrastively focused expression triggers an intervention effect.

- (17) a. ?*Mira-to nwukwu-lul chotayha-ess-ni?
Mira-also who-ACC invite-PAST-Q
b. Nwukwu-lul Mira-to chotayha-ess-ni?
who-ACC Mira-also invite-PAST-Q
'Who did also Mira invite?'
- (18) a. *MIRA-ka nwukwu-lul phathi-ey chotayha-ess-ni?
Mira-NOM who-ACC party-to invite-PAST-Q

4.2. THE PHENOMENON

- b. Nwukwu-lul_i MIRA-ka t_i phathi-ey chotayha-ess-ni?
 who-ACC Mira-NOM party-to invite-PAST-Q
 ‘Who did MIRA (not someone else) invite to the party?’

But compare (19) to German (9-c): the adverbial quantifier ‘often’ triggers an intervention effect in German but not in Korean. The set of problematic interveners for *wh*-phrases is thus subject to crosslinguistic variation (as discussed in Beck 1996, Beck and Kim 1997, Kim 2002a,b).

- (19) a. Mira-nun cacwu nwukwu-lul phathi-ey chotayha-ess-ni?
 Mira-TOP often who-ACC party-to invite-PAST-Q
 b. Mira-nun nwukwu-lul cacwu phathi-ey chotayha-ess-ni?
 Mira-TOP who-ACC often party-to invite-PAST-Q
 ‘Who did Mira often invite to the party?’

AltQ intervention effects in Korean

Unlike English and German, Korean does not use one ambiguous surface form to express both a Y/NQ and an AltQ interpretation. (20-a) is unambiguously interpreted as a Y/NQ. The corresponding AltQ must be phrased as in (20-b) with a different connective *animyen* (meaning literally ‘if not’).

- (20) a. Mira-ka cha-na khephi-lul masi-ess-ni?
 Mira-NOM tea-or coffee-ACC drink-PAST-Q
 ‘Did Mira drink tea or coffee or not?’ [only Y/NQ]
 b. Mira-ka cha-lul masi-ess-ni animyen khephi-lul
 Mira-NOM tea-ACC drink-PAST-Q if not coffee-ACC
 masi-ess-ni?
 drink-PAST-Q
 ‘Which of tea or coffee did Mira drink?’ [only AltQ]

This means that once more, Korean data are easier empirically, since we can simply consider well-formedness without distinguishing two different interpretations. (21-a-c) below contrast with (20-b), thus exhibiting an intervention effect.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (21) a. ?*Mira-man cha-lul masi-ess-ni animyen khephi-lul
 Mira-only tea-ACC drink-PAST-Q if not coffee-ACC
 masi-ess-ni?
 drink-PAST-Q
 ‘Did only Mira drink tea or coffee?’
- b. ?*Mira-to cha-lul masi-ess-ni animyen khephi-lul
 Mira-also tea-ACC drink-PAST-Q if not coffee-ACC
 masi-ess-ni?
 drink-PAST-Q
 ‘Did also Mira drink tea or coffee?’
- c. *MIRA-ka cha-lul masi-ess-ni animyen khephi-lul
 Mira-NOM tea-ACC drink-PAST-Q if not coffee-ACC
 masi-ess-ni?
 drink-PAST-Q
 ‘Did MIRA drink tea or coffee?’

Unsurprisingly, the same effect arises when we vary the shape of the disjunctive phrase.

- (22) a. Mira-ka ku chayk-ul sa-ss-ni animyen pilli-ess-ni?
 Mira-NOM that book-ACC buy-PAST-Q if not borrow-PAST-Q
 ‘Did Mira buy or borrow the book?’
- b. ?*Mira-man ku chayk-ul sa-ss-ni animyen pilli-ess-ni?
 Mira-only that book-ACC buy-PAST-Q if not borrow-PAST-Q
 ‘Did only Mira buy or borrow the book?’

The example below shows that the element *cacwu* ‘often’, which was harmless as an intervener in Korean *wh*-questions, is equally harmless as an intervener in AltQs. Thus in a given language, the set of problematic interveners is the same in both types of questions, while at the same time there is variation between languages regarding what the set of problematic interveners is.

4.2. THE PHENOMENON

- (23) Mira-ka cacwu John-ul phathi-ey chotayha-ess-ni animyen
Mira-NOM often John-ACC party-to invite-PAST-Q if not
Bill-ul phathi-ey chotayha-ess-ni?
Bill-ACC party-to invite-PAST-Q
'Did Mira often invite John or Bill to the party?'

4.2.3 Intervention Effects in English

Wh-intervention effects in English

Intervention effects in English *wh*-constructions have been found by Pesetsky (2000). Two examples are given in (24). It should be noted that such effects only arise in English *wh*-questions in otherwise permissible violations of superiority (cf. Pesetsky 2000). Thus many configurations that would be ungrammatical instances of the intervention effect in German are acceptable in English. Examples are given in (25).

- (24) a. ?*Which book didn't which person read ___?
b. ?*Which boy did only Mary introduce which girl to ___?
- (25) a. Who did only John introduce ___ to whom?
b. Which person ___ didn't read which book?

AltQ intervention effects in English

The data below show that English AltQs show the same intervention effect as German AltQs (the judgements refer once more to the AltQ reading only). The acceptability of (27) illustrates that the structural relation between the intervener and the disjunctive phrase is relevant. And (28)a-c show that just like in German, various quantificational expressions are interveners (see Pesetsky 2000 for an investigation of the class of problematic interveners in English *wh*-questions).

- (26) a. ?*Didn't Sue read 'Pluralities' or 'Barriers'?

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- b. ?*Didn't Sue or Molly read 'Pluralities'?
 - c. ?*Did only Mary introduce Sue to Bill or (to) Tom?
 - d. ?*Did only Mary introduce Sue or Molly to Bill?
- (27) Did John or Susan invite only Mary?
- (28) a. ?*Did very few students drink coffee or tea?
b. ?*Did only John drink coffee or tea?
c. ?*Does even John like Mary or Susan?

It is interesting that AltQs in English and German are much more parallel than *wh*-questions in the two languages: in AltQs, an intervention effect arises invariably in both English and German.

4.2.4 Intervention Effects in Hungarian

Wh-intervention effects in Hungarian

The final language for which I have collected relevant data is Hungarian.¹ Lipták (2001) argues that Hungarian has *wh*-intervention effects. (30) is her example. To this I add (30) and (32). Note the word order/syntactic structure effect exhibited by these data (analogous to Korean and German).

- (29) Kit hívtál meg?
who-ACC invited-2SG PV
'Who did you invite?'
- (30) a. ?*Mindig kit hívtál meg?
always who-ACC invited-2SG PV
b. Kit hívtál meg mindig?
who-ACC invited-2SG PV always
'Who did you invite all the time?' (Lipták 2001)

¹I would like to thank to László Molnárfi and Balázs Surányi for discussion of the Hungarian data.

4.2. THE PHENOMENON

- (31) a. ?*Mindenki mit ivott?
everyone-NOM what drank-3SG
b. Mit ivott mindenki?
what-ACC drank-3SG everyone-NOM
'What did everyone drink?'
- (32) a. ?*Senki mit nem ivott?
nobody-NOM what-ACC not drank-3SG
b. Mit nem ivott senki?
what-ACC not drank-3SG nobody-NOM
'What did nobody drink?'

Lipták (2001) shows that just like contrastive focus, *wh*-phrases in Hungarian move overtly to the designated focus position, namely, SpecFocP, but not all the way up to SpecCP as in English. Focusing in Hungarian is always detectable from verb movement up to Foc^o. The postverbal position of the aspectual verb particle *meg* in (29) and (30) shows that the verb has been raised, since in their declarative counterparts without any contrastive focus the same particle precedes the verb, as illustrated in (33). That *wh*-phrases move to SpecFocP in Hungarian is evident from the fact that they are in complementary distribution with the contrastive focus constituent in the same clause. Hungarian is thus different from English and German on the one hand, which have *wh*-movement to SpecCP, and from Korean on the other hand, which is a *wh*-in-situ language. Nonetheless, the *wh*-intervention effect is parallel.

- (33) Mindig meghívtam Pétert.
always PV-invited-1SG Péter-ACC
'I always invited Péter.'

AltQ intervention effects in Hungarian

As we have by now come to expect, the same expressions that cause an intervention effect in Hungarian *wh*-questions also cause one in AltQs (as before, the

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

judgement refers to the AltQ reading). The position of the verb and the disjunctive phrase in (35) shows that the disjunctive phrase, just like the *wh*-phrase in (29) and (30), moved to SpecFocP. Both disjuncts have to be stressed, just like in English (something I don't generally represent, for simplicity). The AltQ data show the same word order/structure effects as the *wh*-questions.

- (34) Kávét vagy teát ivott Mari?
coffee-ACC or tea-ACC drank-3SG Mari-NOM
'Did Mari drink coffee or Tea?'
- (35) a. ?*Mindig Pétert vagy Marit hívtad meg?
always Péter-ACC or Mari-ACC invited-2SG PV
b. Pétert vagy Marit hívtad meg mindig?
Péter-ACC or Mari-ACC invited-2SG PV always
'Did you always invite Péter or Mari?'
- (36) a. ?*Mindenki kávét vagy teát ivott?
everyone-NOM coffee-ACC or tea-ACC drank-3SG
b. Kávét vagy teát ivott mindenki?
coffee-ACC or tea-ACC drank-3SG everyone-NOM
'Did everyone drink coffee or tea?'
- (37) a. ?*Senki nem ivott kávét vagy teát?
nobody-NOM not drank-3SG coffee-ACC or tea-ACC
b. Kávét vagy teát nem ivott senki?
coffee-ACC or tea-ACC not drank-3SG nobody-NOM
'Did nobody drink coffee or tea?'

4.2.5 Summary of the Facts and Consequences for Linguistic Theory

We have seen that intervention effects in questions arise crosslinguistically, in languages that otherwise behave quite differently with respect to the syntax of *wh*-constructions. Intervention effects in AltQs show a homogeneous picture, in

4.3. ANALYSIS OF INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

that the following generalization holds in all four languages I investigated.

- (38) A focusing or quantificational element may not intervene between a disjunctive phrase and its licensing complementizer.

*[_{CP} Q ... [Op [... [A or B] ...]]]

We have seen evidence that the *wh*-intervention effect and the AltQ intervention effect should receive a parallel analysis: The same languages show both kinds of intervention effects. The class of problematic interveners is the same for both in a given language (remember the facts about ‘often’ in German vs. Korean). And finally, the syntactic conditions for the effect to arise seem parallel (cf. the German and Hungarian word order facts). An interesting exception to this is English, where *wh*-intervention effects are more limited than AltQ intervention effects.

I conclude that we need an analysis of intervention effects, and an analysis of alternative questions, that gives a basically parallel explanation for both types of intervention effect. In section 4.3 I propose to combine the available compositional analyses of AltQs (Romero and Han’s 2003 analysis and von Stechow’s 1991 proposal) with Beck’s (2006) explanation of intervention effects. I will keep the English facts in mind for section 4.4, where I compare the nature of *wh*-questions and AltQs.

4.3 Analysis of Intervention Effects in Alternative Questions

It will be my goal to derive the intervention effect in AltQs in a parallel manner to the intervention effect in *wh*-questions. I consider two compositional analyses proposed for AltQs: the one developed in Romero and Han (2003) and the one suggested in von Stechow (1991). Both straightforwardly permit the extension of the above analysis of intervention to AltQs. According to my knowledge, there

is no other competing theory of the compositional interpretation of AltQs. I will discuss the two analyses in turn.

4.3.1 Deriving the Effect in the Framework of Romero and Han (2003)

The Analysis of Alternative Questions

My goal is to associate the interrogative in (39-a) with the semantic object in (39-b).

- (39) a. Did Pfrondorf win or lose?
 b. {that Pfrondorf won, that Pfrondorf lost}

Romero and Han (2003) propose that this interpretation is derived from the structure in (40), where an invisible *wh*-element has been adjoined to the disjunctive phrase (note that I have adapted Romero and Han's theory somewhat to my framework; but their essential ideas regarding compositional interpretation are translated intact).

- (40) $[_{CP} Q [_{\phi} \text{Pfrondorf } [_{wh} [_{DisjP} \text{win or lose}]]]]$

Romero and Han (2003) assume that the contribution of the disjunctive phrase is as in (41); the same is suggested in von Stechow (1991). They further suggest that the hidden *wh*-element has the semantics of a choice function; in my framework, this suggestion amounts to (42).

- (41) $[_{DisjP} \text{win or lose}] \rightarrow \{\llbracket \text{win} \rrbracket, \llbracket \text{lose} \rrbracket\}$
 $= \{[\lambda w. \lambda x. x \text{ win in } w], [\lambda w. \lambda x. x \text{ lose in } w]\}$

- (42) a. $\llbracket [_{wh} [_{DisjP} \text{win or lose}]] \rrbracket^{\circ}$ is undefined
 b. $\llbracket [_{wh} [_{DisjP} \text{win or lose}]] \rrbracket^f = \{f\{\llbracket \text{win} \rrbracket, \llbracket \text{lose} \rrbracket\} \mid \text{CH}(f)\}$

4.3. ANALYSIS OF INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- c. $f_{\langle \tau, t \rangle, \tau}$ is a choice function, $\text{CH}(f)$, iff for all P in $\text{dom}(f)$:
 $P(f(P))$

The larger structures that contain this disjunctive *wh*-phrase are interpreted in the now familiar way as indicated in (43). (44) is the final step in which the question operator lifts the focus semantic value of its sister ϕ to the level of the ordinary semantics. This yields the desired interpretation for the example.

- (43) $\llbracket \phi \rrbracket^o$ is undefined.
 $\llbracket \phi \rrbracket^f = \{p : p = \lambda w. \text{Pfrondorf has the property selected by } f \text{ from } \{\llbracket \text{win} \rrbracket, \llbracket \text{lose} \rrbracket\} \text{ in } w \mid \text{CH}(f)\}$
- (44) $\llbracket \text{CP} \rrbracket^o =$
 $\{p : p = \lambda w. \text{Pfrondorf has the property selected by } f \text{ from } \{\llbracket \text{win} \rrbracket, \llbracket \text{lose} \rrbracket\} \text{ in } w \mid \text{CH}(f)\} =$
 $\{p : p = \lambda w. \text{Pfrondorf won or } p = \lambda w. \text{Pfrondorf lost}\} =$
 $\{\text{that Pfrondorf won, that Pfrondorf lost}\}$

There is one further aspect of Romero and Han's (2003) analysis of AltQs that is relevant for the explanation of the intervention effect, and that is the question of what exactly the disjunction is. We have already seen that the disjunction in AltQs can take various shapes. (45) is an example where two sentential categories are coordinated – let's say IPs.

- (45) a. Did the program execute or the computer crash?
 b. {that the program executed, that the computer crashed}
 c. $[_{\text{CP}} \text{Q} [_{\phi} \text{wh} [_{\text{DisjP}} [\text{the program execute}] \text{or} [\text{the computer crash}]]]]$

Nothing much changes for the semantics, except that the choice function now applies to a set of propositions.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (46) a. $\llbracket [wh]_{\text{DisjP}} \text{the program execute or the computer crash} \rrbracket^o$ is undefined.
 b. $\llbracket [wh]_{\text{DisjP}} \text{the program execute or the computer crash} \rrbracket^f = \{f \{ \llbracket \text{the program execute} \rrbracket, \llbracket \text{the computer crash} \rrbracket \} \mid \text{CH}(f)\}$
- (47) $\llbracket \text{CP} \rrbracket^o = \llbracket \phi \rrbracket^f = \{p : p \text{ is the proposition selected by } f \text{ from } \{ \llbracket \text{the program execute} \rrbracket, \llbracket \text{the computer crash} \rrbracket \} \mid \text{CH}(f)\} = \{\text{that the program executed, that the computer crashed}\}$

Here is one of the standard examples for AltQs:

- (48) a. Did John drink tea or coffee?
 b. $\{\text{that John drank tea, that John drank coffee}\}$

In this case, we have a choice between several structures that differ in terms of the size of the disjuncts. All three of (49-a-c) would be possible semantically.

- (49) a. $[_{\text{CP}} \text{Q } [_{\phi} \text{John drink } [wh]_{\text{DisjP}} \text{tea or coffee}]]]$
 b. $[_{\text{CP}} \text{Q } [_{\phi} \text{John } [wh]_{\text{DisjP}} [\text{drink tea}] \text{ or } [\text{drink coffee}]]]]]$
 c. $[_{\text{CP}} \text{Q } [_{\phi} wh]_{\text{DisjP}} [\text{John drink tea}] \text{ or } [\text{John drink coffee}]]]]]$

Romero and Han (2003) argue that the disjuncts are relatively large, on the basis of focus effects in AltQs. They derive the intonation pattern of AltQs from the assumption that they involve ellipsis. See Romero and Han (2003) and also Han and Romero (2004a,b) for details and arguments. According to them, then, the example (48-a) could involve the structures in (49-b) or (49-c), but not the one in (49-a). The analysis of (49-c) could proceed as in (50). This point will become relevant below.

- (50) a. $[_{\text{CP}} \text{Q } [_{\phi} wh]_{\text{DisjP}} [\text{John drink tea}] \text{ or } [\text{John drink coffee}]]]$
 b. $\llbracket [wh]_{\text{DisjP}} \text{John drink tea or John drink coffee} \rrbracket^f = \{f \{ \llbracket \text{John drank tea} \rrbracket, \llbracket \text{John drank coffee} \rrbracket \} \mid \text{CH}(f)\}$

4.3. ANALYSIS OF INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- c. $\{p : p \text{ is the proposition selected by } f \text{ from } \{\llbracket \text{John drank tea} \rrbracket, \llbracket \text{John drank coffee} \rrbracket\} \mid \text{CH}(f)\} =$
 $\{\text{that John drank tea, that John drank coffee}\}$

Explaining the Intervention Effect in Alternative Questions

The sentence in (51-a) below is an English example of the intervention effect in AltQs. A plausible structure for the example, according to Romero and Han's (2003) theory, would be (51-b).

- (51) a. ?*Did only Mary introduce Sue to Bill or (to) Tom?
 b. $[_{CP} Q [_{\varphi} \text{only}_C [_{\sim} C [_{IP} \text{Mary} [_{wh} [_{DisjP} [\text{introduce Sue to Bill}] \text{or} [\text{introduce-Sue to Tom}]]]]]]]]]$

This structure is predicted to be uninterpretable, hence ungrammatical, through the same reasoning that applied to the *wh*-cases:

- (52) $\llbracket wh \rrbracket^o \text{ is undefined} \Rightarrow \llbracket IP \rrbracket^o \text{ is undefined}$
 $\llbracket IP \rrbracket^f = \{f\{\llbracket \text{intro S. to Bill} \rrbracket, \llbracket \text{intro S. to Tom} \rrbracket\}(\text{Mary}) \mid \text{CH}(f)\}$
 $\llbracket \sim C IP \rrbracket^o \text{ is undefined} \Rightarrow \llbracket \sim C IP \rrbracket^f \text{ is undefined}$
 $\Rightarrow \llbracket \varphi \rrbracket^o \text{ is undefined, } \llbracket \varphi \rrbracket^f \text{ is undefined}$
 $\Rightarrow \llbracket CP \rrbracket^o \text{ is undefined.}$

Another example is the preposed negation case; structure and steps of compositional interpretation are illustrated below.

- (53) a. ?*Didn't Sue read 'Pluralities' or 'Barriers'?
 b. $[_{CP} Q [_{\varphi} \text{NOT} [_{\sim} C [_{\phi} wh [_{DisjP} [\text{Sue read 'Pluralities'}] \text{or} [\text{Sue read 'Barriers'}]]]]]]]$

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (54) $\llbracket wh \rrbracket^o$ is undefined $\Rightarrow \llbracket \phi \rrbracket^o$ is undefined
 $\Rightarrow \llbracket \varphi \rrbracket^o$ is undefined and $\llbracket \varphi \rrbracket^f$ is undefined
 $\Rightarrow \llbracket CP \rrbracket^o$ is undefined

The general prediction that I make is:

- (55) $[wh \text{ DisjP}]$ may not have the \sim operator as its closest c-commanding operator.
 $*[Q [\sim C [\phi \dots [wh [\text{DisjP} A \text{ or } B]] \dots]]]$

Thus the explanation of the intervention effect in AltQs reduces to Beck's (2006) and my explanation for the intervention effect in *wh*-questions, simply because AltQs are analyzed as a special type of *wh*-question. The combination of Romero and Han's (2003) theory with Beck's (2006) analysis of intervention makes the desired predictions.

4.3.2 Deriving the Effect in the Framework of von Stechow (1991)

We need to take another look at the example from above. I associated (56-a) with the structure in (56-c), in which a *wh*-element adjoined to DisjP.

- (56) a. Did the program execute or the computer crash?
 b. {that the program executed, that the computer crashed}
 c. $[_{CP} Q [\phi wh [_{\text{DisjP}} [\text{the program execute}] \text{ or } [\text{the computer crash}]]]]$

Let's reconsider the *wh* disjunctive phrase. In my general framework for the compositional interpretation of *wh*-questions, I need to assume (57). The *wh* choice function is active at the level of focus semantic values.

- (57) a. $\llbracket [wh [_{\text{DisjP}} \text{the program execute or the computer crash}]] \rrbracket^o$ is undefined

4.3. ANALYSIS OF INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- b. $\llbracket \llbracket wh \llbracket_{\text{DisjP}} \text{the program execute or the computer crash} \rrbracket \rrbracket \rrbracket^f$
 $= \{f \{ \llbracket \text{DisjP} \rrbracket^f \} \mid \text{CH}(f)\}$
 $= \{ \lambda w. \text{the program executed in } w, \lambda w. \text{the computer crashed in } w \}$

This implies that the disjunctive phrase itself makes the semantic contributions in (58). But then, the reader will notice that the disjunctive phrase itself already has the focus semantic value that we need in order to derive the desired meaning for the question. In a translation into my framework for the interpretation of questions, the *wh*-element from Romero and Han (2003) thus becomes superfluous. I might as well assume the structure in (59) without such an *wh*-element.

- (58) a. $\llbracket \text{DisjP} \rrbracket^o = [\lambda w. \text{the program executed in } w \text{ or the computer crashed in } w]$
 b. $\llbracket \text{DisjP} \rrbracket^f = \{ \lambda w. \text{the program executed in } w, \lambda w. \text{the computer crashed in } w \}$

- (59) $\llbracket_{\text{CP}} \text{Q} \llbracket_{\text{DisjP}} [\text{the program executed}] \text{ or } [\text{the computer crashed}] \rrbracket \rrbracket$

This is in fact the analysis of AltQs proposed in von Stechow (1991). The ordinary semantic contribution of a disjunction is the classical analysis of *or*, and the focus semantic contribution is the formation of an alternative set containing the two ordinary meanings of the disjuncts, which is used by the question operator to derive the meaning of the question.

Explaining the Intervention Effect without the *Wh*-Element

My next question has to be: how would we account for the intervention effect in AltQs if there is no *wh*-element? The new structure for (60-a) is (60-b), without the *wh*-element. Compositional interpretation goes through the steps in (61).

- (60) a. ?*Did only Mary introduce Sue to Bill or (to) Tom?
 b. $\llbracket_{\text{CP}} \text{Q} \llbracket_{\varphi} \text{only}_C [\sim C \llbracket_{\text{IP}} \text{Mary}_F \llbracket_{\text{DisjP}} [\text{introduce Sue to Bill}] \text{ or } [\text{introduce Sue to Tom}]] \rrbracket \rrbracket \rrbracket$

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (61) a. $\llbracket \text{DisjP} \rrbracket^o = [\lambda x. \lambda w. x \text{ introduced Sue to Bill in } w \text{ or } x \text{ introduced Sue to Tom in } w]$
 $\llbracket \text{DisjP} \rrbracket^f = \{ \lambda x. \lambda w. x \text{ introduced Sue to Bill in } w, \lambda x. \lambda w. x \text{ introduced Sue to Tom in } w \}$
- b. $\llbracket \text{IP} \rrbracket^o = [\lambda w. \text{ Mary introduced Sue to Bill in } w \text{ or Mary introduced Sue to Tom in } w]$
 $\llbracket \text{IP} \rrbracket^f = \{ \lambda w. \text{ Mary introduce Sue to Bill in } w, \lambda w. \text{ Mary introduced Sue to Tom in } w, \lambda w. \text{ Nina introduced Sue to Bill in } w, \lambda w. \text{ Nina introduce Sue to Tom in } w, \dots \}$
- c. $\llbracket \sim C \text{ IP} \rrbracket^o = \llbracket \text{IP} \rrbracket^o$ (if $g(C) = \llbracket \text{IP} \rrbracket^f$)
 $\llbracket \sim C \text{ IP} \rrbracket^f = \{ \llbracket \text{IP} \rrbracket^o \}$
- d. $\llbracket \varphi \rrbracket^o = \lambda w. \text{ the single true proposition in } \llbracket \text{IP} \rrbracket^f \text{ is } \llbracket \text{IP} \rrbracket^o.$
 $\llbracket \varphi \rrbracket^f = \{ \llbracket \varphi \rrbracket^o \}$
- e. $\llbracket \text{CP} \rrbracket^o = \{ \llbracket \varphi \rrbracket^o \} \implies \text{this is not a question meaning!}$

The IP now has a perfectly well-defined ordinary semantic interpretation. The \sim operator will inherit that (if the focus anaphor C has the appropriate value: the focus semantic value of IP). But it will also reset the focus semantic value of the structure with the \sim to the singleton containing the ordinary semantics of IP. At the level of the category φ we still have a singleton set as the focus semantic value. This is raised by the Q operator to the ordinary semantic value of the question.

I suggest that a singleton set is not appropriate as a question meaning in the Hamblin/Karttunen framework. A question denotes a set of alternatives, and a singleton is not an appropriate set of alternatives in the case of a question any more than in the case of focus (cf. Rooth 1992). This constraint might be derived from the pragmatics of matrix questions and the semantics of question embedding verbs. But it is also possible to hard-wire it into the semantics of the Q operator, as in (62).

4.3. ANALYSIS OF INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

(62) $\llbracket Q \phi \rrbracket^o$ is only defined if $\llbracket \phi \rrbracket^f$ has two or more members. If defined:

- a. $\llbracket Q \phi \rrbracket^o = \llbracket \phi \rrbracket^f$
- b. $\llbracket Q \phi \rrbracket^f = \{\llbracket Q \phi \rrbracket^o\}$

On this view of the compositional semantics of AltQs, the intervention effect follows because the Q operator has no alternatives left to evaluate. AltQs would no longer be an instance of the *wh*-intervention effect, but they would be an instance of the general minimality effect for focus evaluation (64), which I introduced in chapter 3.

(63) [DisjP] may not have the \sim operator as its closest c-commanding operator.

*[Q ... [\sim C [ϕ ... [A or B] ...]]]

previously: because of uninterpretability

now: because the \sim robs the Q operator of alternatives, and a non-question results.

(64) *General Minimality Effect* (cf. Beck 2006, Beck & Kim 2006)

The evaluation of alternatives introduced by an XP cannot skip an intervening \sim operator.

*[Op₁ ... [\sim C [ϕ ... XP₁ ...]]]

I conclude that the AltQ intervention effects follows from the general minimality effect for focus evaluation under both proposals for the interpretation of AltQs. The next section discusses the issue of whether AltQs should be seen as having a *wh*-element in them or not. In section 4.5, I come back to the focus semantic values of disjunctions and investigate the general plausibility of the assumption in (58), which both versions of the analysis of AltQs need to make.

4.4 Are AltQs *Wh*-Questions?

Even though both an analysis of AltQs as containing a *wh*-element and an analysis without one are in principle compatible with my goal of deriving the intervention effect, it would be interesting to decide between the two. The decision would affect my view of the role of the disjunction in alternative questions, as well as my understanding of the intervention effect in questions. Regarding the first issue, observe that on von Stechow's (1991) proposal, the disjunctive phrase acts in itself exactly like a *wh*-phrase without being one. This ought to affect my understanding of disjunction in general. Regarding the second issue, we note that under Stechow's semantic analysis the intervention effect in AltQs would point towards a rather more general nature of intervention effects (independent of *wh*-elements). This section is devoted to potential arguments for analyzing AltQs as a special kind of *wh*-question. My perspective is that since the analysis without the *wh*-element is simpler, the burden of proof is on the *wh*-analysis.

4.4.1 Is the Disjunctive Phrase a *Wh*-Phrase?

I discuss three potential arguments for the *wh*-status of the disjunctive phrase: selection, multiple questions, and scope marking.

Selection

This consideration is due to Regine Eckardt (p.c.). There are question embedding verbs like *surprise* that can take a *wh*-question as their complement, but not a Y/NQ.

- (65) a. I was surprised who attended.
 b. *I was surprised whether Bill attended.

4.4. ARE ALTQS *WH*-QUESTIONS?

If AltQs were *wh*-questions, they should be acceptable as complements to such verbs, but they are not:

- (66) a. *I was surprised whether Bill or George attended.
b. I was surprised which of Bill and George/which of the two attended.

Selection thus provides an argument against the assumption that AltQs are a special kind of *wh*-question.

Scope Marking

Several languages including German offer the possibility of constructing a long-distance *wh*-dependency via a so-called scope marking construction (cf. Lutz et al. 2000). An element in the matrix indicates the scope of the question, while an embedded clause contains the interrogative element. In German, the embedded clause must contain a *wh*-phrase and but not an element indicating a Y/NQ:

- (67) a. Was glaubt Ede, welchen Kurs Doris unterrichtet hat?
what believes Ede which course Doris taught has
'Which course does Ede believe Doris taught?'
b. *Was glaubt Ede, ob Doris Syntax unterrichtet hat?
what believes Ede whether Doris syntax taught has
'Does Ede believe that Doris taught syntax?'

If AltQs are *wh*-questions, they should occur in the German scope marking construction; if they are not *wh*-questions, it seems more probable that they should not. Unfortunately the evidence is a bit unclear. Some examples appear to be fairly good, while others are degraded.

- (68) a. ?Was glaubt Ede, ob Doris Syntax oder Semantik
what believes Ede whether Doris syntax or semantics
unterrichtet hat?
taught has
'Which of syntax and semantics does Ede believe Doris taught?'

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- b. Was glaubst Du, ob Pfrondorf gewonnen oder verloren hat?
what believe you whether Pfrondorf won or lost has
'Do you believe that Pfrondorf won or that Pfrondorf lost?'

The data are not as unequivocally acceptable as one would expect under a *wh*-phrase analysis of the disjunctive phrase, so it seems fair to say that no clear argument in favor of the *wh*-status of AltQs can be gleaned from scope marking.

Multiple AltQs

A final consideration concerns the fact that *wh*-phrases occur in multiple questions. Hence if the disjunctive phrase were a *wh*-phrase, there should be (i) multiple AltQs containing two disjunctive phrases, and (ii) mixed multiple questions containing a *wh*-phrase and a disjunctive phrase.²

- (69) a. Who taught what?
b. Did Fritz or Doris teach syntax or semantics?
c. Who taught syntax or semantics?

It is clear that sentences of the required form are acceptable, but less clear that they have the relevant interpretation. In order to simplify the empirical considerations, I will embed the prospective multiple questions under the predicates *list* and *compare*. These predicates embed (roughly) questions with multiple singular *wh*-phrases but not questions with a single singular *wh*-phrase (see Schwarz 1993

²Regarding the first possibility, Bartels (1999: 112) suggests that this is not possible for data like (i). As for the second option, Gullì (2003: 204, fn.173) seems to consider (ii) a possible instance. Neither author offers extensive discussion.

- (i) #DO I turn RIGHT or LEFT here?
= Do I or don't I turn right or left here?
- (ii) I don't give a damn where he's gone or where he hasn't gone, ...

4.4. ARE ALTQS *WH*-QUESTIONS?

for a more detailed description). They also do not embed simple AltQs.

- (70) a. *Arnim listed which linguist taught syntax last year.
b. Arnim listed which linguist taught which class last year.
c. *Arnim listed whether Fritz or Doris taught syntax last year.
- (71) a. *Arnim compared which linguist taught syntax last year.
b. Arnim compared which linguist taught which class last year.
c. *Arnim compared whether Fritz or Doris taught syntax last year.

If the disjunctive phrase functioned like a *wh*-phrase, embedding of the prospective multiple questions should be acceptable. Once more, however, the data have a questionable status (with some variation between speakers).

- (72) a. ^{?(?)}Arnim listed which linguist taught syntax or semantics last year.
b. ^{?(?)}Arnim listed whether Fritz or Doris taught syntax or semantics last year.
- (73) a. ^{?(?)}Arnim compared which linguist taught syntax or semantics last year.
b. ^{?(?)}Arnim compared whether Fritz or Doris taught syntax or semantics last year.

Certainly, such examples are not as clearly acceptable as a *wh*-phrase analysis of the disjunctive phrase would lead us to expect. I conclude that my considerations in this subsections have failed to produce convincing evidence in favor of a *wh*-phrase analysis of disjunctive phrases.

4.4.2 Movement in Alternative Questions?

This subsection raises the question of whether there is *wh*-movement in AltQs. If we found characteristics of *wh*-movement in AltQs (as argued by Larson 1985), that would constitute evidence for the presence of a *wh*-element. Specifically, I

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

raise the questions in (75), supposing the prospective structure in (74).

(74) [*wh* [_{DisjP} A or B]]

- (75) a. Does the *wh*-part of (74) move overtly?
b. Does the entire phrase in (74) undergo covert phrasal movement?
c. Is there feature movement of a *wh*-feature in AltQs?

The prospective landing site would be in each case the vicinity of the interrogative complementizer. Some further explanation: a positive answer to (75-a) leads basically to Larson's (1985) theory, in which *whether* or a phonologically empty element playing the same role as *whether* moved to SpecCP. I will reexamine his evidence. (75-b,c) instead pursue the idea that there is covert movement in AltQs. Following Pesetsky (2000), I discuss two different kinds of covert movement: covert 'phrasal' movement is phonologically invisible movement of a syntactic constituent that has semantic effects, and feature movement is movement of just a syntactic feature with no interface effects (phonological or semantic). For the option of covert phrasal movement (75-b), I discuss the possibility that the entire phrase in (74) moves, because this possibility has observable semantic effects while moving just the *wh*-element would not, and would thus be indistinguishable from feature movement. Thus I think that the three possibilities raised in (75) are the conceptually interesting alternatives regarding movement in AltQs. My answer to all three of these questions will be negative. Note that neither version of the analysis presented in section 4.3 assumes movement of any kind. I will maintain and support this aspect of my analysis. The issue is important for the theory of intervention: there are movement based accounts of intervention effects, for which the behavior of AltQs will be shown to be problematic.

4.4. ARE ALTQS *WH*-QUESTIONS?

No Overt Movement

Larson (1985), and following him Han and Romero (2004b), suggests that there are movement constraints visible in the syntax of English AltQs. Some of his examples are given below. (76-a) is ambiguous between (77-a) and (77-b), while (76-b) with the complex NP island only permits the Y/N-question interpretation (77-a). Thus it seems that availability of an AltQ analysis is sensitive to island constraints.

- (76) a. the decision whether to believe that Bill resigned or retired
(ambiguous)
- b. the decision whether to believe the claim that Bill resigned or retired
(unambiguous)
- (77) a. The decision is between believing that Bill resigned or retired or not believing that Bill resigned or retired.
- b. The decision is between believing that Bill resigned or believing that Bill retired.

Example (78) involves a *wh*-island. Larson reports that an interpretation as a Y/N-question is strongly preferred. Thus it looks as if some part of the disjunctive phrase has to move overtly to the position of the interrogative complementizer, thereby being responsible for island effects. For Larson, that element is *whether*. *Whether* originates at the left edge of the disjunction and moves to the interrogative complementizer position.

- (78) I know whether Bill wonders who resigned or retired.
- (79) a. {that Bill wonders who resigned or retired, that Bill doesn't wonder who resigned or retired} (preferred)
- b. {that Bill wonders who resigned, that Bill wonders who retired} (marginal?)

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

I have collected an additional set of relevant data that shed doubt on the idea that the constraint observed in (76-b) and (78) is an island constraint. It is possible to find rather good examples of AltQs in which the interrogative complementizer and the disjunctive phrase are separated by an island. A German example in which the disjunctive phrase is inside an adjunct island is given in (80-a). The sentence is acceptable as an AltQ. A comment on the judgement ‘?’ which I assign to this sentence: (80-a) is perhaps not the optimal way to express the intended question. One would probably prefer the versions in (81-a) and (81-b). In (81-a), the entire adjunct clauses are disjoined, and (81-b) is at least compatible with an ellipsis analysis in which the disjuncts are quite large. However, (80-a) is still acceptable, and importantly, there is a very clear contrast between (80-a) and (80-b). (80-b) is an instance of overt *wh*-movement out of the same adjunct clause. The contrast shows that (80-a) should not involve overt movement of any part of the disjunctive phrase. The contrast in (80-c) vs. (80-d) shows the same – (80-c) is actually impeccable, while (80-d) is terrible.

(80) Adjunct Island:

- a. ?Freust du dich (mehr), wenn du Anne oder Lena siehst?
be pleased you Refl (more) when you Anne or Lena see
‘Are you more pleased when you see Anne or Lena?’
- b. *Wen_i freust du dich (mehr), wenn du t_i siehst?
whom be pleased you Refl (more) when you see
‘Who are you more pleased when you see?’
- c. Fährst du nach Griechenland, um dort zu wandern oder zu
go you to Greece in order there to hike or to
segeln?
sail
‘Are you going to Greece in order to hike or sail there?’
- d. *Was_i fährst du nach Griechenland, um dort t_i zu tun?
what go you to Greece in order there to do
‘What are you going to Greece in order to do there?’

4.4. ARE ALTQS *WH*-QUESTIONS?

- (81) a. Freust du dich (mehr), wenn Du Anne siehst oder wenn du
be pleased you Refl (more) when you Anne see or when you
Lena siehst?
Lena see
'Are you more pleased when you see Anne or when you see Lena?'
- b. Freust du dich (mehr), wenn Du Anne siehst oder [__ Lena
be pleased you Refl (more) when you Anne see or Lena
__]?
'Are you more pleased when you see Anne or when you see Lena?'

The English versions (82-a,b) seem parallel to the German examples (80-a,c) and were judged well-formed.

- (82) a. Are you more pleased when you see Anne or Lena?
b. Are you going to Greece in order to sail or hike there?

Similar pairs are constructed below with a relative clause island and a subject clause. The contrasts between the AltQ and overt movement are clear. I report the English data for simplicity.

- (83) a. Do you need a person who speaks Dutch or German?
b. ?Are you looking for someone whose parents live on an island that is
close to Australia or Africa?
c. *What do you need a person who speaks?
d. *Which country are you looking for someone whose parents live on
an island that is close to?
- (84) a. Does it disturb you more that he lied to his mother or (to) his teacher?
b. ??Who does it disturb you more that he lied to?

I am not actually quite certain of the judgement for the *wh*-island below. The AltQ interpretation does not seem to be impossible, but merely dispreferred.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (85) Q: Do you want to know whether Anna or Lena is playing?
A: Anna (= I want to know whether Anna is playing).

In sum, I have found several clear cases in which an AltQ interpretation is available despite an island separating the disjunctive phrase from the interrogative complementizer. Important in particular is the clear contrast between regular *wh*-movement and AltQs. I think that the contrast holds crosslinguistically; consider e.g., Korean (86). Overt movement (in this case, scrambling) out of a syntactic island is ungrammatical, but the AltQ interpretation was judged better by my informants.

- (86) Relative Clause:
- a. ?Mira-ka [Seoul-lo animyen Pusan-ulo ka-nun] kicha-lul chacko
Mira-NOM Seoul-to if not Pusan-to go-REL train-ACC look
iss-ni?
for-Q
'Is Mira looking for a train which goes to Seoul or to Pusan?'
 - b. *Seoul-lo_i Mira-ka [t_i ka-nun] kicha-lul chacko iss-ta.
Seoul-to Mira-NOM go-REL train-ACC look for-DEC
'To Seoul_i, Mary is looking for a train which goes t_i.'

I conclude that it would be problematic to assume that there is overt movement of any part of the disjunctive phrase in AltQs. This leaves us with the question of what goes wrong in the AltQs reported to be impossible by Larson (1985). I suggest that the complex NP example (76-b) involves an intervener. Note that there is an important difference between my complex NP examples and Larson's, the determiner of the complex NP being an indefinite in my data but a definite article in Larson's. Guerzoni (2006) argues that the definite article causes an intervention effect for elements in its restrictor. She investigates intervention effects in NPI licensing. A relevant datum would be the contrast between (87-a) and (87-b).

4.4. ARE ALTQS *WH*-QUESTIONS?

- (87) a. Nobody found a teacher who had any religious holiday absence forms.
b. *Nobody found the teacher who had any religious holiday absence forms. (~Guerzoni)

Thus I think that (76-b) shows an intervention effect like (87-b) here, not an island effect. Note that the relative clause example becomes much worse as an AltQ when the indefinite is replaced with a definite description (thanks to Peter Sells for his empirical help with this subsection and in particular for example (89)).³

(88) Relative Clause:

- a. Do you need a person who speaks Dutch or German?
b. ??Do you need the employee who speaks Dutch or German?

(89) NP Complement:

- a. It all depends on whether we put out a story that Bill retired or resigned.
b. *It all depends on whether the general public believes the claim that Bill retired or resigned.

There remains the *wh*-island case. I am not completely sure what to say about that, because the judgement is not so clear. The AltQ (85) seems fairly acceptable, and it is not clear from Larson's discussion whether he judges the AltQ interpretation to be really completely impossible, or just dispreferred. I leave this matter open (should a constraint ruling out AltQs out of questions turn out to be desirable, I would like to refer to Shimoyama (2001), who argues that there are minimality effects in questions that are not plausibly analyzed as movement effects and instead reminiscent of intervention). Thus I conclude that it would be problematic

³The same interfering factor shows up in Han and Romero's (2004b) evidence from Hindi for apparent island constraints in AltQs.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

to posit that AltQs involve overt movement. The data brought forth to argue for this should receive a different analysis, perhaps as intervention effects. I suggest that no part of (*wh*) DisjP moves overtly.

No Obligatory Covert Phrasal Movement

My next question is whether AltQs involve covert phrasal movement, where a syntactic constituent moves invisibly to affect interpretation. Constraints on covert movement are not generally assumed to be identical to the constraints on overt movement (for example, lack of Subjacency effect for covert *wh*-movement (cf. Huang 1982) and clause boundedness of QR (Rodman 1976, May 1985) vs. no such constraint for overt *wh*-movement). Therefore I will not presuppose that the evidence from the previous subsection prejudices the issue. I would like to ask whether there is any motivation that there is covert phrasal movement in AltQs, assuming that the phrase that would move covertly would be the whole disjunctive phrase. I consider two types of evidence: scope and *there*-insertion contexts (see Pesetsky 2000 and Guerzoni 2006 for relevant discussion of the properties of covert phrasal movement). One type of accepted evidence for covert movement consists of instances in which a phrase takes wider scope than its overt position would indicate. In this light, consider the AltQ in (90-a). The question has the interpretation indicated in (90-b).

- (90) a. Does Tina need a hammer or a screwdriver?
b. {that it is necessary that Tina has a hammer (any hammer), that it is necessary that Tina has a screwdriver (any screwdriver)}

I am interested here in the scope of the indefinites inside the disjunctive phrase. (I am not interested in the scope of the *wh*-element or the disjunction itself, because their interpretive contribution is fixed by the in-situ mechanism I employ to derive the question meaning.) The natural interpretation of this example is one in which

4.4. ARE ALTQS *WH*-QUESTIONS?

the indefinites take narrow scope relative to the modal verb. This interpretation can be straightforwardly derived from the structure in (91) (assuming for the moment the *wh*-analysis of the disjunctive phrase), where the disjunctive phrase stays below the modal.

$$\begin{aligned}
 (91) \quad & [_{\text{CP}} \text{Q} [\text{need} [_{\phi} [_{\text{wh}} [_{\text{DisjP}} \text{a hammer or a screwdriver}]_i [\text{Tina has } t_i]]]] \\
 & \llbracket \phi \rrbracket^f = \{ \text{that Tina has } f(\{ \llbracket \text{a hammer} \rrbracket, \llbracket \text{a screwdriver} \rrbracket \}) \mid \text{CH}(f) \} \\
 & = \{ \text{that Tina has a hammer, that Tina has a screwdriver} \} \\
 & \llbracket \text{CP} \rrbracket^o = \{ \llbracket \text{need} \rrbracket(\text{that Tina has } f(\{ \llbracket \text{a hammer} \rrbracket, \llbracket \text{a screwdriver} \rrbracket \})) \mid \\
 & \quad \text{CH}(f) \} \\
 & = \{ \text{that it is necessary that Tina has a hammer,} \\
 & \quad \text{that it is necessary that Tina has a screwdriver} \}
 \end{aligned}$$

By contrast, a structure in which the disjunctive phrase has moved to the vicinity of the interrogative complementizer naturally leads to an interpretation in which the indefinites take wide scope relative to the modal verb, as illustrated in (92).

$$\begin{aligned}
 (92) \quad & [_{\text{CP}} \text{Q} [[_{\text{wh}} [_{\text{DisjP}} \text{a hammer or a screwdriver}]_i [\text{need} [\text{Tina has } t_i]]]]] \\
 & \llbracket \text{CP} \rrbracket^o = \\
 & \{ f(\{ \llbracket \text{a hammer} \rrbracket, \llbracket \text{a screwdriver} \rrbracket \}) (\lambda x. \llbracket \text{need} \rrbracket(\text{that Tina has } x)) \mid \text{CH}(f) \} \\
 & = \{ \text{that } \llbracket \text{a hammer} \rrbracket (\lambda x. \llbracket \text{need} \rrbracket(\text{that Tina has } x)), \\
 & \quad \text{that } \llbracket \text{a screwdriver} \rrbracket (\lambda x. \llbracket \text{need} \rrbracket(\text{that Tina has } x)) \} \\
 & = \{ \text{that there is a hammer that Tina needs,} \\
 & \quad \text{that there is a screwdriver that Tina needs} \}
 \end{aligned}$$

I am not sure in how far the interpretation in (92) is available for this example – I think that generally such interpretations do exist, see e.g., (93).

- (93) Context: A and B are participants in a class run through student presentations. Each student is assigned a presentation by the teacher.
A: Did you have to present a paper or a book?

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

The crucial point for me is that the reading in (91) is available. The availability of the narrow scope reading argues against an analysis in which the disjunctive phrase obligatorily undergoes covert phrasal movement towards the interrogative complementizer: scope effects that could be derived from such an analysis are in fact missing. Thus there is no reason to think that the disjunctive phrase obligatorily moves. Several other examples that show the same thing are given below, (94) in English and (95) in Korean. In these data, any wide scope effects we might expect from obligatory covert phrasal movement are absent. I conclude that scope provides no argument that there is obligatory covert phrasal movement. My analysis is compatible with optional QR-like covert phrasal movement of the disjunctive phrase, and that seems right.

- (94) a. Do you want to bake a cherry cake or a cheese cake?
b. Do you have to paint two or three pictures?
- (95) a. John-un cacwu thongsalonca-lul chotayha-ess-ni animyen
John-TOP often syntactician-ACC invite-PAST-Q if not
uymilonca-lul chotayha-ess-ni?
semanticist-ACC invite-PAST-Q
'Did John often invite a syntactician or a semanticist?'
- b. John-un cacwu uymilonca-lul chotayha-ess-ta.
John-TOP often semanticist-ACC invite-PAST-DEC
'John often invited a semanticist.'
(It could be different semanticists every time.)

A slightly different type of evidence that points in the same direction comes from *there*-insertion contexts. (96-a) is a well-formed AltQ in English. I suggest that the structure that is input to interpretation is the one in (96-b). The structure in (96-c), in which the disjunctive phrase moved towards SpecCP, would be problematic: Heim (1987) suggests that *there*-insertion contexts are incompatible with an individual variable in the place of the associate of *there*. So once more we are better off with a theory that does not force the disjunctive phrase to move.

4.4. ARE ALTQS *WH*-QUESTIONS?

- (96)
- a. Is there a horse or a donkey (in the garden)?
 - b. [_{CP} Q [there is [*wh* [_{DisjP} a horse or a donkey]]]]
 - c. [_{CP} Q [[*wh* [_{DisjP} a horse or a donkey]]_i [there is *t_i*]]]
 - d. **There is x*, when *x* is an individual variable. (Heim 1987: 23)

Thus I have come to the conclusion that in a theory in which *wh*-elements can be interpreted in situ, obligatory covert phrasal *wh*-movement in AltQs is unmotivated: all effects that could be derived from this movement are missing. I suggest that (*wh*) DisjP does not have to move towards the interrogative complementizer position, although it may undergo QR.

No Feature Movement

The last kind of movement I want to discuss is feature movement. According to Pesetsky (2000), feature movement (F-movement) has the following properties: (i) no island effects, (ii) no scope effects, (iii) intervention effects.

This is of course precisely the set of facts I identified in AltQs. Note that the only empirically operative property of F-movement that I am aware of is sensitivity to intervention. There is no other property of F-movement that would have empirically testable effects. But sensitivity to intervention is derived semantically under my analysis and in Beck (2006); i.e., I give a semantic reconstruction of the term feature movement. For the purpose of describing intervention, it thus becomes unnecessary as a theoretical notion. Nonetheless, I want to ask the question of what an F-movement analysis of intervention effects in AltQs would have to look like. I will show that it is not attractive to apply such an analysis to AltQs. The reason is ultimately that in contrast to *wh*-questions, the whole apparatus of movement does not seem applicable in AltQs, as shown by the data discussed above. Pesetsky (2000) proposes to increase the inventory of covert (i.e., phonologically invisible) movement operations by assuming both covert phrasal movement and F-movement. F-movement applies when a syntac-

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

tic constraint enforces movement, but phrasal movement does not happen. This permits him, among other things, to differentiate between English D-linked and non-D-linked *wh*-phrases: non-D-linked *wh*-phrases undergo phrasal movement, and show movement effects like superiority. D-linked phrases can undergo F-movement instead and do not show superiority effects. The *wh*-phrase in situ in (97-b) underwent F-movement: an analysis in which it underwent (covert) phrasal movement would violate superiority – cf. (97-a) –, which is here construed as a rule that says that the highest *wh*-phrase is moved overtly (i.e., pronounced in the moved position).

- (97) a. *What did who read?
b. Which book did which student read?

This distinction in turn permits Pesetsky to distinguish (98-a) – an intervention effect – from (98-b) – no intervention effect. He argues that covert phrasal movement is not sensitive to intervention effects. The *wh*-phrase in situ in (98-b) undergoes covert phrasal movement, hence (98-b) is fine. The D-linked *wh*-phrase appearing in situ in (98-a) on the other hand does not undergo covert phrasal movement (cf. the fact that it successfully violates superiority), but it undergoes F-movement. Pesetsky suggests that F-movement is sensitive to intervention, hence (98-a) is bad.

- (98) a. ?*Which book didn't which student read?
b. Who didn't read what?

I should add that Pesetsky does not actually provide an analysis of what intervention is. He merely uses it as a diagnostic. When F-movement applied, we expect intervention effects to arise. But there are cases of intervention that fall outside the scope of his theory, like *wh*-separation constructions, which are intervention sensitive for reasons other than F-movement. (For the general cause of interven-

4.4. ARE ALTQS *WH*-QUESTIONS?

tion effects, Pesetsky refers to Honcoop 1998, who claims that a quantifier may not be separated from its restriction by another operator; but see chapter 2, section 2.4.3 where I listed some problems of his analysis.) Let's now try to transfer the F-movement analysis to AltQs. My reasoning starts as follows:

- (99) Intervention effects arise always in AltQs
⇒ there must always be F-movement in AltQs
⇒ there must be
- (i) a [*wh*] Comp, and
 - (ii) something preventing phrasal movement of [*wh* DisjP]

Part (ii) is because (covert) phrasal movement is not sensitive to intervention, cf. the well-formed (98-b). (ii) is the problematic aspect: what prevents phrasal movement? I will be guided by Pesetsky's discussion; he discusses two reasons why phrasal movement might be excluded. One applies in Japanese/Korean, German etc. *wh*-in-situ constructions, the other in English D-linked questions. In both contexts, *wh*-intervention effects arise. With respect to Japanese/Korean and German intervention effects, Pesetsky argues that phrasal movement is excluded for reasons of space. The interrogative specifier could not host the phrase concerned (the *wh*-phrase in situ). With respect to intervention effects in D-linked questions in English, phrasal movement of the relevant *wh*-phrase should have been overt but wasn't. Phrasal movement would violate the pronunciation rule for moved *wh*-phrases, but F-movement would not. The first explanation is not applicable to English AltQs. English has multiple specifier positions according to Pesetsky and should thus be able to host the *wh* disjunctive phrase in AltQs. It is also problematic to try to extend the explanation for D-linked *wh*-questions in English to the case of AltQs. This is because the relevant pronunciation rule does not apply – there is no requirement on the *wh* disjunctive phrase to have been moved overtly (i.e., be moved, and pronounced in the moved position). I tried to think of an alter-

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

native reason why phrasal movement is not possible in AltQs, but could not come up with anything plausible. Note that under my analysis there are no semantic problems (e.g., incompatibility of the elements that would end up in the interrogative specifier; an element like *whether* would either be semantically harmless or correspond to the question operator, and would thus be quite compatible with a moved disjunctive phrase).

Trying to extend an F-movement analysis of intervention to AltQs, I see no obvious way to block covert phrasal movement (which I need to do to predict an intervention effect). I conclude that intervention effects in AltQs are not usefully analyzed in terms of F-movement. Like separation constructions, they would fall outside the scope of Pesetsky's (2000) proposal that intervention effects occur when F-movement is involved.

4.4.3 Consequences

My conclusion is that the available evidence speaks against analyzing AltQs as a *wh*-construction. The disjunctive phrase does not give rise to the effects that a *wh*-phrase triggers. This includes in particular movement characteristics. This conclusion has consequences for the analysis of intervention effects, for the role of *whether* in AltQs, and for my understanding of the semantics of disjunction.

Intervention Effects

An important empirical connection I would like to note is that if AltQs had a *wh*-element that moved overtly, we would not expect an intervention effect. This is shown by data like Korean (100), in which a *wh*-phrase moved overtly past the intervener avoids the intervention effect. As we saw above, the Korean fact follows from the theory advocated here. The *wh*-phrase introduces alternatives above 'only', and no intervention effect is predicted. Since the prospective *wh*-part would presumably be the part of the disjunctive phrase to move overtly, we

4.4. ARE ALTQS *WH*-QUESTIONS?

have converging evidence for my claim that there is no overt movement in AltQs: the fact that AltQs exhibit intervention effects are one more reason to think that there is no overt *wh*-movement.

- (100) Nwukwu-lul_i Mina-man t_i chotayha-ess-ni?
 who-ACC Mina-only invitePAST-Q
 ‘Who did only Mina invite?’

Next, covert movement was the core ingredient in my own earlier analyses of intervention effects (Beck and Kim 1997). I suggested that a *wh*-question like Korean (101-a) be associated with the structure in (101-b) at Logical Form. Then there was a syntactic constraint (Minimal Quantified Structure Constraint) excluding such structures.

- (101) Beck (1996), Beck and Kim (1997):
- a. ?*Mina-man nwukwu-lul chotayha-ess-ni?
 Mina-only who-ACC invite-PAST-Q
 ‘Who did only Mina invite?’
 - b. [_{CP} nwukwu-lul_i [C_[+Q] [Mina-man t_i^{LF} chotayha-ess-ni]]]
 - c. *[wh_i [... [Op [... t_i^{LF} ...]] ...]]

At the time, covert movement of the *wh*-phrase was motivated by interpretability. The procedure for the compositional interpretation of questions that was generally adopted then had a *wh*-phrase move past the interrogative complementizer in order to be interpretable. Since then, it has become much more doubtful, for syntactic reasons, that *wh*-phrases always move covertly, and alternative interpretation procedures have been developed that do not rely on such movement (see e.g. Reinhart 1998). My own compositional interpretation component from section 4.3 does not rely on movement of *wh*-elements either. Thus covert phrasal movement of *wh*-items is no longer motivated by issues of interpretability. I have argued above that under these revised assumptions about interpretation, there is no independent

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

evidence (say, from scope) that there is covert phrasal *wh*-movement in AltQs. Its absence is incompatible with an LF movement analysis of Intervention Effects (e.g., Beck 1996, Beck and Kim 1997).

Feature movement in turn exists fruitfully in a system in which other kinds of movement are observable. I think that I failed in my attempts to use F-movement here because the whole tool kit of movement does not seem to be useful in the analysis of AltQs. There is simply no compelling evidence that I am aware of that movement is involved in AltQs. This is an important difference between AltQs and *wh*-questions.

In this connection it is also relevant that the intervention effect in AltQs seems stable across languages, while there is some variation in how the intervention effect in *wh*-question surfaces, e.g., between English and German. Beck (2006), following Pesetsky (2000), suggests that the latter phenomenon is related to the inventory of movement strategies that applies in a given language. In English *wh*-questions, movement can rescue a potential intervention configuration, hence the effect is more limited than in German. This seems to play no role in AltQs. In English AltQs movement can never come to the rescue. If AltQs were a special kind of *wh*-question, we would expect the intervention effect in English AltQs to be as limited as the intervention effect in English *wh*-questions, but this is not the case. Regarding the nature of intervention effects, I conclude that AltQs show that intervention effects cannot in general be analyzed as movement effects. AltQs, I have argued, do not involve movement, but do show intervention effects. Thus intervention effects in AltQs support the analysis of intervention in Beck (2006) in terms of interpretability.

The syntax of AltQs and *whether*

In the literature on *whether-or*-questions (i.e., AltQs) and *either-or*-constructions, it is claimed that *either* marks the left edge of the disjunction (argued for in the recent literature in particular by Schwarz 1999), and that *whether* originates in the

4.4. ARE ALTQS *WH*-QUESTIONS?

same position, but is subsequently moved to SpecCP (as argued in particular by Han and Romero 2004b), both following Larson (1985). I have argued against the movement aspect of this proposal. This leads to the view that *whether* (as well as its null counterpart *Q* in matrix questions) is base-generated in its overt position, presumably fulfilling some formal requirement on marking the question. My analysis of AltQs does not posit any formal connection between *whether* and the disjunction. I do not think, in particular, that *whether* marks the edge of the disjunction. This can be argued for independently of my concerns on the basis of the following contrast, originally due to Schwarz (1999).

- (102) a. ??Either this pissed Bill or Sue off.
b. Did this piss Bill or Sue off?
I wonder whether this pissed Bill or Sue off.

Han and Romero's (2004b) combined movement/ellipsis analysis of *whether/Q*... *or* constructions can handle the asymmetry in (102). They argue that the difference between *whether/Q*... *or* and *either*... *or* is that *whether/Q* is a *wh*-phrase, and so *whether/Q* can undergo movement, while *either* cannot. This means that while *either* marks the left edge of the disjunction in *either*... *or* constructions (as proposed by Schwarz 1999), the trace of *whether/Q* marks the left edge of the disjunction in *whether/Q*... *or* constructions. Han and Romero claim that the contrast between (102-a) and (102-b) can be attributed to the degree of right-node raising of the particle. They propose the following derivations with ellipsis for (102-a) and (102-b), respectively.

- (103) a. either [_{IP} this pissed Bill e_j] or [_{IP} ~~this pissed~~ Sue e_j] off_j.
b. Q_i did this t_i [_{VP} piss Bill e_j] or [_{VP} piss Sue e_j] off_j?

Either is base-generated at its surface position at the left edge of the disjunction and does not move. So (102-a) involves an IP disjunction. Following Schwarz

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

(1999), Han and Romero claim that the option of right-node raising of the particle above IP, as in (103-a), is difficult, if not completely unavailable. The AltQ (102-b), on the other hand, has the derivation in (103-b). The covert Q-operator is base-generated adjacent to the VP disjunctive phrase and moves to SpecCP. And the particle undergoes right-node raising only above VP, which is available to all speakers as exemplified in (104-a) (with the corresponding derivation under an ellipsis account in (104-b)):

- (104) a. This either pissed Bill or Sue off.
b. This either [_{VP} piss Bill e_j] or [_{VP} ~~piss~~ Sue e_j] off_j.

On my analysis, to explain the contrast between (102-a) and (102-b), we can assume with Schwarz (1999) that *either* marks the left edge of the disjunction and (102-a) is marked due to right-node raising of the particle to IP. And we can further assume that *whether* does not necessarily mark the left edge of the disjunction. This means that we can have a disjunction of VPs as in (103-b), and the particle undergoes right-node raising only above VP. The only difference between Han and Romero's analysis and my analysis is that I don't have the *wh/Q*-trace adjacent to VP in (103-b) because I don't assume *whether/Q*-movement. So the contrast in (102) can be accounted for in my analysis, as well. Thus I suggest that the contrast does not argue for a movement analysis, but rather shows that *whether* in contrast to *either* does not mark the left edge of the disjunction.

Disjunctions

I have, through arguing against an analysis of AltQs as *wh*-constructions, convinced myself that a compositional analysis of AltQs following von Stechow (1991) is to be preferred. Such an analysis implies that the disjunction itself is responsible for making available alternatives to the semantics, which the Q operator can evaluate to derive a question meaning. Disjunctions are thus argued

4.5. MORE ON THE DISJUNCTION

to have an alternative semantics. This leads us to expect that alternatives should surface on other occasions when disjunctions occur. It is the purpose of the next section to explore this.

4.5 More on the Disjunction

4.5.1 The Focus Semantic Contribution of Disjunctions

Remember from section 4.3 that we need the semantics in (106) for the disjunctive phrase in order to derive the right semantics for the example in (105):

- (105) a. Did the program execute or the computer crash?
b. {that the program executed, that the computer crashed}
c. $[_{CP} Q [_{DisjP} [the\ program\ execute] or [the\ computer\ crash]]]$
- (106) a. $[[DisjP]]^o = [\lambda w. the\ program\ executed\ in\ w\ or\ the\ computer\ crashed\ in\ w]$
b. $[[DisjP]]^f = \{\lambda w. the\ program\ executed\ in\ w, \lambda w. the\ computer\ crashed\ in\ w\}$

A question that arises at this point is what evidence we have for the claim that the focus semantic value of a disjunction is a set that contains the contents of the two disjuncts. More precisely, is there further evidence that disjunctions⁴ give rise to an alternative set that consists of the ordinary meanings of the disjuncts, as indicated in (107) (for the case in which A and B are propositions)?

- (107) a. $[[[A_F or B_F]]]^o = [[A]]^o \cup [[B]]^o$
b. $[[[A_F or B_F]]]^f = \{ [[A]]^o, [[B]]^o \}$

First, there is the simple observation that (108-b) is a felicitous answer to (108-a) with the indicated focus (i.e., the same one we find in AltQ disjunctions). The

⁴Or at least, disjunctions with the kind of focus assignment I am interested in here.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

meaning of the question is (109-a). The constraint on focus-answer congruence (Rooth 1992) says roughly that the focus semantic value of the answer has to be identical to the meaning of the question (as given in (110)). My supposed focus semantic value of (108-b) is (109-b). While this does not fit the constraint on congruent answers completely, it is still a much better match than the probable alternative (109-c). This suggests that *or* does have a special effect on focus semantic values.

- (108) a. Who did Hans invite?
 b. Hans invited Anna_F or Sally_F
- (109) a. $\{\text{that Hans invited } x \mid x \in D\}$
 b. $\{\text{that Hans invited } x \mid x = \text{Anna or } x = \text{Sally}\}$
 c. $\{\text{that Hans invited } x \text{ or } y \mid x, y \in D\}$
- (110) $\llbracket \text{Question} \rrbracket^o = \llbracket \text{Answer} \rrbracket^f$

Secondly, I note that Aloni (2003) (and also Simons 2004) adopts an analysis of free choice ‘or’ in modal contexts like (111) that is based on an alternative semantics. She associates the argument of *may* with the set of alternatives in (112). The semantics of *may* makes use of those alternatives to derive the intuitive semantics of the example. See Aloni (2003) for details. Importantly for me, she uses the same focus semantic value for the disjunction that is relevant for my purposes. This supports (107) as the focus semantic contribution of disjunctions on independent grounds.

- (111) John or Mary may come.
 \implies John may come and Mary may come.
- (112) a. $[\text{may } [{}_{\phi} \text{John or Mary come}]]$
 b. $\llbracket \phi \rrbracket^f = \{\text{that John comes, that Mary comes}\}$

4.5. MORE ON THE DISJUNCTION

A final potential application I see is free disjunctions with *either*, as discussed in Zimmermann (2000). Zimmermann (partly inspired by the free choice *or* mentioned above) proposes a non-classical semantic analysis of *or*, according to which (113-a) means (113-b).

- (113) a. It is raining or it is snowing.
 b. It is possible that it is raining and it is possible that it is snowing.
 c. It is possible that it is raining and it is possible that it is snowing and there are no other relevant possibilities.

Further grammatical mechanisms may strengthen the meaning to (113-c). Zimmermann calls this effect ‘closure’; it is parallel to the exhaustification of answers to questions (cf. Groenendijk and Stokhof 1984) – in the example it would be the exhaustification of the background question “What might be the case?”. Closure in this sense can arise from falling intonation, and, as Zimmermann suggests, from the use of *either*:

- (114) Either it is raining or it is snowing.

I propose that *either* functions as a focus sensitive operator that derives closure on the basis of the focus semantic value of its sister disjunction.

- (115) a. $r := \lambda w. \text{it is raining in } w$
 $s := \lambda w. \text{it is snowing in } w$
 b. $\llbracket \text{it is raining or it is snowing} \rrbracket^o = r \cup s$
 $\llbracket \text{it is raining or it is snowing} \rrbracket^f = \{r, s\}$

- (116) $\llbracket \text{either it is raining or it is snowing} \rrbracket^o = \text{may } r \ \& \ \text{may } s \ \& \ \neg \exists p [p \cap r = \{\} \ \& \ p \cap s = \{\} \ \& \ \text{may } p]$
 it may rain and it may snow and there is no genuinely different possibility of what may be the case.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (117) $\llbracket \text{either XP} \rrbracket^o = \text{for all } q \text{ in } \llbracket \text{XP} \rrbracket^f : \text{may } q \ \& \ \neg \exists p [\text{for all } q \text{ in } \llbracket \text{XP} \rrbracket^f : p \cap q = \{\} \ \& \ \text{may } p]$

I leave open whether the ordinary semantics of disjunction without *either* is already as in (113-b) or the classical semantics as used in (115-b), with some extra step deriving (113-b). If I maintain the classical semantics for the ordinary semantic contribution of a disjunction, I also need to say something about how the ordinary meaning affects the semantics of the whole *either-or* disjunction. All of these are left for future work. My proposal is this: that *either* is an operator that has access to the alternatives that the disjunction gives rise to, and evaluates those alternatives to derive the closure effect. This is in keeping with the suggestion in Hendriks (2003) that *either* is a focus sensitive operator.

4.5.2 Other Intervention Effects with Disjunctions?

Larson (1985) investigates both *whether...or...* and *either...or...*, and once intervention effects in AltQs are recognized, the following observation on *either...or...* from Larson seems immediately relevant: As illustrated in (118), taken from Schwarz (1999), *either* cannot be separated from the disjunction by an intervening negation. I add to this the fact in (119), as well as (120).

- (118) a. (?)John didn't eat either rice or beans.
b. ??John either didn't eat rice or beans.
c. ??Either John didn't eat rice or beans.

- (119) a. Only John ate either rice or beans.
b. ?*Either only John ate rice or beans.

- (120) *Either he REALly IS going out with MarTIna or with SUE.

(Han and Romero 2004a)

4.5. MORE ON THE DISJUNCTION

This certainly looks like an intervention effect: negation, *only*, etc. cannot intervene between *either* and the disjuncts. An intervention effect would be predicted by a focus semantic analysis of *either ... or ...*, where *either* evaluates the alternatives introduced by the disjunction. That is of course what I have just proposed. (118-b) and (118-c) can be seen as instantiations of the minimality constraint on focus evaluation (64), which is repeated below in (122). On my analysis, the relevant structure for (118-c) would look as in (121) in the relevant respects, where the disjunctive phrase is trapped below the \sim triggered by negation and the alternatives it introduces are trapped there.

(121) [either [NOT [\sim C [_{DisjP} John eat rice or John eat beans]]]]

(122) *General Minimality Effect*

The evaluation of alternatives introduced by an XP cannot skip an intervening \sim operator.

*[Op₁ ... [\sim C [_{ϕ} ... XP₁ ...]]]

Schwarz (1999) has a different explanation for (118); he excludes (118-b) and (118-c) as a violation of the condition that *either* mark the left edge of the disjunction. More empirical work is needed to decide between these two options.

Other potential intervention effects should obtain whenever the alternatives introduced by a disjunctions are evaluated. Let's try this out on the other case of disjunction in which an alternative semantic analysis has been proposed: free choice 'or' as in (123) (many thanks to Ede Zimmermann, p.c., for this suggestion). The free choice reading available in (123) becomes unavailable with the addition of the intervener *nobody* in (124). An analysis of the effect in terms of the general minimality effect is sketched in (125). The modal *may* wants to evaluate the alternatives introduced by the disjunction, but those get trapped below the \sim triggered by *nobody*.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (123) You may show him the paper or the book.
 \implies you may show him the paper and you may show him the book.
- (124) You may show nobody the paper or the book.
 \nRightarrow you may show nobody the paper and you may show nobody the book.
- (125) a. [may [nobody_x [\sim [ϕ you show t_x the paper or the book]]]
b. $[[\phi]]^f = \{\text{you show } x \text{ the paper, you show } x \text{ the book}\}$

Again, more work would need to be done for a proper investigation of intervention effects in free choice contexts. Even so, the data observed in this subsection point towards an analysis of ‘or’ in which it is designated to introduce alternatives, and occurs in constructions in which alternatives are evaluated at a particular point in the semantics. In that it would be similar to the role assigned to certain indefinites by Kratzer and Shimoyama (2002). AltQs would then be just one instance of a much larger phenomenon, which seems to be a promising area for future research.

4.6 Some Further Issues

In this section, I point out some issues raised by my suggestions that cannot be pursued in depth. I come back to the syntax of AltQs, I relate my analysis of the effect of negation in AltQs to that of Han and Romero (2001, 2004a,b), and I point out some empirical predictions concerning intervention effects across languages.

4.6.1 The Size of the Disjuncts

A question that has already come up is how large exactly the disjuncts are. I do not have a theory of that, but what I have proposed has some consequences for the issue that future theories will need to take into account. Consider in this context once more an example in which the disjunctive phrase appears to be fronted past the intervener:

4.6. SOME FURTHER ISSUES

- (126) Hat den Jonas oder die Ida nur Maria eingeladen?
has the Jonas or the Ida only Maria invited
'Did only Maria invite Jonas or Ida?'

The obvious analysis, syntactically speaking, would be one in which the disjunctive phrase has moved across the intervener. This would associate the sentence with the structure in (127). That structure receives the desired interpretation and is correctly predicted to be grammatical.

- (127) [_{CP} Hat [_{IP} [_{NP} den Jonas oder die Ida]_i [_{IP} nur Maria t_i eingeladen]]]?

A problem is the assumption that there is no ellipsis at all in this structure, in view of the fact that Han and Romero (2004a,b) and Romero and Han (2003) use ellipsis to derive the characteristic AltQ focus pattern. It might be possible to save this aspect of their theory by assuming the following derivation in (128) for (126). The analysis becomes rather more complex.

- (128) a. Hat [_{IP} nur Maria den Jonas eingeladen] oder [_{IP} nur Maria die Ida eingeladen]
b. Hat [_{IP} den Jonas_i [_{IP} nur Maria t_i eingeladen]] oder [_{IP} die Ida_j [_{IP} nur Maria t_j eingeladen]]
(scrambling of the object in each IP disjunct)
c. Hat [_{IP} den Jonas_i [_{IP} ~~nur Maria t_i eingeladen~~]]] oder [_{IP} die Ida_j [_{IP} nur Maria t_j eingeladen]]
(deletion of the remnant IP in the first disjunct)

Thus German (and Hungarian) movement data rather suggest that DisjP is smaller than in Han and Romero's (2004a,b) analysis, but this is not conclusive. Conversely, one could reexamine the ellipsis analysis to see if it is strictly necessary to assume ellipsis in such AltQs. Perhaps a notion of contrast would suffice instead. After all, there are AltQs with no ellipsis, such as (129); see once more Han and Romero (2004b) for discussion.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

(129) Did the program execute or the computer crash?

Next, let's turn to the matter of ellipsis in the regular intervention effect in AltQs. I repeat one of the relevant examples below, together with the structures that permit me to derive the intervention effect.

- (130) a. ??Did only Mary introduce Sue to Bill or (to) Tom?
 b. $[_{CP} Q [_{\varphi} \text{only}_C [\sim C [_{IP} \text{Mary} [_{DisjP} [\text{introduced Sue to Bill}] \text{or} [\text{introduced Sue to Tom}]]]]]]]$
 c. $[_{CP} Q [_{\varphi} \text{only}_C [\sim C [_{IP} \text{Mary introduced Sue} [_{DisjP} [\text{to Bill}] \text{or} [\text{to Tom}]]]]]]]$

There is also a structure that would not work, although it would be compatible with Romero and Han's (2003) semantic analysis of AltQs – the one in (131), in which the intervener is contained in both disjuncts and elided in the second. This structure does not instantiate the intervention effect structure predicted to be uninterpretable by my theory, and if it were a possible structure for the sentence, we would expect it to be acceptable.

- (131) $[_{CP} Q [_{DisjP} [\text{only}_C [\sim C [_{IP} \text{Mary} [\text{introduce Sue to Bill}] \text{or} [\text{only}_C [\sim C [_{IP} \text{Mary} [\text{introduce Sue to Tom}]]]]]]]]]$

Note in this connection that we know from examples in which the potential intervener is overtly part of the disjuncts, that no intervention effect arises. This is illustrated below for English and German.

- (132) a. Hat [nur die erste Mannschaft gewonnen] oder [nur die
 has only the first team won or only the
 zweite __]?
 second
 'Did only the first team win or only the second?'

4.6. SOME FURTHER ISSUES

- b. Hat [nur der Peter gespielt] oder [auch der Fritz ___]?
has only the Peter played or also the Fritz
'Did only Peter play, or Fritz too?
- c. Did nobody sing or nobody dance?

This means that the intervener puts a roof on the size of the disjuncts, in that an analysis must be excluded in which the intervener is part of the disjuncts and has been elided (such as (131) above). We can follow Han and Romero's (2004a,b) argument that there is ellipsis in AltQs, but it must be constrained how large the ellipsis can be. Ideally, restrictions on ellipsis should predict the impossibility of (131) (for example Han and Romero's 2004a *Focus Deletion Constraint*: Focus-marked constituents at LF (or their phonological locus) cannot delete at Spell-Out). I refer the reader to Han and Romero for a much more extensive discussion of the syntax of AltQs. Whatever the theoretical solution, intervention effects in AltQs impose the requirement on the syntactic analysis of AltQs that the disjunctions cannot be too large.

A related matter is an observation by Han and Romero (2001, 2004a) that preposed negation blocks an AltQ interpretation, but non-preposed negation does not. They assume a structure for the non-preposed case as in (133-c).

- (133) a. Didn't John drink tea or coffee? [Y/NQ only]
 b. Did John not drink tea or coffee? [Y/NQ, AltQ]
 c. [_{CP} did [wh [_{DisjP} [John not drink tea] or [~~John not drink~~ coffee]]]]

This proposal is compatible with my theory of the effect of preposed negation. The structure in (133-c) is not expected to lead to an intervention effect. I can replicate Han and Romero's contrast in German in the following way:

- (134) a. Hat nicht Hans Kaffee oder Tee getrunken?
 has not Hans coffee or tea drunk
 'Didn't Hans drink coffee or tea?' [Y/NQ only]

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- b. Hat Hans keinen Kaffee oder keinen Tee getrunken?
has Hans no coffee or no tea drunk
'Did Hans not drink coffee or tea?' [Y/NQ, AltQ]
- c. Hat nicht Bayern gewonnen oder Pfrondorf verloren?
has not Bayern won or Pfrondorf lost
'Didn't Bayern win or Pfrondorf lose?' [Y/NQ only]
- d. Hat Fritz nicht teilgenommen oder nicht bestanden?
has Fritz not participate or not passed
'Did Fritz not participate or (not) pass?' [Y/NQ, AltQ]

Note that the well-formed cases have negation inside the disjuncts. A question arises in connection with the examples in (118-b) and (118-c), however. Let us consider (118-c), here repeated as (135).

(135) ??Either John didn't eat rice or beans.

I have argued above that the structure in (136-b) is excluded (as an intervention effect, or as a violation of the left edge restriction on *either*). Schwarz (1999) argues that the structure in (136-a) is also excluded because negation cannot be elided in disjunctions. Hence the ungrammaticality of (135) accounted for.

- (136) a. ??Either [John didn't eat rice] or [~~John didn't eat~~ beans].
b. ??Either John didn't [eat rice] or [eat beans].

However, Han and Romero's (2001, 2004a) explanation for the grammaticality of (133-b) relied on the possibility of eliding negation (see the structure in (133-c)). It is not clear to me how this contrast between (135) and (133-b) should be explained. This is part of the larger question of what ellipsis processes are at work in AltQs (vs. *either-or*).

Han and Romero (2001, 2004a) give an explanation for the preposed (vs. non-preposed) negation data in AltQs that is based on their *Focus Deletion Constraint*. Preposed negation is focused, non-preposed negation is not. But note that the

4.6. SOME FURTHER ISSUES

negation in (135) is not preposed. So under Han and Romero's analysis, we would expect that the negation in (118-c) can be deleted. They extend their focus-based explanation to other data in which it looks like a focus intervenes, for instance (137) below.

(137) *Did LOLA buy flowers for JOANNA or PAQUITA?

(Han and Romero 2001)

I would like to point out that the explanation does not extend to cases of intervention which involve focus sensitive (not focused!) interveners. Even if, for example, the preposed negation fact can be made to follow from focus, it would also be excluded by the mechanism that generally derives intervention effects, which is needed anyway. Thus Han and Romero's (2001, 2004a) predictions overlap with mine in the case of preposed negation. For an analysis of the intervention effect created by just a focused element (without an element like 'only'), see chapter 3, section 3.3.1 and Kim (2006). Note also, though, that I am completely sympathetic to the suggestion that focus based constraints are operative in AltQs.

4.6.2 Intervention Effects in AltQs and *Wh*-Questions Cross-linguistically

A final empirical point I want to make concerns crosslinguistic predictions about intervention effects in AltQs. I expect that in a given language, the intervention effect in AltQs should show parallels to the intervention effect in *wh*-questions. The available data lead to a few specific predictions in this regard. For one thing, Han and Romero's (2001) crosslinguistic data on preposed negation lead me to expect that those languages should all also show *wh*-intervention. Conversely, *wh*-intervention languages introduced in chapters 2 and 3 of this thesis should also show AltQ intervention (for same interveners, and (where testable) under same structural conditions). I leave this as a project for future research.

CHAPTER 4. INTERVENTION EFFECTS IN ALTERNATIVE QUESTIONS

- (138) Spanish (Han and Romero 2001):
- a. ¿Juan no bebió café o té?
Juan neg drank coffee or tea
‘Did Juan not drink coffee or tea?’ [Y/NQ, AltQ]
 - b. ¿No bebió Juan café o té?
Neg drank Juan coffee or tea
‘Didn’t Juan drink coffee or tea?’ [Y/NQ only]
- (139) Turkish (Beck 1996, Beck and Kim 1997):
- a. *Kimse kimi gör-me-di?
anyone who-ACC see-NEG-PAST
 - b. Kimi kimse gör-me-di?
who-ACC anyone see-NEG-PAST
‘Whom did nobody see?’

4.7 Summary and Conclusions

I have collected a set of crosslinguistic AltQ data which are, *prima facie* unexpected, not acceptable. Their common characteristic is that a focusing or quantificational element occurs between the disjunctive phrase and the interrogative complementizer. I have subsumed these data under the general intervention effect exhibited by questions. For this purpose I have adopted Stechow’s (1991) analysis of AltQs and Beck’s (2006) analysis of intervention effects. Intervention effects in AltQs provide support for aspects of both of these theories. I argued for an *in-situ* analysis of the disjunctive phrase, and for the role of focus alternatives in the explanation of the intervention effect. The explanation of the intervention effect proposed in this chapter has interesting consequences for the understanding of the semantic role of ‘or’ in natural language, as an alternative introducing element.

Chapter 5

Intervention Effects in NPI Licensing

5.1 Introduction

Since the work of Linebarger (1987), it has been known that the licensing of English negative polarity items (NPIs) is subject to an “intervention” or “minimality” effect. This is captured in Linebarger’s *Immediate Scope Constraint* (ISC), which states that no quantificational expression may intervene between the NPI and the licensing negation; the ISC is presented in detail in section 5.2. The ISC is rather similar in conception to Beck’s (1996) *Minimal Quantified Structure Constraint* (MQSC), in that both constraints postulate that no LF dependency may cross a quantificational barrier. This would naturally lead to the question of whether it is possible to give a unified analysis of these two types of intervention effects.

I proposed in Kim (2002b) that intervention effects in *wh*-licensing and NPI-licensing are indeed closely related. Furthermore I argued that both the MQSC and the ISC are too strong in one sense: not all quantificational expressions induce an intervention effect in both constructions. Based on crosslinguistic data, I proposed that the core set of interveners in both cases consists of focus expressions (and not

quantifiers in general). I suggested that as both the Q operator (licensing *wh*) and the NEG operator (licensing NPIs) are focus-sensitive operators themselves, it is natural that an intervening focus phrase would induce an intervention effect:

(1) *Focus Intervention Effect*

In a focus-sensitive licensing construction, no independent focus phrase may intervene between the licensor Op and the licensee XP.

*[Op₁ ... [FocP [... XP₁ ...]]]

In the previous chapters, I have discussed *wh*-licensing and AltQ licensing in detail. The licensing of an NPI now provides a third construction which is sensitive to Focus Intervention Effect. In slightly less detail, this chapter presents the data motivating the claims made above about NPI licensing and the constraints on it, and presents the outlines of a syntactic analysis. I will show that the apparent effects of the MQSC can sometimes be avoided at LF, while Linebarger's ISC is a very robust constraint.

5.2 NPIs and NPI Licensing

Negative polarity items (NPIs) are expressions which need to be in the scope of a downward entailing operator such as negation, according to the influential analysis of Ladusaw (1979). The set of NPIs includes idiomatic expressions such as *a red cent*, as in (2), and DPs containing *any* such as *any books*, as in (3). In the ungrammatical examples (2-a) and (3-a), the NPIs appear without negation, while in the grammatical examples (2-b) and (3-b), the NPIs appear in the scope of negation (NPIs are in italics).

- (2) a. *John earned *a red cent*.
 b. John didn't earn *a red cent*.
- (3) a. *John sold *any books*.

5.2. NPIS AND NPI LICENSING

- b. John didn't sell *any books*.

Linebarger (1987) proposes that the core licensing condition on the relation between a negative polarity item and the licensing negation should be the more restricted relation “immediate scope” rather than being merely in the “scope” of the licenser (as assumed by Ladusaw 1979). In effect, Linebarger motivates a minimality requirement on polarity licensing which ensures that no other logical operator can intervene between an NPI and a licensing negation at LF. NPIs are subject to a constraint which requires them to be in the immediate scope of negation, the Immediate Scope Constraint, defined as follows:

- (4) *Immediate Scope Constraint* (ISC; Linebarger 1987: 338)

A negative polarity item is acceptable in a sentence S if in the LF of S the subformula representing the NPI is in the immediate scope of negation operator. An operator is in the immediate scope of NOT only if (i) it occurs in a proposition that is the entire scope of NOT, and (ii) within this proposition there are no logical elements intervening between it and NOT.

‘Logical elements’ correspond roughly to propositional operators (e.g., quantified NPs and quantificational adverbs as well as the causal predicate lexically expressed by *because*).

This requirement can be illustrated by the following examples:

- (5) Mary didn't wear *any earrings* at every party.
- a. There are no earrings that Mary wore at every party.
(NOT > *any* > *every*)
 - b. At every party Mary wore no earrings.
(*every* > NOT > *any*)
 - c. *It wasn't at every party that Mary wore any earrings.
(NOT > *every* > *any*)

CHAPTER 5. INTERVENTION EFFECTS IN NPI LICENSING

While the relative scope of *every* and *not* + NPI is variable in (5), Reading (5-c) where the scope of negation and the NPI is split is unavailable, that is, there is no reading where a scopal element scopes in between negation and the NPI.

The deviance of examples like (6-b) taken from Honcoop (1998) can also be accounted for by Linebarger's Immediate Scope Constraint.¹

- (6) a. Nobody gave John *a red cent/anything*.
b. *Nobody gave **most beggars/every beggar** *a red cent/anything*.
(Honcoop 1998: 116)

On the assumption that an NPI must be in the *immediate* scope of its licensor, (6-b) fails because *every beggar*, a scope-bearing element, intervenes between the negation and the NPI *a red cent/anything*.

The effect is strongly reminiscent of the *wh*-intervention effect we saw in chapter 2. Although Linebarger's definition (4) requires a clearer characterization of harmless and harmful interveners,² it seems that we have another case of an inter-

¹Double Object constructions typically exhibit frozen scope effects, as noted by Barss & Lasnik (1986) and Larson (1988); that is, they tend to lack inverse scope readings, where the direct object takes scope over the indirect object.

- (i) a. I gave a child each doll. (*a* > *each*, **each* > *a*)
b. I gave a doll to each child. (*a* > *each*, *each* > *a*)

So for the examples in (6), the reading where the indirect object universal quantifier scopes over the direct object NPI should be the only possible reading allowed by the grammar, for independent reasons. This is why (6-b) is ungrammatical. The scope of an NPI in direct object position is fixed by its surface position; thus it cannot be in the immediate scope of the licensing negative operator.

²See also the discussion in Chierchia (2004). So-called strong determiners (*every*, *most*, the definite article) are harmful interveners, but indefinite *some* and bare plurals do not intervene. The conjunction *and* intervenes, but the disjunction *or* does not. Chierchia points out that it is not clear that the interveners form a natural class in a way that would justify them carrying the same feature.

5.2. NPIS AND NPI LICENSING

vention effect, very similar to the one seen with *wh*-questions.³

Based on a crosslinguistic study of NPI intervention and *wh*-intervention in the same languages, I made the following observation in Kim (2002b). Intervention effects in NPI licensing can be found in a variety of languages just like intervention effects in *wh*-questions, but the core set of interveners, consists of focus phrases (and not quantifiers in general), and is crosslinguistically stable. Furthermore I observed that while the set of problematic interveners varies from one language to the other, the same expressions that are problematic for *wh*-intervention are also problematic for NPI intervention in a given language. This clearly suggests a close relationship between the two phenomena.

In the remainder of this section, I illustrate this claim with examples from German and Korean, originally presented in Kim (2002b).

In German, *einen Finger rühren* ‘lift a finger’ is a negative polarity predicate. In (7) the NPI is in the scope of the licensing negative quantifier *niemand* ‘nobody’ and the sentence is grammatical.

- (7) weil niemand für Otto *einen Finger gerührt* hat
because nobody for Otto a finger lifted has
‘because nobody lifted a finger for Otto’

However, when a focus expression like *nur für Otto* ‘only for Otto’ intervenes between the licensing negative quantifier and the NPI, the example is ungrammatical:

- (8) a. ?*weil niemand **nur für Otto** *einen Finger gerührt* hat
because nobody only for Otto a finger lifted has
b. weil **nur für Otto**_i niemand t_i *einen Finger gerührt* hat
because only for Otto nobody a finger lifted has

³See Beck (1996), Honcoop (1998), and Guerzoni (2006) for the idea of some possible connection between these two domains.

CHAPTER 5. INTERVENTION EFFECTS IN NPI LICENSING

Yet, as we saw above with *wh*-licensing, when the focus phrase is moved away from the intervening position, the configuration once again becomes grammatical, as illustrated in (8-b). The PP *nur für Otto* is scrambled across the negative quantifier in the subject position, taking scope over the negative quantifier *niemand* ‘nobody’. The surface c-command relations are (*only* > *nobody* > *lift a finger*). So (8-b) can be paraphrased as ‘because Otto is the only person who nobody helped’. In this configuration, the NPI is in the immediate scope of the licensing negative quantifier, satisfying the ISC, and hence (8-b) is grammatical while (8-a) is not.

The contrast in (9) shows that an intervening universal quantifier *jeden* ‘everyone’ blocks the licensing of the NPI *je* ‘ever’:

- (9) a. weil niemand den Hans *je* eingeladen hat
 because nobody the Hans ever invited has
 ‘because nobody ever invited Hans’
- b. ?*weil niemand **jeden** *je* eingeladen hat
 because nobody everyone ever invited has
 ‘because nobody ever invited everybody’

The ungrammaticality of (9-b) also follows on Linebarger’s account. Due to the intervening quantifier, the NPI *je* ‘ever’ is not in the immediate scope of the licensing negation, violating the ISC.

I now present some examples from Korean. Interestingly, not all quantifiers induce an intervention effect for NPI-licensing, similar to the cases of *wh*-intervention. For example, quantificational adverbs like *cacwu* ‘often’ or *hangsang* ‘always’ do not seem to induce an intervention effect for NPI-licensing. Focus expressions are once again the harmful interveners. NPIs in Korean need to be licensed by a clause-mate negation (cf. Choe 1988) and there is no subject/object asymmetry observed in many languages (e.g., in English **Anyone didn’t come*).⁴

⁴NPIs in Korean can only be licensed by negation, and not by any other downward-entailing operator. See Sells (2006) for a recent analysis of NPI licensing and interpretation in Korean.

5.2. NPIS AND NPI LICENSING

- (10) *Amwuto* i chayk-ul an ilk-ess-ta
anyone this book-ACC NEG read-PAST-DEC
'No one read this book.'

Consider now (11), with a focus expression intervening the NPI and negation. The example with intervention is ungrammatical (examples from Sells 2001; see also A.-R. Kim 2002).

- (11) a. ?**Amwuto* i **chayk-man** an ilk-ess-ta
anyone this book-only NEG read-PAST-DEC
'No one read only this book.'
- b. **I** **chayk-man** *amwuto* t an ilk-ess-ta
this book-only anyone NEG read-PAST-DEC
'Only this book is what no one read.' (*only* > *no one*)

This contrast is quite parallel to the intervention effects observed in *wh*-questions in Korean, discussed in chapter 2, section 2.3.

It is also interesting to observe that some quantificational expressions do not block the NPI-licensing even though they intervene between the NPI and the licensing negation, the same class of quantifiers which do not induce any intervention effects for *wh*-in-situ. So, for example, a quantificational adverb such as *cacwu* 'often' may occur between the NPI and negation.

- (12) *Amwuto* kukos-ey **cacwu** an ka-ass-ta
anyone that place-to often NEG go-PAST-DEC
'No one went there often.'

Finally, it is interesting to note that in the case of *wh*-in-situ with an intervening NPI, there will be actually a "double" violation due to the focus intervention effect. Both the NPI and the *wh* are focus elements, and they each block the licensing of the other. This might explain why intervention effects are stronger with NPIs than with any other interveners in many languages.

- (13) *Amwuto nwukwu-lul chotayha-ci anh-ass-ni?
 anyone who-ACC invite-COMP not do-PAST-Q
 ‘Who did no one invite?’

5.3 Focus and NPI-Licensing

Why does a focus element show the same intervention effect for NPI-licensing as for *wh*-licensing? Is the focus interpretation involved in NPI interpretation similar to that in *wh*-interpretation? The answers to these questions are not straightforwardly given, as I will show in this section but, my overall claim that focus is what matters for intervention is supported.

According to recent analyses of NPIs (e.g., Lee & Horn 1994, Krifka 1995, Lahiri 1998), they are in fact to be analyzed as focus phrases, supported by the fact that NPIs consist of an indefinite NP and an overt scalar focus particle meaning ‘even, also’ in many languages.⁵ 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. A number of polarity items are necessarily associated with focus, and polarity items denote scalar endpoints, an observation originally due to Fauconnier (1975). So it is quite well-motivated to consider NPI licensing as a case of focus-sensitive quantification.⁶

Based on this, I proposed in Kim (2002b) the following generalization, to provide the core account of intervention effects for NPI-licensing:

⁵Cf. Haspelmath (1997) on the typology of NPIs. The ‘indefinite/*wh* + *also/even*’ combination is a very common form of NPI cross-linguistically. I mentioned earlier in chapter 2 that the negative polarity items in Chinese, Japanese and Malayalam are also morphologically made up of a *wh*-indefinite pronoun and a focus particle meaning ‘also/even’.

⁶There is also some phonological evidence for the analysis of NPIs as focus elements: just like *wh*-elements, NPIs also induce Focus Intonation (see Ishihara 2005 for Japanese, Sohn 1999 for (North Kyungsang) Korean).

5.3. FOCUS AND NPI-LICENSING

(14) * [NEG [... FocP ... [... NPI ...]]]

A focus phrase may not intervene between an NPI and negation.

While this generalization holds, it turns out that it cannot be given a syntactic account exactly parallel to that for *wh*-in-situ, as I proposed in chapter 3. If we follow that account it would mean that that NPIs have uninterpretable features [*uNeg, uF*] and need to be in an Agree relation with a NEG operator, which has interpretable features [*iNeg, iF*]. An intervening focus operator Foc would block that relation, as in the case of *wh*-licensing:⁷

(15) * [NEG_[*iNeg, iF*] [... Foc_[*iF*] ... [... NPI_[*uNeg, uF*] ...]]]

The example in (16) is a multiple NPI construction. A single negation operator NEG with the interpretable features [*iNeg, iFoc*] can license multiple occurrences of NPIs with the uninterpretable [*uNeg, uF*] features via Multiple agreement (which gives rise to a single semantic negation). This is parallel to the multiple *wh*-constructions discussed in chapter 3 (multiple *wh*-phrases licensed by a single Q operator).⁸

(16) John didn't give *anyone anything*.

(17) NEG_[*iNeg, iF*] ... NPI_[*uNeg, uF*] ... NPI_[*uNeg, uF*]

(16) will be interpreted as in (18):

(18) $\neg \exists x \exists y [\text{person}(x) \ \& \ \text{thing}(y) \ \& \ \text{give}(\text{john}, x, y)]$

⁷Chierchia (2004, 2006) also assumes an interpretable negative feature *iNeg* on negation and an uninterpretable negative feature *uNeg* on NPIs. See also Zeijlstra (2004) and von Stechow (2005).

⁸There is in fact a stronger parallel between NPI constructions and multiple *wh*-constructions as analyzed in chapter 3: Sells (2006) proposes that multiple NPIs create a polyadic quantifier by a process similar to *wh*-absorption.

CHAPTER 5. INTERVENTION EFFECTS IN NPI LICENSING

This line of reasoning, however, runs into trouble with Korean. Consider the Korean example (11-a), repeated here in (19):

- (19) ?**Amwuto i chayk-man an ilk-ess-ta*
 anyone this book-only NEG read-PAST-DEC
 ‘No one read only this book.’

This can be explained as a case of the focus intervention effect. Based on the scope interaction between negation and NPIs, Sells & Kim (2006) show that in Korean, negation can never scope over an NPI, and claim that an NPI in Korean must have negation in its immediate scope. This means that a Korean NPI is interpreted as a kind of universal (see also Sells 2006). However, the Immediate Scope Constraint holds for the licensing of Korean NPIs as well, in the sense that there can be no intervening (quantifier or) focus phrase between the NPI and negation.⁹

The important point is that in Korean, the NPI is structurally higher than negation. If we follow the same structural analysis as given above, the ungrammaticality of (11-a) should be due to the intervening focus phrase, which blocks the Agree relation between the NPI and negation, as illustrated in (20):

- (20) *[NPI_[uNeg,uF] [... Foc_[iF] ... [... NEG_[iNeg,iF] ...]]]

However, note that the configuration in (20) is exactly the mirror image of (15) for English, with the goal (NPI) is c-commanding the probe (NEG). According to the definition of Agree (Chomsky 2000, 2004), the probe always has to c-command the goal to check the features of the latter. Hence it seems to be difficult to use exactly the same analysis as in chapter 3, for the intervention effect. However, there are other ways to explain the intervening effect of a Focus phrase in Korean, as I discuss in the following section.

⁹The ISC is consistent with an NPI in the immediate scope of negation (English) or negation in the immediate scope of an NPI (Korean). See Sells & Kim (2006).

5.4. THE INTERVENTION EFFECT FOR NPIS

5.4 The Intervention Effect for NPIs

Due to the reversed relationship between an NPI and negation in Korean, compared to English, the specific Agree-based mechanism proposed in chapter 3 does not apply quite straightforwardly; similarly, the idea that the alternative-introducing element must be higher in the compositional structure than a Focus phrase, the semantic account of intervention, does not apply in these cases. Nevertheless, the generalization that Focus intervenes for NPI licensing is robust. The reason is the interaction of Focus phrases and the ISC.

The ISC does not allow a quantifier to intervene at LF between an NPI and negation, which scopes immediately under the NPI in Korean. If the potential intervener is a regular quantifier, it turns out in Korean that it may be able to scope lower than the NPI-Neg complex, allowing the ISC to be maintained with the LF scope $\text{NPI} > \text{Neg} > \text{Quantifier}$.

- (21) a. *Amwuto mwuncey-lul ta mos phwul-ess-ta*
anyone problem-ACC all NEG solve-PAST-DEC
'No one could solve all of the problems.' (NPI > Neg > *all*)
- b. *Amwuto kukos-ey cacwu an ka-ass-ta*
anyone that place-to often NEG go-PAST-DEC
'No one went there often.' (NPI > Neg > *often*)

However, negation never scopes over Focus (see Sohn 1995, Sells 2001); see (22):

- (22) a. *Mira-nun i chayk-man an ilk-ess-ta.*
Mira-TOP this book-only NEG read-PAST-DEC
'Only this book, Mira didn't read.'
(*only* > Neg, *Neg > *only*)
- b. *Mira-nun i chayk-to an ilk-ess-ta.*
Mira-TOP this book-ALSO NEG read-PAST-DEC
'This book, too, Mira didn't read.'
(*also* > Neg, *Neg > *also*)

Due to this fact about Focus and negation, it will be the case that a surface c-command configuration $\text{NPI} > \text{Focus} > \text{Neg}$ will necessarily be interpreted with the same scope configuration at LF, and this is a violation of the ISC. Unlike non-focus quantifiers, Focus cannot scope lower to avoid the effects of the ISC. Although I am not providing a formal account of the ISC here, the correct account of the Focus intervention effect for NPI licensing in Korean seems to be the fact that the presence of Focus necessarily creates an ISC violation.

5.5 Summary

I have not gone into the details of NPI licensing, but I have observed that is naturally considered as one type of focus construction. The fact that focus blocks NPI licensing shows that NPIs are subject to the General Minimality Effect for focus evaluation, here repeated in (23):

(23) *General Minimality Effect*

The evaluation by Op of alternatives introduced by an XP cannot skip an intervening \sim operator.

*[Op₁ ... [\sim C [_{ϕ} ... XP₁ ...]]]

Strictly speaking, NPI licensing in Korean does not quite fit into the General Minimality Effect in (23). This is because of the reversed c-command relation between NPI and negation, i.e., the fact that the NPI should have its licensing negation in its immediate scope. As stated, the General Minimality Effect rules out only cases in which an intervening focus operator c-commands the alternative introducing element (i.e., the NPI in this case).

It should also be noted that even though Beck's (1996) MQSC and Linebarger's (1987) ISC appear to be very similar to each other at first sight, there seems to be a fundamental difference between the two constraints. The MQSC is a constraint on LF movement (i.e., derivation from surface structure to LF) whereas

5.5. SUMMARY

the ISC is a constraint on the LF representation (i.e., the output of the operation deriving LF). I will illustrate this briefly with the following Korean examples.

Both (24-a) and (24-b) are grammatical with the interpretation given:

- (24) a. Mira-nun **cacwu** *nwukwu*-lul phati-ey teyliko ka-ss-ni?
 Mira-TOP often who-ACC party-to take-PAST-Q
 ‘Who did Mira often take to the party’
- b. *Amwuto* kukos-ey **cacwu** an ka-ss-ta
 anyone that place-to often NEG go-PAST-DEC
 ‘No one went there often.’
 (*anyone* > Neg > *often*, **anyone* > *often* > Neg)

(25) is the LF structure of (24-a). Note that the *wh*-phrase is moved across an intervening quantifier, which should be ruled out by the MQSC (which prohibits LF movement across a quantifier).

- (25) [_{CP} *nwukwu*-lul_i [_{TP} Mira-nun **cacwu** t_i^{LF} phati-ey teyliko ka-ss-ni]]

This led Beck & Kim (1997) to the assumption that there is some crosslinguistic variation regarding the harmful interveners. Harmful interveners for *wh*-questions in Korean are only a subset of the harmful interveners in German. Of course, this has the consequence that the MQSC can sometimes be violated.

Now consider (24-b), which can only mean ‘No one went there often’. In this interpretation, negation takes scope over the intervening quantifier ‘often’, landing in the immediate scope of the NPI. In fact, this is the only possible scope relation for (24-b), because it satisfies the ISC. The scope relation ‘*anyone* > *often* > Neg’ is not possible due to the intervening quantifier, a violation of the ISC, and (24-b) does not have that interpretation. This shows that Linebarger’s ISC is a very robust constraint (unlike the MQSC).

It is clear that more careful work needs to be done on the intervention effect for NPI licensing and its relation to *wh*-intervention effect. I will leave this for further research.

CHAPTER 5. INTERVENTION EFFECTS IN NPI LICENSING

Chapter 6

Conclusion

6.1 Summary of the Dissertation

In this dissertation I have investigated the phenomenon of intervention effects, found in three different domains: *wh*-questions, alternative questions (AltQs) and Negative Polarity Item (NPI) licensing.

In chapter 2, I introduced the phenomenon of intervention effects in *wh*-questions observed in various languages. I first discussed the analysis proposed by Beck (1996) and Beck & Kim (1997) in terms of the *Minimal Quantified Structure Constraint* (MQSC). The MQSC is based on the generalization that quantifiers block LF movement of *wh*-in-situ. Despite its apparent universal character, however, the intervention effect shows some crosslinguistic variation. This is unexpected under the MQSC analysis, for the property that is held responsible for making an expression induce an intervention effect is a semantic property, namely that of being a quantifier, which is not something we would expect to be subject to crosslinguistic variation.

Considering the crosslinguistic variation regarding harmful interveners for *wh*-licensing, I then proposed in chapter 3 that the core set of interveners, which is crosslinguistically stable, consists of focus phrases, and not quantifiers in general.

The condition is given in (1):

- (1) 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 that *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 operator precisely blocks that association.

I provided evidence that focused elements and *wh*-elements have similarities in terms of their overt syntax, semantics and phonology, in a number of languages. Considering the similarities between two kinds of element, it is not surprising that focus interferes with *wh*.

On the syntactic side I assume that the Agree relation between a *wh*-phrase and an interrogative C is disturbed by an intervening Foc operator, which creates the intervention effect. I proposed (revising the proposal of Chomsky 2000) that the interrogative C has both an interpretable Q feature (*i*Q) and an interpretable F(ocus) feature (*i*F), and that a *wh*-phrase has uninterpretable Q and F features (*u*Q, *u*F). The *wh*-phrase has to be licensed by the interrogative C by the operation Agree, but an intervening Focus operator with the interpretable F feature blocks this Agree relation between the two.

On the semantic side, I adopted the recent analysis by Beck (2006), which is based on Kim's (2002b) syntactic generalization in (1). Beck (2006) proposes that *wh*-phrases and focus phrases both introduce alternatives into the computation. However, unlike focus, *wh*-phrases do not have any ordinary semantic value. It is the function of the question operator Q to lift the focus semantic value of the *wh*-phrase to the type necessary for the ordinary semantics. Beck argues that an intervention effect occurs whenever a focus-sensitive operator other than the question operator tries to evaluate a constituent containing a *wh*-phrase – the resulting

6.1. SUMMARY OF THE DISSERTATION

LF fails to have an ordinary semantic interpretation.

I further argued that the *wh*-intervention effect is actually an instance of the more general intervention effect, as given in (2):

(2) *Focus Intervention Effect*

In a focus-sensitive licensing construction, no independent focus phrase may intervene between the licenser Op and the licensee XP.

*[Op₁ ... [FocP [... XP₁ ...]]]

The domain of ‘focus-sensitive licensing’ includes not only *wh*-licensing, but also AltQ-licensing, and NPI-licensing. I assumed that a *wh*-element in *wh*-questions, the disjunctive phrase in alternative questions, and NPIs in negative sentences are all dependent focus elements which have to be associated with a licensing operator in order to be properly interpreted (a Q operator for the first two cases, and NEG for NPIs). I proposed that the Q(uestion) 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 chapter 4, I discussed the intervention effects in alternative questions. I provided evidence that the intervention effects in *wh*-questions and in alternative questions should receive a parallel analysis: the class of problematic interveners is the same for both *wh*-questions and alternative questions in a given language. I also provided evidence that the *wh*-phrase in *wh*-questions and the disjunctive phrase in alternative questions share some similarities in terms of their syntax, semantics and phonology. In alternative questions, the alternatives in the disjunctive phrase must be contrastively focused. Semantically, the disjunctive phrase introduces a set of alternatives, just like *wh*-phrase. And in languages like Hungarian, both the *wh*-phrase in *wh*-questions and the disjunctive phrase (in AltQ) undergo syntactic focus movement to [Spec, FocP].

Finally, in chapter 5, I introduced a third construction which is sensitive to the Focus Intervention Effect: the licensing of negative polarity items (NPIs). I

proposed that focus is a very consistent intervener also for the licensing of NPis across languages. I proposed that an NPI introduces alternatives just like a *wh*-element and needs to be associated with the licensing NEG operator in order to be properly interpreted. An intervening focus operator blocks the Agree relation between the two and the NPI cannot be assigned a proper interpretation.

Semantically, the Focus Intervention Effect in (2) can be paraphrased as the General Minimality Effect in (3):

- (3) *General Minimality Effect* (cf. Beck 2006, Beck & Kim 2006)

The evaluation of alternatives introduced by an XP cannot skip an intervening \sim operator.

*[Op₁ ... [\sim C [_{ϕ} ... XP₁ ...]]]

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 three constructions which are both sensitive to focus intervention, i.e., *wh*-questions, alternative questions and NPI licensing. I showed that in these 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.

6.2 Open Issues

Even though focus seems to be a stable intervener across languages, it is still not clear exactly why the set of harmful intervener varies from language to language. In particular, if intervention effects are purely semantic phenomena, we would not expect to find such variation. Beck's (2006) answer to this question is that problematic interveners in a given language are the expressions that are accompanied by a focus-evaluating \sim operator. However, as I have shown in chapter 3, it is not the case that all such expressions are interveners. One instance is the quantifica-

6.2. OPEN ISSUES

tional adverb *hangsang* ‘always’ in Korean, which is not a harmful intervener but which does give rise to a focus-affected reading. It remains for future research to clarify further the exact nature of the interveners and to provide a deeper explanation of the crosslinguistic variation.

Another issue which I did not discuss in detail above is the difference between the so-called D-linked (or specific) *wh*-phrases and non-D-linked (or non-specific) ones, with reference to the intervention effect. Kuno & Kim (2004), among others, observe that in Korean, the (non-)specificity of *wh*-in-situ influences the relative acceptability of some examples. They show that the intervention effects may exhibit varying degrees of strength depending on the extent to which the *wh*-expression is contextually restricted or specific, and propose a functional analysis of the intervention effect. Miyagawa & Endo (2004) make a similar observation that a D(iscourse)-linked *wh*-in-situ cancels the intervention effect in Japanese. This is certainly an important aspect which needs to be considered in formalizing the intervention effects.

It is interesting to note, though, that German does not show any improvement in acceptability with D-linked (or specific) *wh*-in-situ expressions:

- (4) *Welche Kinder haben **niemandem** welche Bilder zeigen wollen?
which children have nobody which pictures show wanted
‘Which children wanted to show nobody which pictures?’

(4) does not allow a pair-list reading due to the intervening negative quantifier. To the extent that it is acceptable at all, it is only a request for a single-pair answer (cf. Pesetsky 2000: 71).

All the examples discussed in Kuno and Kim (2004) involve a single *wh*-phrase. It would be interesting to see whether questions with multiple D-linked *wh*-phrases allow a pair-list reading even with a harmful intervener in Korean (and Japanese).

CHAPTER 6. CONCLUSION

Finally, there has also been a pragmatic approach to the intervention effect, by Tomioka (2007). He proposes that intervention effects in Japanese and Korean are not due to LF syntax but to pragmatics, arguing that the ungrammatical examples violate the requirements on information structure within a sentence. I have not commented in detail on this proposal above (like Kuno & Kim's, it does not seem to apply to languages like German). Miyagawa & Endo (2004) offer some critical comments on Tomioka's arguments, and give an alternative analysis of the cases Tomioka observes.

The precise nature of interpretation of multiple *wh*-in-situ examples still needs more study, and as the brief discussion above suggests, a more detailed account of the intervention effects is necessary so that we can see how much of the effects should be attributed to syntax, to semantics, or to pragmatics.

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