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Wh-in-situ

SynCom Case #XXX

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0. Introduction

In most of the languages of Indo-European origin constituent questions are formed by fronting an interrogative pronoun or a phrase which is headed by an interrogative determiner. Following common usage, we will refer to these as "wh-pronouns" and "wh-phrases", and to the transformational process of constituent question formation as "wh-movement". In terms of more recent syntactic theorizing, a wh-element is assumed to land in a designated position which is provided by the functional vocabulary of the language. Clause structure involves at least the lexical layer of the V-system, on top of this the functional layer of the I(nflectional) system, and on top of that the functional layer of the C(omplementizer) system. Wh-phrases are moved from the domain of the V-system, in which they function as arguments or adjuncts of any sort, to the specifier of CP (SpecCP). This movement is shown in (1).

(1) $[_{CP}$ wh-phrase$_1$ $[_{C'}$ C $[_{IP}$ $[_{VP}$ ... t_1 ...]]]]

The Wh-phrase leaves a trace (t). The chain which is formed by wh-movement has roughly the following characteristics: If the wh-phrase corresponds to an argument, the trace is in an A(rgument) position, while the Wh-phrase itself is in a non-A, or A'-position. The Wh-phrase is semantically an operator which binds the trace, which in turn is interpreted like a logical variable. In natural language, the operator is usually a phrase which consists of the operator proper, the pure wh-part, and a restrictive part. Thus, *who* is composed of the features [wh] and [person], *what* is composed of [wh] and [thing], *which student* is composed of [wh] and [student], etc. Once the operator is in SpecCP, it has scope over the proposition expressed by

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IP. The proposition contains a trace, and is thus an "open" proposition. As such it does not express a truth value but rather a property. The sentence containing a trace corresponds to a lambda-abstracted formula, λx [... x ...]. If a referring expression is inserted via λ-conversion, a truth-value is yielded. According to standard semantic assumptions (cf. Karttunen, 1977), a constituent question is taken to be the set of true propositions expressed by [... x ...], where the variable x is restricted in the familiar ways. Strictly speaking, the feature [wh] is not itself an operator that could bind a variable. According to standard assumptions, the wh-phrase also involves an existential operator. This operator is actually responsible for variable binding. By involving existential quantification, the question makes a commitment to the existence of an entity which corresponds to the phrase which is missing from the clause. As Chomsky (1977) has shown, Wh-movement is only one manifestation of a larger class of movements which comprises topicalization, relativization, clefting, comparative formation etc. Here we will confine ourselves to question formation by wh-movement and its immediate correspondents. These immediate correspondents are the actual topic of this article. The point is that not all wh-phrases undergo movement, while at the same time their interpretation seems to remain the same as if the phrase had been moved. In the wh-moving languages this is shown in multiple questions. One wh-phrase moves to SpecCP, while all the others remain "in-situ", i.e. where we assume the corresponding arguments would have been inserted as is seen in the parallelism between (2a) and (2b):

(2) a. Who bought **what** for **whom**?
b. Who bought **flowers** for **his wife**

The question in (2a) is interpreted as if it was composed of three questions: „Who bought something for someone?“, „What was bought by someone for someone?“, and „For whom was something bought by someone?“ The wh-phrases in-situ seem to also be operators which at some level of representation bind variables like the moved operator. The question is how syntactic theory can meet this semantic intuition.

Next to this phenomenon there are languages in which constituent questions are never formed by wh-movement. Wh-phrases rather remain in-situ. This is shown by Cole and Hermon’s (1994) Chinese example in (3):

(3) Meige ren dou maile shenme (-ne)?
everyone *all* *buy* *what* *PARTICLE*
“What did everyone buy?”

Shenme remains in situ, but there is the possibility of using the particle *ne* which indicates that we are dealing with an interrogative. One can imagine that *shenme* may be allowed to stay in situ just because *ne* already does the job of marking the clause as a +wh clause.

Finally, there are languages in which both the in-situ and the movement strategy seem to be options which exist side by side. French is said to be a language in which a wh-phrase may remain in-situ. However, the English and German examples in (4b,c) also seem to function as normal information seeking questions under certain circumstances:

(4) a. Jean a vu qui?
Jean has seen whom
"Whom has Jean seen?"
b. John saw who?
c. Der Hans hat wen gesehen?
the Hans has whom seen

Apart from these cases, various languages were found in which the wh-operator moves only part of the way to the final scope position. The actual scope position is occupied by another and more neutral wh-element. This case, which has become more widely known as PARTIAL MOVEMENT through McDaniel (1989) is exemplified by the German sentence in (5):

(5) Was glaubst du, wann er kommt?
what believe you when he comes
"When do you believe that he will come"

We observe that the attitude verb *glauben* which does not tolerate a wh-complement at all nevertheless tolerates one in this case. The reason seems to be that the interrogative force of the embedded wh-clause is neutralized by the presence of the higher wh-element *was*. This element, occasionally called a "wh-expletive", obviously directs the scope of the actual wh-operator *wann* to the matrix scope position. Partial wh-movement in the wh-moving languages constitutes a special case because the lower wh-phrase is not in situ at all. It rather has undergone short movement (to the closest Spec CP). We will briefly return to partial movement in section 4.4 in connection with data from Bengali in which it is wh-in-situ that seems to be involved in a similar process.

The article is organized as follows: Section 1 presents a brief overview of the phenomena that have played a central role in the earlier theory of LF-movement within GB-theory (Chomsky, 1981). This theory has largely accepted the conclusion that wh-scope is achieved by covert move-alpha, but that this movement is special in being less constrained than overt movement. Section 2 turns to a first important critique of the classical LF-theory which has culminated in the proposal that certain constraints on movement may be invisible at LF because it is not the wh-phrase proper that undergoes movement but rather the whole island that contains this phrase. This has become known as LF PIED-PIPING. Section 3 introduces unselective binding in some detail as it is an account that many researchers at present take to be able to replace the earlier movement account. Since unselective binding predicts island-free wh-scope, it is able to overcome the conceptual problem of the movement asymmetry found in GB. In section 4 we will turn in some detail to wh-in-situ in South Asian languages, in particular in Bengali. The wh-in-situ phenomenon in these languages has so far received less attention than the one in the more Eastern languages (Chinese, Japanese, Korean). It will be shown that the South Asian languages can shed new light on the phenomenon because they allow different strategies of wh-scoping, one of which seems to be covert movement, while there is also overt movement as well as something that resembles partial movement. The materials discussed in section 4 are mainly from Bayer (1996: ch.7), but new data are frequently introduced, and the account also goes beyond of what has been suggested in earlier work.

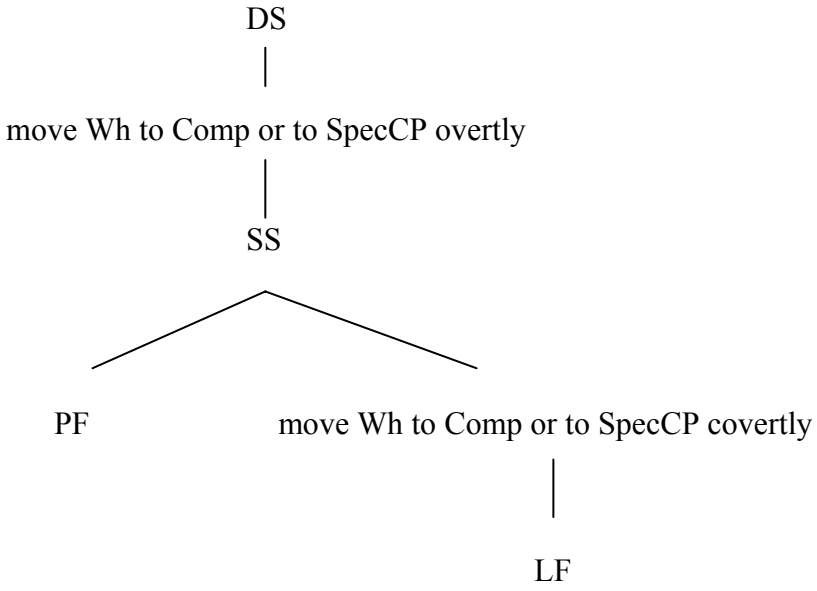
1. The phenomenon in the context of LF theory

Our goal in this section is to provide the basic facts and problems of wh-in-situ in both multiple interrogatives and wh-in-situ languages, and to recapitulate what the classical GB-approach of LF-movement contributed toward an explanation. We will first turn to multiple interrogatives in Wh-moving languages, and then turn to wh-in-situ languages.

1.1 Multiple interrogatives

The classical account of multiple interrogatives in the late seventies and in the eighties has been to assume a syntactic level of LOGICAL FORM (LF) which serves as the input to semantic interpretation. LF represents a structurally disambiguated syntactic form in which a wh-in-situ phrase may receive a proper interpretation by being moved to the domain in which the overtly moved constituent is already located since S-structure.

(6) *Wh-movement in overt and in covert syntax in the GB-model*



A sentence like (7a), *Who bought what?*, is then analyzed as in (7b) where *who* has been moved either to Comp or in - later versions of the theory - to SpecCP overtly, while the in-situ phrase *what* has been moved covertly. According to Aoun, Hornstein and Sportiche (1981), *what* would adjoin to the phrase which is in scope position in overt syntax. This leads to an LF-representation as in (7):

(7) a. Who bought what?
b. $[_{CP}$ what$_2$ who$_1$ $[_{IP}$ t_1 $[_{VP}$ bought $t_2]]]$
c. Jim ... a book, Mary ... flowers, and Clarissa ... shoes

In (7), SpecCP is something like a "super operator" into which the in-situ wh-phrase has been absorbed, and which can bind also the traces that have been left by LF-movement. The semantics is roughly "For which y and for which x is it the case that x bought y?" A felicitous answer that could satisfy this question would provide equally for both parts of the missing in-

formation, i.e. an answer like (7c) would semantically translate into two processes of λ-conversion.

The GB-inspired account of multiple interrogatives has very strongly been an account in terms of the EMPTY CATEGORY PRINCIPLE (ECP). The ECP requires that a non-pronominal empty category be either lexically governed, i.e. governed by a lexical head, or antecedent-governed. Overt movement is under the control of the ECP and under the control of SUBJACENCY, the latter being a somewhat weaker constraint which requires that not more than a single cyclic node be crossed at a time. To see what is going on, one has to contrast cases of overt wh-movement with cases of wh-in-situ where the relevant wh-phrases appear in boldface.

(8) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(9) a. ??**What** do you know where we bought?
b. Who knows where we bought **what**?

(10) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

(8), (9) and (10) show in the a. cases effects of the COMPLEX-NP-CONSTRAINT (CNPC), the WH-ISLAND CONSTRAINT and the CONDITION ON EXTRACTION DOMAIN (CED) respectively.. It is a stable and remarkable observation that comparable effects of degradation are absent in the corresponding cases of wh-in-situ (the b. sentences). If we conceive of wh-in-situ as a covert version of the operation Move-alpha, we are led to the conclusion that LF-movement is less constrained than overt movement.[1] Precisely this has been the message of the majority of work in the context of GB-theory. On the other hand, much evidence was brought about that LF-movement of the relevant sort is constrained by the ECP. Most prominent are the superiority facts. As the contrast between (11a) and (11b) shows, the subject wh has to move overtly and the object wh covertly, not the other way around:

(11) a. Who bought what?
b. *What did who buy?

If the LFs of these examples are as in (12), there is an explanation in terms of the ECP:

(12) a. $[_{CP}\ [what_2\ [who]_1]_1\ [_{IP}\ t_1[_{VP}\ bought\ t_2]]]$
b. $[_{CP}\ [who_1\ [what]_2]_2\ [_{IP}\ t_1[_{VP}\ bought\ t_2]]]$

In order to understand what is going on here, one has to recognize that the covert adjunction to the overtly moved phrase leaves the index of the latter unaffected, i.e. we don't get multiple indices as we shall see have been suggested in another theory of multiple interrogatives. In (12a) *who* governs its trace locally. *What* has been moved to SpecCP and has

[1] The discrepancy between overt and covert movement with respect to subjacency is not the only unattractive aspect of the classical LF-theory. If covert wh-movement could move the entire wh-phrase to COMP, we would expect a repair of the principle C violation that exists in sentences in which a pronoun c-commands a coindexed name. This is not the case, however, as (i) shows. Only overt movement as in (ii) will repair the defect. (See Comorovski, 1996: ch.4 for discussion)

(i) *Who said that he_1 liked [how many pictures that $John_1$ took]?

(ii) [How many pictures that $John_1$ took] did you say that he_1 liked?

been adjoined to *who*. As a consequence of this, *what* is unable to antecedent-govern its trace. The trace is, however, lexically governed by the verb. Thus, no ECP-violation can arise. In (12b), however, the lexically governed NP *what* has been moved to SpecCP overtly, and the subject wh-phrase *who* has been adjoined to it at LF. In this case, the trace of *what* is licensed as usually, but the trace of *who* is not antecedent-governed. As one can see, by virtue of the indexing convention *who* fails to c-command its trace. Since the subject is not the sister of a lexical head, its trace is in conflict with the ECP.

Let us next turn to wh-in-situ languages where the core results of the classical LF-account in terms of an ECP-based explanation could be neatly replicated.

1.2 Wh-in-situ languages versus Wh-moving languages

The classical LF-theory of wh-in-situ was inspired by Huang's (1982) groundbreaking work on the Logical Form of Chinese. In Chinese as well as in many other languages interrogative phrases remain where other arguments are. Nevertheless, the sentences are interpreted as constituent questions. ECP-effects could not be found in connection with wh-subjects. This was attributed to a difference between Chinese and English according to which the subject is lexically governed in Chinese but not in English. ECP-effects could, however, be found in the possible scope positions of argument and adjunct wh-phrases. The celebrated case appears in (13a). (13b,c) are the two virtual LFs (which we represent here with English words) that could be derived when the wh-in-situ phrases are associated with either the embedded clause or with the matrix clause.

(13) a. Ni xiang-zhidao [Lisi **zeme** mai-le **shenme**]
you wonder Lisi how buy-ASP what
b. How$_1$ do you wonder [what$_2$ Lisi t_1 bought t_2]
c. What$_2$ do you wonder [how$_1$ Lisi t_1 bought t_2]

Given this state of affairs, (13a) should be ambiguous. As a matter of fact, however, (13a) is unambiguous. The only reading it can have is (13c). (13b) is ruled out by the ECP: The trace of *zeme* ("how") is not lexically governed. If it fails to be antecedent-governed as is the case in (13c), it violates the ECP. On the other hand, subjacency seems to be violable. As the attested reading of (13a), (13c), indicates, the expectable wh-island effect (cf. ??*What do you wonder how we could repair?*) is absent. The conclusion that at LF the ECP is active but subjacency is not is corroborated by data like those in (14). (14a,b) show that LF wh-movement is also possible out of relative clauses and complex NPs:[2]

[2] *De* is roughly speaking a functional element that turns the phrase to its left into a modifier of the phrase to its right.

(14) a. Ni zui xihuan [piping shei de shu]
you most like criticize who DE book
"Who do you like books that criticize?"

b. Ni renwei [shei de hua zui piaoliang]
you think who DE picture most pretty
"Who do you think that pictures of are most pretty?"

Huang's findings about Chinese wh-in-situ were important motivation for a syntactic level of LF in general and for a particular view of LF in particular. This view, which forms the standard view of LF in GB-theory, says that LF derivations are constrained by the ECP but not by subjacency. Together with May (1977; 1985) it formed the core of the LF-theory of GB. It lead to the widely accepted conclusion that the LF of a sentence which involves a quantifier or a wh-in-situ element is transformationally derived from S-structure in the sense of Move-α, but that the transition from S-structure to the level of LF as shown in (6) is somehow less constrained than the transition from D-structure to S-structure.

2. Pied-Piping

The classical explanation of wh-in-situ did not remain unanswered. Apart from independent attempts of showing that LF is fully under the control of subjacency (cf. Bayer, 1990, 1996; Reinhart, 1991), Nishigauchi (1986; 1990), Choe (1987) and Pesetsky (1987) have argued that LF-subjacency is largely invisible due to large-scale pied-piping. The following Japanese sentence (from Pesetsky, 1987) should show a subjacency violation because *nani-o* appears in a relative clause, but it is well-formed:

(15) Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP John -DAT what-ACC gave man-DAT meet-Q
"For which thing x did Mary meet a man who gave x to John?

The central fact that supported the idea that it is not the wh-item (*nani-o*) per se which is moved but rather the whole island that contains it is the way such a question must be answered. It turns out that a felicitous answer has to repeat the island in which the relevant operator occurs:

(16) a. */?? Konpyuutaa desu
computer COP
"It is a computer"

b. [[konpyuutaa-o ageta] hito] desu
computer-ACC gave man COP
"It is the man who gave a computer (to him)"

This finding has inspired an analysis of wh-in-situ according to which not the operator proper is moved out of an island at LF, but rather the entire island is moved. In (15) the phrase to be moved at LF would be the entire NP headed by *hito-ni* as reflected in the answer (16b).[3] Nishigauchi (1990: ch.3) proposes a pied-piping analysis according to which there is first CP-internal wh-movement which marks CP as +wh, then movement of the +wh marked CP to the

[3] Due to the fact that Japanese is a pro-drop language, the dative can be missing.

specifier of NP which has the effect of assigning the feature +wh to the complex NP; in a final step, this complex +wh marked NP moves to the specifier of the matrix CP.

The restriction on possible answers is also found w.r.t. the English multiple questions in (8b) through (10b):

(17) Who found [evidence that Jim has bought what]? (=8b)
a. **Bill** (found) evidence that Jim has bought **a gun**
b. ***Bill** ... **a gun**

(18) Who knows [where we bought what]? (=9b)
a. **Bill** (knows) where we bought **a copy of LGB**
b. ***** **Bill** ... **a copy of LGB**

(19) Who got jealous [after I had spoken to who]? (=10b)
a. **Bill** (got jealous) after I had spoken to **Madonna**
b. ***Bill** ... **Madonna**

The obvious extension of Nishigauchi's theory would be to mark the islands in (17) through (19) analogously as +wh via the percolation convention. Moving them to SpecCP at LF would then avoid the familiar subjacency problem. There are, however, at least three aspects which should shed a critical light on this analysis: First, as Huang (1982), Nishigauchi (1990) and others have noticed, there are restrictions which disallow certain occurrences of wh-phrases in islands. In Japanese it is, for example, impossible to have the wh-element inside a definite NP; cf. (20a). Likewise it is impossible to have an adverbial wh-phrase like *naze* ("why") in a complex NP as shown in (20b):

(20) a. *Kimi-wa [[dare-ga kai-ta] kono hon]-o yomi masi-ta ka?
you-TOP who-NOM write this book-ACC read -Q
"You read this book that who wrote?"
b. *Kimi-wa [[kare-ga naze kai-ta] hon]-o yomi masi-ta ka?
you-TOP he-NOM why write book-ACC read -Q
"You read book that he wrote why?"

These cases need extra restrictions which do not follow from the general approach. (20a) could be taken care of by the name constraint (cf. Fiengo and Higginbotham, 1981) according to which a definite NP (a „name") must not contain a variable; (20b) could be ruled out by extra assumptions relating to the ECP, but if *naze* is replaced by *dooiu riyuu de* ("what reason for"), the sentence becomes acceptable. Thus, it cannot be the adjunct nature of the wh-constituent which is responsible for the restriction. Secondly, as von Stechow (1996) has pointed out, it is not obvious how the LFs produced by LF-pied-piping could be interpreted semantically. (15), for instance, asks for the identity of thing such that a man gave it to John, not for the identity of some man. Nishigauchi (1990: 52) argues that such questions ask in fact for the entity referred to by the island, here ... *hito-ni*, "by making crucial use of" the thing(s) which the entity gave to John. As he nevertheless admits in footnote 24, an answer simply identifying a person would not be appropriate. Thus, the island must somehow be left by the in-situ operator at some level of representation which serves as input to the semantic component. A third point is that the LF component is predicted to have extra power which is unattested in (most cases of) overt movement. Thus, as Webelhuth (1989) observes, a phrase

whose head is not overtly marked as +wh can hardly serve as an identifier of a +wh clause (cf. 21a,b). Witness in this context also examples of wh-infinitive pied-piping German (21c) or the lack of it (21d,e) which have been discussed in van Riemsdijk (1985).

(21) a. I wonder [$_{+wh}$ [$_{+wh}$ whose books] we should read]
b. *I wonder [$_{-wh}$ [$_{-wh}$ books by whom] we should read]
c. Ich frage mich [$_{+wh}$ [$_{+wh}$ mit wem]$_1$ [es t_1 aufzunehmen]] $_2$ dir t_2
I wonder REF with who it up-to-take for-you
ein Bedürfnis wäre]
a need would-be
"I wonder with who to enter into a competition would be a need for you"
d. *Ich frage mich [$_{-wh}$ [$_{-wh}$ [es mit wem aufzunehmen]] $_2$ dir t_2
I wonder REF it with who up-to-take for-you
ein Bedürfnis wäre]
a need would-be
e. *Ich frage mich [$_{-wh}$ [dir [es mit wem aufzunehmen]
I wonder REF for-you it with who up-to-take
ein Bedürfnis wäre]]
a need would-be

Examples in which the left edge of the wh-phrase is not overtly ocupied by a +wh expression seem to be only possible where no overt movement could occur.[4]

There have been attempts of coming to grips with the semantic problem while retaining the essential insights of the pied-piping analysis. With respect to (9b) one could, for instance, argue that the analysis proceeds in two steps: First, the entire wh-CP headed by *where* is moved to an A'-position, then the operator proper (*what*) is moved out of the island. It has in fact been suggested that A'-movement of a phrase XP causes XP to lose its status as a barrier (cf. Fiengo et al., 1988).[5] As a matter of fact, however, this way of coping with the subjacency problem at LF turns out to be problematic. First of all adjunction or movement to SpecCP would be a wild card for getting rid of barrierhood that seems far too unconstrained to cope with the data. Secondly, there is strong evidence that something like the exact opposite must be the case. Movement of XP to SpecCP usually bleeds sub-extraction from XP. Since Ross (1967), this has been known as the "freezing effect". German V-second clauses give direct evidence that neither overt movement nor covert movement can proceed from phrases that have been moved to SpecCP. (22a) shows a grammatical case in which movement proceeds from a phrase in A-position. (22b) shows that once the *was-für* phrase has been moved to SpecCP, this turns out to be impossible. (22c) shows the same is true for covert movement, assuming for the moment that the wh-element in SpecCP would be "absorbed" by the matrix wh-element:

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[4] Notice, however, that there are also examples like Ross' (1967) widely known
(i) the report [[the height of the lettering on the covers of which]$_1$ the government prescribes t_1]
for which it is unclear why it would not be blocked by
(ii) the report [[which]$_1$ the government prescribes the height of the lettering on the covers of t_1]

[5] Something similar is proposed by von Stechow (1996). The difference is that – partially following Watanabe (1992) - von Stechow suggests that there is pied-piping but that it is still an operation of overt movement, "invisible overt movement" so to say. At LF, the operator proper is moved out of the pied-piped phrase. For instance, the operator *nani-o* of (15) would have to appear in the specifier of the Q-operator ("interrogativizer") *no*.

(22) a. Was$_1$ glaubst du [daß der Hans [t_1 für Leute] kennengelernt hat?
what think you that the Hans for people come-to-know has
"What kind of people do you think that Hans has come to know?"
b. *Was$_1$ glaubst du [[t_1 für Leute]$_2$ (daß) der Hans t_2 kennengelernt hat?
c. *Wer glaubt [[was für Leute]$_2$ (daß) der Hans t_2 kennengelernt hat?
who believes what for people that the Hans come-to-know has

Thus, debarrierization-by-A'-movement seems to be unfeasible.

The above criticism of the pied-piping solution of the wh-in-situ problem does not undermine the insights that it has contributed to further theorizing. Although various aspects of pied-piping are still in the dark, the approach has been successful in shaping our understanding of Wh-movement, wh-in-situ and related constructions in the area of quantification, negation etc. Criticism may focus on two aspects that have played a role in the discussion: The first is that the morphosyntactic operations underlying the pied-piping mechanism must be more severely constrained. It is, for instance, unclear by which operations the NP *evidence that Jim has bought what* in (17) could ever acquire the +wh feature. The process seems to be very much restricted to those cases in which we find the relevant (wh-) feature either in the specifier, say, in SpecDP (*whose mother*), or in the complement of a functional or semi-functional head such as P. In the latter case, features of the complement of P may raise to P, essentially marking the whole PP with whatever operator features are in the complement. Thus, a PP like *about who* is simply a +wh phrase, as various analyses have independently suggested. This would rule out a number of cases for which Nishigauchi has nevertheless assumed pied-piping. This criticism is directly related to a second point, namely that pied-piping is not called for and should therefore not be used, if wh-scope is already overtly determined. For instance, if the particle *–ne* in (3) or *was* in (5) or *–no* in (15) all mark the structure of which they are the head as +wh, then it is unnecessary and should therefore not be possible to move the purported "real" wh-phrase to the specifier of this Q-particle. In the cases considered so far, Q-scope is already overtly marked. Thus, there could only be two reasons for moving an in-situ wh-phrase to its specifier: (i) the formation of an operator-variable chain; (ii) feature checking. However, both reasons do not seem to be very strong. As we shall see shortly, the wh-phrase needs to be decomposed into various parts among which an existential operator of which there is no evidence that it has to be put exactly into SpecCP. Thus, the formation of an operator-variable chain could well be an independent issue that does not enforce movement of the wh-in-situ phrase (including islands) to SpecCP. Secondly, it is far from clear that the feature structure of a wh-element in situ is exactly the same as the feature structure of a wh-element in SpecCP or of the CP's head C which is marked +wh. It cannot be an accident that many languages use wh-words not only in interrogatives but also in relatives and for the expression of indefinites.[6] Thus, a scoped wh-phrase or a Q-particle in sentence peripheral

[6] Examples abound in the Germanic languages. In English we find *which*-relatives next to *that*-relatives. The same is true for German w-relatives versus d-relatives. Consider also *was/wos* in the relatives of Southern German dialects as well as in Yiddish (cf. Lowenstamm, 1977) or *pu* („where") in modern Greek. Wh-words which are not in the scope of an interrogative head usually adopt extra morphemes in order to count as indefinite pronouns. Consider here German which is in this respect more consistent and richer than English::

(i)	a.	wer	(„who")	irgendwer	(„someone")
	b.	was	(„what")	irgendwas	(„something")
	c.	wann	(„when")	irgendwann	(„sometime")
	d.	wo	(„where")	irgendwo	(„somewhere")
	e.	wohin	(„where-to")	irgendwohin	(„somewhere-to")

scope position can have an extra feature that might be missing from a wh-in-situ element. If that is the case, however, there is no reason for the wh-in-situ element to undergo movement to the scope position in order to get its wh-feature checked. Viewed from the perspective of the moved wh-phrase it would rather seem that the wh-phrase in SpecCP needs to reconstruct into its underlying position in order to associate its non-interrogative feature complex with licensing heads that are independent of question formation proper.[7] If correct movement of the wh-in-situ element to the specifier of the Q-scope marker is an unnecessary and therefore undesirable operation, a consequence of principles of economy by which movement is to be avoided if constraints can be satisfied without it. The proposal that wh-in-situ does not involve any movement at all is, of course, much older. The process in which the scoped element associates with one or more in-situ elements in its c-command domain has become known as "unselective binding". This is the phenomenon as well as a class of approaches that will be considered next.

3. Unselective binding

It is a trade-mark of many head-final languages to have a suffixal morpheme at the right edge of a phrase that counts as an interrogative. In Japanese, for instance, the morpheme *–ka* appears at the end of an interrogative sentence.[8] However, as example (23) from Nishigauchi (1990: 10) shows, it appears both in yes/no questions and in constituent questions:

(23) Tanaka-kun -wa [dare-ga nani-o tabe-ta -**ka**] oboe-te-
Tanaka -TOP who-NOM what-ACC eat -Q remember
i-masu-**ka**?
is -Q
"Does Tanaka know who ate what?"

The sentence-final Q-morpheme *–ka* turns the matrix clause into a yes/no question, but we see that once *–ka* minimally heads a structure in which *dare*, *nani* etc. appear, these are interpreted like wh-phrases. As Nishigauchi (1990: ch.4) says, referring to Kuroda (1965), *dare*, *nani* etc. do not themselves have an interrogative feature. They are rather "indeterminate" pronouns. They are interpreted as non-interrogative in combination with other particles (among which *–ka* again), once *–ka* is missing as a clause-final head:[9]

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f. woher („where-from") irgendwoher („somewhere-from") etc.

Interestingly, many of the pure w-words (from the left-hand column) can be colloquially used as indefinites although the disambiguating morpheme *irgend* is missing. Examples are given in (ii):

(ii) a. Ich habe schon **wen** gesehen, der den neuen Roman von Grass hatte
„I have already seen someone who had the latest novel by Grass"
b. Wenn **wer** anruft, sag ihm, ich sei nicht zuhause
„If someone calls, tell him that I am not at home"
c. Vielleicht sind sie **wohin** gefahren, um einzukaufen
„Perhaps they went somewhere to go shopping"

This phenomenon to which we will return seems to be extremely widespread. Cf. Haspelmath (1997) for a typological investigation.

[7] Cf. Jayaseelan (2001).

[8] In (15), *-no* has a similar function.

[9] We have already seen similar examples from German, cf. note 4.

(24) Dare-mo-ga nani-ka o tabe-te-iru
everyone-NOM *something* *ACC* *eating* is
"Everyone is eating something"

Thus, one may argue that the actual interrogative feature must head the clause, if an interrogative meaning should be generated. In (24), *dare* combines with the conjunctive particle *–mo* to form a universal quantifier, while *nani* combines with the disjunctive particle *–ka* to form an existential quantifier. One could argue that in (23) it is pure pronominal forms that mimic a wh-phrase by being c-commanded and bound by the peripheral element *–ka*.[10] The wh-phrases and wh-pronouns of the European languages would – according to this picture – be simply blends of heterogeneous features just like negative indefinite quantifiers which are standardly taken to be fusions of a feature of negation and an indefinite of some sort.[11] Wh-in-situ languages of the kind we have been looking at show in a sense more clearly than the wh-moving languages how questions are built up semantically: There is a disjunctive operator, typically residing in the final head of the clause, which carries the interrogative (+wh) force. If there is a saturated proposition in its scope, the operator ranges over the truth values 1 and 0.[12] Assuming now that indeterminate pronominals correspond to information gaps whose range is restricted by features such as PERSON, THING, TIME, PLACE, etc., or whatever is added via an NP with restrictive qualities, then the disjunctive operator will range over "open" propositions. A constituent question is then composed of the disjunctive operator ranging over the set of propositions defined by the possible values the variable(s) can take. In that case, the formats for yes/no questions and for constituent questions are roughly as in (25a) and in (25b) respectively.

(25) a. $\lambda p\ [p \vee \neg p]$
b. $\lambda p\ \exists x,\ [p = [...x...] \vee p = \neg [...x...]]$

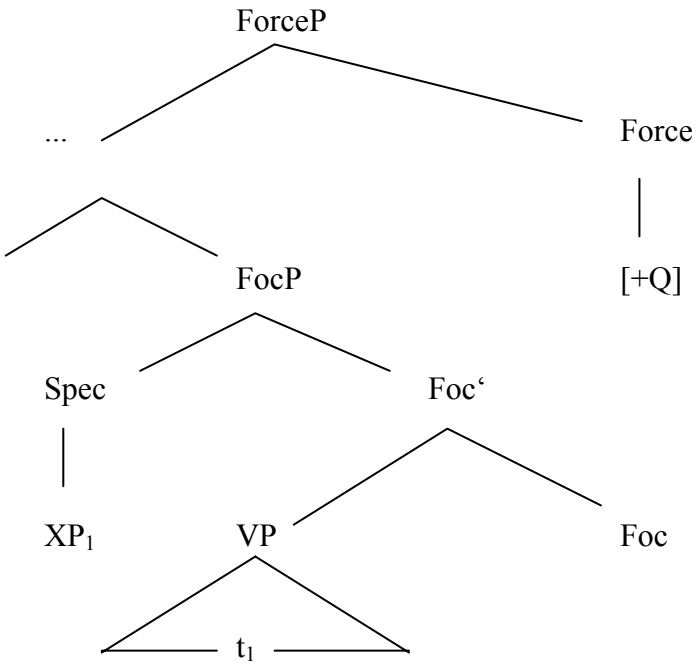
The set of propositions in (25b) is a function of the number of the individuals in the discourse universe that may replace the variable(s) while yielding a true proposition.[13] For example, in a universe with the three individuals Mary, Susan and Fred (besides John), a question like *Who did John see?* would translate into the set of disjunctions {[john saw mary] $\vee$ $\neg$[john saw mary], [john saw susan] $\vee$ $\neg$[john saw susan], [john saw fred] $\vee$ $\neg$[john saw fred]}.

Following Rizzi (1997), Jayaseelan (2001) proposes a structure for interrogatives in which the actual wh-operator resides in a clause-peripheral phrase, the ForceP, which hosts the illocutionary force feature of the sentence. Unlike in older approaches which assume wh-

[10] Almost the same is found in Malayalam, a genetically unrelated Dravidian language. As Jayaseelan (2001) and Hany Babu (1999) point out, *-um* as in *John-um Bill-um* ("John and Bill") resembles Japanese *–mo* and is conjunctive, while *–oo* as in *John-oo Bill-oo* ("John or Bill") resembles Japanese *–ka* and is disjunctive.
[11] Consider German *nichts* which derives from OHG *niwiht* which decomposes into NEG+(some)thing.
[12] Many languages form yes/no questions with disjunctive tags such as "or not", "did(n't) XP", etc. Swiss German simply uses the tag *oder* („or") which seems to be an elliptic and grammaticalized form of *oder nicht* („or not"). Highly suggestive is also the English wh-operator *whether* which stems from *wh+either*. Cf. Higginbotham (1993: 217ff) for discussion of the semantics of disjunctive questions with *whether* as decomposing into *wh*, *either* and *or*. One should note that the application of a tag imposes a bias toward an affirmative answer in certain languages but not in all.
[13] The semantics sketched here is compatible with the standard analyses in Hamblin (1973) and Karttunen (1977), but especially with the partition approach initiated by Groenendijk and van Stokhof (1982); see also Higginbotham (1993) as well as Bayer (2004), where new evidence for the appropriateness of this approach is discussed.

in-situ more literally, the variable and its restrictor are put in – or in Jayaseelan's implementation moved into – the focus projection that is in head-final languages usually found to the left of the verb. Simplifying Jayaseelan's proposal, the structure is as in (26):

(26)



As the embedded clause in (23) shows, there can be multiple occurrences of pronominals which may associate with the operator in the head of the ForceP. If it can be maintained that indefinites and indeterminates are pure variables which are existentially bound by a default operation, as Heim (1982) has suggested, then it is perhaps not necessary to move anything to the clause peripheral position. The familiar subjacency problem of LF-theory as exemplified in (8) through (10) as well as in (15) – all repeated here for convenience - would disappear because in all these cases there is a +wh operator in either the left or in the right peripheral position which (i) has scope over the in-situ elements that need to be bound and (ii) identifies the clause as a +wh type in the sense of Cheng's (1991) typing hypothesis.[14]

(8) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(9) a. ??**What** did you know where we bought?
b. Who knows where we bought **what**?

(10) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

[14] Cheng's clausal typing hypothesis implies that all languages are alike in requiring a morphology based assignment of a clause to the +wh type, if the clause should count as a +wh clause. Either the clause is typed by a +wh head (as is the case in Japanese) or it is identified as +wh by virtue of wh-movement to SpecCP. Typing by covert movement is excluded. Where we see no relevant morphology, there must be a zero +wh head. We shall return to the latter proposal.

(15) Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP John-DAT what-ACC gave man-DAT meet-Q
"For which thing x did Mary meet a man who gave x to John?

If movement is a last-resort operation to guarantee convergence at the interfaces of grammar, unselective binding would be preferred over movement. Movement would not be required for feature checking, (especially if the "in-situ" element has no relevant wh-feature), and thus movement would be punished. In spite of this, however, and for independent reasons LF-movement has still been assumed in certain cases in which +wh scope is indicated overtly. We will turn now to a review of the arguments in favor of such movement.

3.1 Adjuncts

It was shown in (20b), which is repeated below, that despite the occurrence of the Q-particle *ka* in clause-final position the structure is ill-formed. The adjunct *naze* is obviously bound by *ka*, but nevertheless fails to associate with it in such a way as is necessary to form a normal constituent question.

(20) b. *Kimi-wa [[kare-ga naze kai-ta] hon]-o yomi masi-ta ka?
you-TOP he-NOM why write book-ACC read -Q
"You read book that he wrote why?"

As is widely known, similar restrictions have been reported time and again in various languages. French, which tolerates wh-in-situ questions is said to have a ban against *pourquoi* ("why") in situ.[15]

(27) a. tu as vu qui?
you have seen whom
b. (*)tu es venu pourquoi?
you have come why

Does this suggest that the ECP is at work? Both *naze* and *pourquoi* would be ungoverned and could be subject to a constraint that requires the identification of a trace at LF.[16] As a matter

[15] Similar restrictions seem to hold for German *warum* („why"). German allows under certain discourse conditions (D-linking; see below) in-situ questions. In this case, (i) sounds more awkward than (ii):
(i) ??Du bist warum nach Patmos gefahren?
you have why to Patmos gone
(ii) Du bist aus welchem Grund nach Patmos gefahren?
you are for which reason to Patmos gone
Notice on the other hand that German readily allows *warum* in situ in multiple questions. The following stretch of text about the role of Goethe institutes appeared in DIE ZEIT (19 August 1999):
(iii) Was ist überhaupt deutsche Kultur?
what is actually German culture
Wem will die Bundesregierung sie warum nahebringen?
whom wants the central-government it why near-bring
„What is German culture actually? Who does the government want to familiarize with it why?"
According to published judgments on English, *why* in situ should always be excluded. For a discussion of the largely unclear behavior of *why* see Hornstein (1995).

[16] That the ECP is not precisely the right instrument is suggested by the fact that *pourquoi* could be moved lo-

of fact, however, things are less straightforward. We have already said that (20b) improves, if *naze* is replaced by *dooiu riyuu de* ("what reason for"), which is certainly not more governed than *naze*. Similarly, as Aoun (1985: 24f.) points out, the restriction on *pourquoi* in-situ in French is more subtle than the ECP would allow us to predict. Aoun reports that in (27a) *pourquoi* may in fact remain in situ but only if it is interpreted as "purposive". This is the reason for putting the asterisk in brackets. Thus, should (27b) count as grammatical, a felicitous answer would be as in (28a) but not as in (28b):

(28) a. pour étudier la géométrie
to study geometry
b. parce que je suis malade
because I am sick

Similarly, quoting Dominique Sportiche's judgments, Aoun reports that *comment* ("how") may remain in situ but only at the cost of a restricted interpretation according to which the answer may refer to an instrument but not to a manner:

(29) a. tu as ouvert la porte comment?
you have opened the door how
b. avec une clef
with a key
c. *lentement
slowly

The facts that are reported from English wh-in-situ suggest that manner *how* is also excluded or at least not favored. The following are from Reinhart (1998: 44f):

(30) a. ?Who spoke how?
b. *Who fainted when you behaved how?

While (30a) could be interpreted with an "instrumental" *how*, (30b) cannot. Whatever the subtleties exactly are which may be involved here, two things are clear: (i) if *how* and *why* are changed to *which/what way* and *for which reason* respectively, the sentences improve dramatically; (ii) wh-in-situ is always tolerated in case the wh-element is "referential". To see this consider the following examples of which (31a) is Reinhart's:

(31) a. Who fainted when you behaved what way?
b. Who got excited when/because you went where?
c. Who told you about sea-gulls that can be observed when?

What way, *where* and *when* are clearly no more governed in these examples than *pourquoi*, *how* and *naze* in the ill-formed questions above. Thus, the ECP in its standard formulation seems to be an unlikely candidate to explain the differences. What could be an alternative? Reinhart (1998: 45), referring to Szabolcsi and Zwarts (1993), says that wh-adverbials differ from wh-NPs because they do not have an "N-set" and therefore no "N-role" or variable; wh-adverbials rather denote functions ranging over higher-order entities. There is an implicit requirement that wh-in-situ in multiple questions must meet the formation of pairs, triplets etc. of entities. It is unclear, however, how Reinhart's suggestion would be able to integrate time

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cally and therefore antecedent-govern its trace.

and place adverbials. This returns us to something quite elementary that is reminiscent of Rizzi's (1990) notion of a "referential θ-role". It seems rather easy to pair up persons with time points or places, while it is much harder to think about manners or reasons in similar ways such as to come up with pairs of persons and manners or persons and reasons. This can be achieved, however, with the help of a *which*-phrase. According to Pesetsky (1987), *which*-phrases denote operators which are discourse-linked ("D-linked") in the sense that speaker and hearer have a fixed set of entities in mind which matter in the discourse.[17] If a number of reasons or manners are under debate, these are represented as a set of individuals from which subsets can be drawn. This suggests that the relevant difference does not rest on the argument/adjunct distinction but is rather a matter of individuation. Applying *which* presupposes a set denoted by the common noun. In purely logical terms the difference can hardly be captured, as there seems to be no essential difference between the restrictive parts of *who* (wh **person**), *when* (wh **time**), *where* (wh **place**), *how* (wh **manner**) and *why* (wh **reason**). The difference is conceptual in the sense that we think about a (finite) countable set of individuals (persons, moments of time and places) in connection with *who*, *when* and *where*, but perhaps not in connection with *how* and *why*. The latter need to be transformed into a syntactic form which enforces the formation of a set of individuals. Thus, although there might well be a variable that can in principle correspond to *how* and *why*, extra work needs to be done in order to invoke the idea that it should. It follows that the difference in grammaticality of acceptability is in all likelihood not as clear-cut as we were sometimes made to believe. The fact that judgments usually oscillate between ?, ??, ?* and *, shows exactly this. This explains why the pairing of individuals is easier in (30a) than in (30b): Assume a set of persons and a set of modes in which these persons speak. It would be easiest to postulate an instrumental reading as reflected in answers like *John spoke by using a microphone, Mary by using a megaphone, and Olivia simply by shouting on the top of her voice*. It seems to be comparatively harder to invoke a similar pairing for (30b): First of all, the set itself must be formed on the somehow less straightforward basis of a fixed set of manners of behavior, and secondly this set must be computed as a function of intervals of time in which the behavior took place. Why should this be totally impossible? Perhaps it is just difficult. Replacing *how* by *what way* obviously reduces the set formation problem by ostentatively presupposing a fixed set. Once wh-in-situ in wh-moving languages is understood better, this reasoning may help explaining the contrast between the two answers in (28) in relation to the (grammatical version of the) question *Tu es venu pourquoi?* For the time being, however, it remains unclear why it should be easier to invoke a set of purposes than a set of causes.

The status of wh-movement versus wh-in-situ in French has been investigated in much detail in Obenauer (1994). According to Obenauer, overt wh-movement to SpecCP is obligatory in French only where the speaker fails to have a set of elements in mind which could function as appropriate values for the variable left behind. This is the case, if the wh-operator is not "D-linked". Whenever a wh-phrase remains in situ (although the language permits movement to SpecCP, as is the case in French), an appropriate value must be associated with the variable which belongs to a certain domain (cf. Obenauer's (51), p.314). The difference can be made clear by the contrast between the function of *comment* ("how") in a formulaic question such as *Bonjour! Comment tu vas?* ("Hello! How are you?"), and an information seeking question such as a doctor's inquiry about the health of a patient, *Alors, comment tu vas aujourd'hui?* ("Well, how is it going today?"). As Obenauer points out (p. 321 f.), wh-in-situ is an option in the last case, but not in the first: *Alors, tu vas comment aujourd'hui?* versus **Bonjour! Tu vas comment?* The speaker clearly has a set of options in mind when asking an information seeking question, but this is hardly the case in the usual rit-

[17] We will introduce D-linking in more detail below.

ual exchanges, as has repeatedly been observed and described in research on linguistic pragmatics.[18] The constraints on adjuncts mentioned in connection with (29c) and similar examples may well be derived in a theory that makes crucial reference to the set of alternatives that can readily be invoked in discourse. The asymmetry between the instrumental and the manner interpretation would then be reduced to the fact that alternative instruments for the opening of doors are more readily invoked by the speaker than alternative manners of door-opening.

Returning to wh-in-situ in Japanese for a moment, what could be the reason for the deviance of (20b)? Why should there be problems in computing a relation between the Q-particle *ka* and the adjunct *naze* ("why")? There is no problem of doing so in sentences where *naze* is not in an island. A simple explanation in terms of the ECP cannot be given because (32) is grammatical (see Nishigauchi, 1990: 101):[19]

(32)	Kimi-wa [[	kare-ga	dooiu riyuu-de	kai-ta]	hon]-o	yomi masi-ta	ka?
	you-TOP	*he-NOM*	*what reason for*	*write*	*book-ACC*	*read*	*-Q*

"You read (a) book that he wrote why?"

If *why*, *how* and *naze* may induce a set-formation problem that *who*, *what*, *nani* etc. as well as *for which reason*, *what way*, *dooiu riyuu-de* etc. do not, we might find an explanation in Nishigauchi's theory. Recall that he suggested that neither (20b) nor (32) is directly a question for a reason but rather a question for a reason in terms of a book that someone has written for this reason. This requires a proper set of reasons such that it can be computed as a function of the book(s) that have been written for these reasons. If the present suggestion is tenable, we predict that such a function can be computed on the basis of a countable set of reasons as expressed by an NP but not or only hardly so on the basis of an expression that does not readily permit set formation via individuation such as the adverb *naze*.

This explanation is rather different from the one that has been suggested by Nishigauchi himself. According to Nishigauchi, the unselective binding account of wh-in-situ requires LF movement to the specifier of the Q-particle *ka* (or *no*). The idea is that the element in situ does not only have to be bound by *ka* but must also be governed by it. This is achieved by covert movement as shown in (33). Islands are normally not seen because of large-scale pied-piping. In a complex NP such as [[*kare-ga dooiu riyuu-de kai-ta*] *hon*] ("book(s) that he wrote for what reason"), Nishigauchi claims that the NP *dooiu riyuu* can have a +wh feature by virtue of having a +N feature. If the NP headed by this N moves to the specifier of the relative clause, and the relative clause itself is in the specifier of the nominal headed by *hon*,

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[18] The same holds at least for English and German where non-echo wh-in-situ is possible under certain circumstances:

(i) a. How are you?
b. *You are how?

(ii) a. Wie geht es dir?
b. *Dir geht es wie?

In German it would be absolutely natural to use a wh-in-situ question with *wie* as in (iii) in a context in which the health of a person is already under debate:

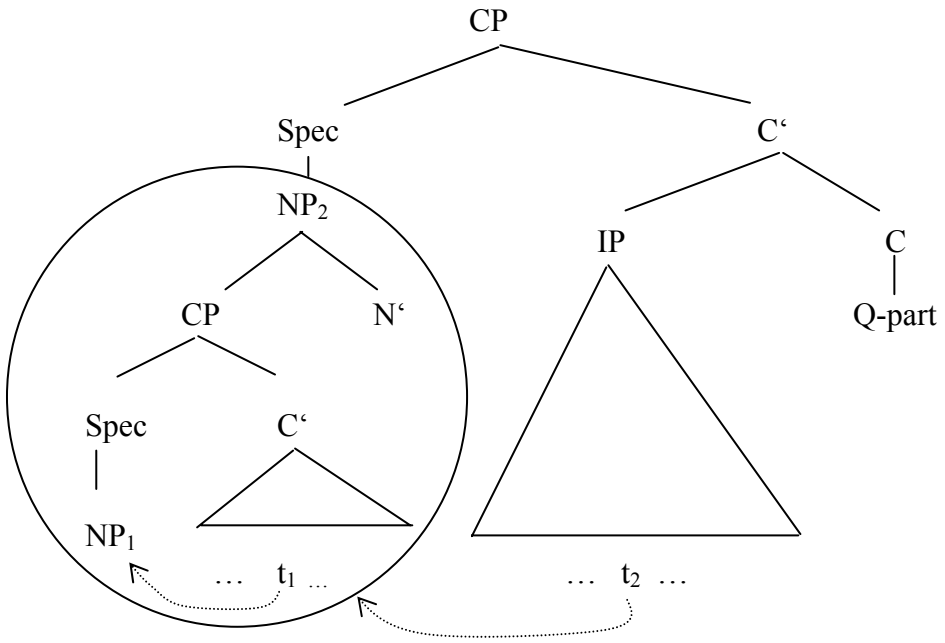
(iii) (having spoken about the interlocutor's health or possible influences on it, say, by taking a certain drug)
... und danach ist es dir wie gegangen?
and then it went with you how?

[19] Notice that German, which we have seen allows *warum* in situ, behaves exactly alike. *Warum* cannot appear in an island, while *aus welchem Grund* can:

(i) Wer kennt Leute, die aus welchem Grund / *warum kriminell wurden?
who knows people who for which reason / why criminal became

the entire complex NP ends up as a +wh phrase. This phrase is said to undergo covert movement to the specifier of the Q-particle which is in the position of a clause final complementizer.

(33)



The reason why *naze* is out if it occurs in the complex NP (NP_2) should be that it lacks a +N feature and that, as a consequence, it cannot derive the +wh feature that is needed for NP_2 to count as a +wh phrase. Translated into later stages of the theory of movement, Nishigauchi's theory requires feature percolation within islands such that islands can be attracted by the Q-particle. From what is known about feature migration (e.g. within Grimshaw's (1991) theory of projection extension), however, neither one of the movements shown in (33) seems to be obvious without strong assumptions about phrase structure, in particular about the availability of specifier positions which are never activated in overt syntax.[20]

Summarizing, accounts of wh-in-situ have tried to overcome certain difficulties in connection with subjacency and the ECP. The subjacency problem is that violations appear to be missing where we expect them under a theory of movement. The ECP-problem is that the constraints on adjuncts appear too heterogeneous to make the classical ECP-account feasible. There seem to be promising alternatives which avoid these problems. Unselective binding without any movement, if defensible, would account for the discrepancy between overt and covert movement with respect to subjacency. A semantic theory which draws the proper distinction between "referential" and "non-referential" adjuncts could be capable of taking care of certain residues of the ECP-account that cannot be maintained in a grammar that has ceased to employ the notion "government".[21] The above suggestions remain vague, but it seems to be clear enough in which direction the right solutions can be expected to be found. The restrictions on wh-in-situ adjuncts seem to be linked to the availability of proper sets of

[20] In the discussion of Japanese syntax, further motivations for movement have been brought up on the basis of visible subjacency effects. These have been relegated to the overt movement of a zero operator rather than to covert movement; cf. Watanabe (1992).

[21] Doubts about the appropriateness of an ECP account with respect to adjunct movement were already uttered in Nishigauchi (1990: 97) in connection with the observation that *naze* turns out to be acceptable in certain complex-NP environments (which are not introduced here), and that this is unexpected under the ECP theory.

discourse entities. By this question we are naturally led to questions about the role of discourse in the formation of questions and in the licensing of wh-in-situ in general. We will therefore now turn to the phenomenon of D(iscourse)-linking.

3.2 D-linked and non-D-linked wh-phrases

In an influential article (Pesetsky, 1987) David Pesetsky has argued that both the LF-movement theory and the theory of unselective binding are correct, and that they take care of different sets of constructions. Pesetsky refers to the LF-movement theory as „Chomsky-style" and to the unselective binding theory as „Baker-style". We have already seen what the former is like. The latter, going back to Baker (1970), essentially says that there is one super operator in a scope position which binds multiple occurrences of phrases which share its feature. In the case of wh-in-situ either a head like Japanese *ka* is in C which c-commands multiple wh-phrases in situ, or one wh-phrase is in SpecCP from where it c-commands an arbitrary number of wh-phrases in situ. In each case, the +wh operator has the capability of binding all occurrences of the relevant phrases in situ. This is usually expressed by indices. Thus, a Baker-style representation of *Who read what?* would be as in (34a); a more up-to-date version would be an LF as in (34b) where there is a distinction between the head C, the specifier of CP, and where a copy of the phrase in SpecCP is retained in subject position:

(34) a. $[[_{Comp}\ Q_{i,j}\ \text{who}_i]\ t_i\ \text{read what}_j\ ]$
b. $[[_{CP}\ \text{who}\ [_{C'}\ [_{C^\circ}\ +\text{wh}]_{i,j}\ [\text{who}_i\ \text{read what}_j]$

According to (34), *what* never actually moves. It is rather "absorbed".[22] The reason why both Chomsky-style movement and Baker-style non-movement are needed is that there are empirical differences which according to Pesetsky culminate in the notion of *D(iscourse) linking*. Certain wh-phrases stay in situ and get bound in the sense of (34) in case they are not novel in the discourse but rather make reference to a set which is already activated in the minds of the interlocutors. Wh-phrases for which this is not true have to undergo Chomsky-style LF-movement. Only in the second case should we see constraints on movement, including subjacency effects. How does one know whether some wh-phrase is D-linked or not? The standard cases Pesetsky suggests are *which* phrases, whereas wh-pronouns such as *who*, *what*, *where* etc. tend to belong to the non-D-linked camp, (although he also provides examples for which this is not true, cf. (37) below).

The theory is mainly developed with an eye on superiority. The SUPERIORITY CONDITION (cf. Chomsky, 1973), requires that in a structure ... X ... [... Y ... Z ...] the relation between X and Z is blocked, if there can also be a relation between X and Y, and Y is superior, i.e. "higher" in the tree, than Z. Given that Y and Z are of the same syntactic type (e.g. wh-phrases), superiority falls under RELATIVIZED MINIMALITY (cf. Rizzi, 1990) or the MINIMAL LINK CONDITION (cf. Chomsky, 1995: §4.5.5). Pesetsky derives it from a ban against crossing (versus nested) dependencies. Superiority accounts for the contrast in (35):

[22] Cf. Higginbotham and May (1981) and the shorter outline in May (1985: ch.1). As von Stechow (1996) emphasizes, wh-binding alone is not sufficient. The indefinite that corresponds to the wh-in-situ element must be turned into a variable at LF. This is standardly done via binding by an existential quantifier, an operation that seems to be independent. The question is whether it should be characterized as syntactic movement or not. We will return to this question.

(35) a. Who read what?
b. *What did who read?

Since due to the asymmetry between subject and object which clearly holds in English *who* is "superior" to *what*, if *what* moves while *who* stays, the Superiority Condition is violated. However, the constraint violation seems to be absent or at least ameliorated in (36b), where *who* and *what* are replaced by overtly D-linked material:

(36) a. Which child read which book?
b. (?)Which book did which child read?

In the following example from Pesetsky (1987: 109) there is no overt mark of D-linking, but the context makes it clear that both the set of transistors and the set of holes is fixed:

(37) I know that we need to install transistor A, transistor B, and transistor C, and I know that these three holes are for transistors, but I'll be damned if I can figure out from the instructions *where what* goes!

The expected order would be *what goes where*. Thus, there can also be D-linking without a visible morphosyntactic reflex. According to Pesetsky D-linked wh-phrases are not quantifiers and get licensed by Baker-style unselective binding. Non-D-linked wh-phrases, however, are quantifiers. They must adjoin to CP (formerly S'). (35b) would be ruled out by the superiority condition itself or by some other more abstract constraint that entails superiority. Given cases like (37) it may be difficult to decide in each case what the stage of the discourse is in which such interrogatives may be uttered. Pesetsky suggests, however, that there are wh-phrases which can never be D-linked. They are "aggressively non-D-linked". According to Pesetsky, aggressive non-D-linking can be forced by attaching an intensifier like *the hell* or *on earth* to the wh-phrase, or *ittai* in Japanese.[23] Superiority effects seem to arise in Japanese as soon as *ittai* is used; an example appears in (38b) where the *ittai* phrase is hierarchically not the closest to the C-node marked by *no*. Similarly, subjacency effects resulting from the CNPC show up - as in (39b) - which are otherwise notoriously absent in Japanese:

(38) a. [Ittai dare-ga] nani-o tukamaeta -no?
the-hell who-NOM *what-ACC* *caught* *-Q*
b. ??Dare-ga [ittai nani-o] tukamaeta-no?

(39) a. Mary-wa [[John-ni nani-o ageta] hito-ni] atta-no?
Mary-TOP *John-DAT* *what-ACC* *gave* *man-DAT met-Q*
b. *Mary-wa [[John-ni ittai nani-o ageta]
Mary-TOP *John-DAT* *the-hell* *what-ACC* *gave*
hito-ni] atta-no?
man-DAT met-Q

It is suggested that intensifiers also constrain pied-piping in English. It is implied that in (40) the containing NP or PP turns out to be islands:

[23] In French it would be *diable*, in German *zum Teufel*.

(40) a. Pictures of whom cost the most at the sale?
b. *Pictures of whom the hell cost the most at the sale?

(41) a. I wonder what the hell he is talking about
b. *I wonder about what the hell he is talking

If these tests show what they are supposed to show, grammatical sentences in which wh-in-situ appears in an island must be either relegated to D-linking or it must be assumed that the entire island undergoes LF pied-piping. The evidence that intensifiers show something interesting about island effects at LF is unfortunately rather weak. The impression is that in English, French and German the use of intensifiers is a root phenomenon or can be linked to the root by virtue of logophoricity (*I don't know what the hell I should do here*). There are in addition phrase structural reasons which in English block attachment to constituents larger than a simplex wh-pronoun. Phrases like *which book the hell* are, for instance, impossible for most speakers of English. Pesetsky himself notices problems with wh-in-situ:

(42) a. Who the hell caught what?
b. *Who caught what the hell?

(43) a. Où (diable) est-il allé?
where the-devil is-he gone
b. Il est allé ou (*diable)

There is no obvious reason why LF-raising of the wh-phrase in-situ should be blocked in (42b) and (43b). There are no familiar problems with movement involved. Notice also that slight changes in Pesetsky's example in (41a) remove its acceptability, a fact which suggests that we are dealing with a root or at least root-related phenomenon; the same is true in German as the examples in (45) show:

(44) a. ??The president wonders what the hell we were talking about
b. *It is unclear what the hell he should talk about next

(45) a. Ich möchte wissen, was zum Teufel er hier zu suchen hat
I want (to) know what to-the devil he hereto search has
„I want to know what the hell he has to do here"
b. *Der Präsident möchte wissen, was zum Teufel wir hier zu suchen haben
the president wants (to) know what to-the devil we here to search have
c. *Es ist unklar, was zum Teufel er hier zu suchen hat
it is unclear what to-the devil he here to search has

Obviously the intensifiers *the hell* or *zum Teufel* can appear in an embedded wh-clause only under the special conditions of direct discourse and certain embedding predicates that guarantee direct discourse transparency. If the intensifier has to be in the left periphery in order to activate a specific phrase (ForceP?) which signals a certain illocutionary act, its ill-formedness in-situ or its non-appearance in an island as in **Who bought a book that fascinated who the hell?* may not be related to constraints on LF movement at all.[24] Constraints

[24] Largely the same constraints can be observed in German clauses with modal particles (PRT) such as *denn, doch, halt, ja*. These words can only appear in root clauses or in embedded clauses that may represent reported speech. In all other contexts they are extremely awkward: the following examples may serve as an illustration:

like those underlying the data in (44) and (45) are also discussed in Obenauer (1994: 313). Obernauer observes that while the predicates *savoir* and *trouver* permit wh-complements, they fail to license wh-*diable* clauses as in **Je sais tres bien où diable elle a mis les clés* ("*I know very well where the hell she has put the keys") or **J'ai trouvé où diable elle a mis les clés* ("*I have found out where the hell she has put the keys"). According to Obenauer by using *où diable*, the speaker commits himself to the view that there is no clear value or no value at all for the variable related to *où*. This is in conflict with the selectional requirements of the matrix predicate in question. Pesetsky's account has revealed interesting properties of wh-in-situ, in particular about D-linking, but it has not really excluded alternatives to the LF-movement analysis. This leaves us with „Baker-style" unselective binding throughout, but then we still wonder how the superiority effects should be derived.

An important insight about multiple interrogatives emerges from Erteschik-Shir (1990) where it is claimed that multiple questions always ask for a pairing of individuals. Thus, in (46) *who* and *what* are never interpreted independently but rather as a set of people who have eaten a set of foods.

(46) Who ate what?

Building on Chierchia (1991), this has led Hornstein (1995) to a syntactic account of multiple interrogatives in which superiority violations are reduced to crossover violations. The dependent or „functional" interpretation of a wh-pronoun is expressed by Hornstein as an NP of the form [pro N] in which pro and N may carry different indices: N carries its own referential index, while pro carries the index of another NP which functions as the „generator" of a set of individuals restricted by N. This can be seen in the familiar wh/QP-interactions:

(47) a. What did everyone say?
b. Who said everything?

(47a) yields a pair-list interpretation as reflected in an answer like *John said he will travel to Italy, Mary said that she will help her father, and Susan said that she will prepare for her exam*. (47b), however, does not. An answer to (47b) could only be something like *John (said everything)*. Hornstein represents the LFs of these examples as follows:

(i) a. Wo habt ihr **denn** übernachtet?
where have you PRT spent-the-night
b. Du bist **ja** verrückt!
You are PRT crazy

(ii) a. Sie wollten wissen, wo wir **denn** übernachtet hätten
they wanted (to)know where we PRT spent-the-night had$_{SUBJ}$
b. Sie sagten, daß ich **ja** verrückt sei, wenn ich sie heiraten würde
they said that I *PRT crazy be, if I her marry would*

(iii) a. *Es ist unklar, wo sie **denn** übernachtet haben
it is unclear where they PRT spent-the-night have

b. *Sie bedauerten, daß ich **ja** verrückt bin, wenn ich sie heirate
they regretted that I *PRT crazy am, if I her marry*

The relevant point here is that it is unclear how the cases in (ii) should be analyzed in terms of PRT-raising in any clear sense of operator movement. Since the intensifier construction rests on the same constraints, the simplest conclusion should be that it does not involve raising either, and that the problem is actually orthogonal to the establishment of an operator-variable chain.

(48) a. [$_{CP}$ [what$_1$ [$_{IP}$ everyone$_2$ [$_{IP}$ t_2 say [pro$_2$ t_1]]]]
b. [$_{CP}$ [who$_1$ [$_{IP}$ everything$_2$ [$_{IP}$ [pro$_2$ t_1] say t_2]]]

The LF in (48a) asks for a set of things that have been said, but with the requirement that this set of things is a function of having been said by x. Now x is bound by a universal quantifier. The assumption is that the universal quantifier acts as a „generator".[25] This gives rise to the pair-list interpretation. The same could be true of (48b), where *everything* would be the generator for the relevant set of people corresponding to *who*. As one can see, however, this interpretation would give rise to a WEAK CROSSOVER (WCO) effect: Being coindexed with pro$_2$, the trace t_2 is not A-free. Of course, this is dependent on the configuration that is assumed for [pro t], an issue that has to be left aside here. Therefore the pair-list interpretation is not available. Returning now to multiple questions and the superiority effect observed, we notice that the same account can be used. According to Chierchia (1991), wh-pronouns like *who* and *what* can function as generators. Let us then consider the examples in (49) and their respective LFs in (50):

(49) a. Who bought what?
b. *What did who buy?

(50) a. [$_{CP}$ who$_1$ [$_{IP}$ t_1 bought [pro$_1$ what]]]
b. [$_{CP}$ what$_2$ [$_{IP}$ [pro$_2$ who] bought t_2]]

Again, (49a/50a) attains the functional reading which Erteschik-Shir has claimed to be obligatory in multiple interrogatives, while (49b/50b) is excluded under this interpretation due to a WCO-violation. What then about *which*-questions and their property of not showing the superiority effect? Hornstein suggests that *which*-phrases are inherently D-linked and can generate the relevant set by themselves and without first moving to an operator position (SpecCP). According to his theory, (51) is well-formed because it does not involve a binding problem:

(51) Which book did which man review?

Since speaker and hearer have a certain set of books and a certain set of men in mind (Pesetsky, 1987: 107f.), no extra linking mechanism as instantiated by the binding of pro has to be invoked. Thus, the construction escapes the WCO-problem.

An advantage of the WCO-theory of wh-in-situ is that it allows an explanation for the problem of cross-linguistic variation that has troubled comparative research for quite some time. It has been assumed in earlier GB-oriented work that German as well as Japanese and other languages are „non-configurational" in the sense that they fail to show a verbal projection distinct from the sentence itself. The widely accepted present view is that these languages are configurational but have in addition the scrambling property. There are still debates as to what drives scrambling, but it seems that scrambling exploits a projection option of the grammar for the reason of information packaging in discourse organization. Languages of this type generally do not show superiority effects, or at least not in the way English and other strict word order languages do. Consider the Japanese example (52b) and the German

[25] One should notice here that not all quantifiers can act as generators. No pair-list answer is possible in response to (i):
(i) What did many / most / no people bring?

example (53b), both of which lack the superiority effect:

(52) a. Dare-ga nani-o tabeta no?
who-NOM what-ACC ate Q
b. Nani-o dare-ga tabeta-no?

(53) a. Wer hat was gegessen?
who has what eaten
b. Was hat wer gegessen?

Assume now that scrambling can move the object across the subject to an A-position or to some other position which is distinct from an operator position. Then the position targeted by scrambling would be the one which counts for variable binding. According to the WCO-theory, this would leave the variable A-free, as the little pro which is used to establish the functional reading would not be crossed by the overt movement that establishes the operator/variable chain. Consider the LF of (53b) in (54):

(54) $[_{CP}$ Was$_2$ $[_{C'}$ hat $[_{IP}$ t_2 $[[pro_2$ wer$_1]$ $[t_2$ gegessen]]]]]

This account of the lack of German superiority in terms of WCO is corroborated by the fact that due to scrambling, WCO-effects are generally less often visible in German than in English. To see this, consider the examples in (55). (55a) shows that WCO is clearly active in German. The lack of WCO in (55b) is then obviously connected to the fact that scrambling bleeds the forbidden binding configuration. Notice that German does not permit scrambling from a finite CP, (although there are grammatical cases of scrambling from infinitival complements).[26] Thus, crossover cannot be avoided in (55a). It can be avoided in (55b), however, because the scrambling operation that precedes wh-movement is confined to the simplex clause.

(55) a. *$[_{CP}$ Wen$_2$ $[_{C'}$ glaubt $[_{IP}$ seine$_2$ Mutter $[_{CP}$ (t_2) $[_{C'}$ daß $[_{IP}$ niemand
who(m) thinks his mother that nobody
t_2 ausstehen kann?
Stand can
„Who(m) does his mother think that nobody can stand?“

b. $[_{CP}$ Wen$_2$ $[_{C'}$ hat $[_{IP}$ t_2 [seine$_2$ Mutter [t_2 angerufen]]]]]?
who(m) has his mother called

German obviously does not show the lexical D-linking effect between pure w-pronouns and *welch*-phrases (*which*-phrases) one would expect in Pesetsky's theory. According to Wiltschko (1997), there is another wh-construction in German which, so she argues, is incompatible with D-linking: the *was-für* construction. *Was-für* questions ask for the kind or nature of something. They are usually infelicitous in a context where a delimited set of individuals is already under debate. Consider the pair of examples in (56):

[26] Cf. Grewendorf and Sabel (1994) as well as Bayer and Kornfilt (1994) among others for details.

(56) a. Was für eine Oper möchstest du hören?
what for an opera want you hear
„What kind of an opera do you want to hear?“
b. Welche Oper möchtest du hören?
which opera want you hear
„Which opera do you want to hear?“

(56a) can hardly be asked in a context where the choice is only between „Cosi fan tutte“, „Lohengrin“ and „Tosca“. In such a situation the D-linked question (56b) is appropriate. If a *was-für* question should be used here at all, it would have to involve a partitive construction as in *Was für eine von diesen Opern möchtest du hören?* (56a) is appropriate, if the choice is between kinds of operas, say opera seria, German romantic opera, Italian verismo etc. In order to demonstrate superiority effects as resulting from non-D-linking, Wiltschko uses among others the examples in (57). According to her judgments both sentences are deviant and have the mark *?.[27].

(57) a. (*?)Was für Opern mögen denn was für Menschen?
what for operas like PRT what for people
b. (*?)Was für Futter fressen denn was für Tiere?
what for food eat PRT what for animals

An example of Wiltschko's which is indeed deviant appears in (58):

(58) *Was für einen Jungen$_1$ wird sein$_1$ Bruder besuchen?
what for a boy-ACC will his brother-NOM visit

The question is whether its ill-formedness can be attributed to a WCO-violation. It could be the case that it is simply semantically odd because it asks for a kind of boy in connection with the definite NP *sein Bruder*. It needs little stretching to find examples in which the functional interpretation of the subject NP becomes prominent. In such a case, the ill-formedness disappears, both with respect to binding and superiority:

(59) a. Was für eine (Art) Oper$_1$ sollte ihr$_1$ Komponist mindestens
what for a (kind) opera should its composer at-least
zwei Wochen vor der Uraufführung fertiggestellt haben?
two weeks before the premiere completed have
„What kind of opera should have better be completed by its composer two weeks before the premiere?“
b. Was für eine (Art) Oper$_1$ könnte welcher Komponist
what for a (kind) opera could which composer
geschrieben haben?
written have
„What kind of opera could have been written by which composer?“

This repeats the negative result for a clear test of a morpho-lexical distinction in D-linking. For the WCO-theory to work, it is necessary that the wh-in-situ phrase leaves the VP by short scrambling. Various authors (e.g. Müller and Sternefeld, 1993) have argued that wh-phrases cannot undergo scrambling. One must distinguish, however, between intermediate positions

[27] Since I disagree with her judgments, I put the judgments in brackets.

and terminal landing sites: If the scrambled phrase lands in pre-VP position, the acceptability is generally degraded for the plausible reason that wh-phrases in-situ must occupy a potential focus position. The net effect of scrambling is, however, to move material out of such a position. Using scrambling for targeting an intermediate position before the occurrence of operator movement is quite a different issue. One should not exclude the possibility that D-linking effects can be revealed by wh-scrambling as Wiltschko (1997) has suggested. For the time being, however, it seems impossible to show how the status of *was-für* and *welch*-questions could be distinguished beyond the purely theoretical assumptions underlying the wh-scrambling analysis. Notice that when the particle *denn* is used as an overt sign of the VP boundary as suggested by Diesing (1992), the landing of the wh-phrase in the scrambling position leads to a bad result in each of the cases under consideration:

(60) a. Wer hat denn welche /was für Opern geschrieben?
who has PRT which / what for operas written
b. *Wer hat welche/was für Opern denn geschrieben?

The requirement seems to be in each case that the unmoved wh-phrase remains in VP, which roughly means that it remains in the focus projection.

To conclude this section, no forceful argument in favor of LF-movement of the wh-in-situ element has appeared so far. In each of the cases considered, there was either a Q-particle in scope position in whose c-command domain the in-situ element could be interpreted as an existentially bound variable, or there was one wh-phrase in SpecCP which identifies the clause as a +wh clause, say, by spec-head agreement. In that case, there is again a +wh head which would c-command all occurrences of wh-in-situ. There were still examples of wh-in-situ like the French example (27a), *Tu as vu qui?* („You have seen whom?“). Since these are restricted to root contexts, we can assume that they involve a silent Q-particle that binds the wh-phrase in situ.[28] We have seen that for those cases for which Pesetsky claimed LF-movement because they are aggressively non-D-linked, other mechanisms can be motivated. We have considered in some detail an analysis by which superiority violations as in **What did who say?* can be reduced to WCO-violations.[29] The considerations so far have reached a point in favor of unselective binding. This squares with much current research on wh-constructions, e.g. Aoun and Li (1993), Cole and Hermon (1994; 1998), Sabel (1998), as well as with conclusions that are necessitated by the adoption of the Minimalist Program as formulated in Chomsky (1995). Nevertheless, the unselective binding solution of the wh-in-situ problem has also received criticism. The next section is devoted to an evaluation of this criticism.

3.3 Is unselective binding affected by a semantic problem?

The received story of unselective binding is strongly influenced by one central proposal of DISCOURSE REPRESENTATION THEORY (DRT) and closely related models (Kamp, 1981; Kamp

[28] How this Q-operator is syntactically represented is a matter of debate. Koopman (2000) adopts an idea of Dominique Sportiche's according to which there is a silent Q-head which gets identified by moving the IP it selects to its specifier. One could also think about an analysis in which interrogative intonation is directly responsible for the possibility of wh-in-situ in languages that usually move their wh-elements.

[29] This can in no way mean that the WCO-account is free of problems, of course; cf. Haider (2000) for critical discussion of the fact that superiority and binding violations do not always go hand in hand. Discussion of this would go beyond the scope of this article.

and Reyle, 1993; Heim, 1982) according to which indefinites are not themselves generalized quantifiers as in earlier semantic theories and in the earlier approaches in terms of QUANTIFIER RAISING (QR), but rather variables which get bound by the default operation of existential closure. The DRT-approach squares with the standard semantic analyses of interrogatives such as Karttunen (1977) where wh-phrases are essentially seen as indefinites. A sentence like (61a) - taken from Reinhart (1997) - translates into the semantic representation (61b), which designates the class of propositions such that there is at least one European country of which the property of a having a queen can be truly asserted.

(61) a. Which European country has a queen?
b. λP (∃x (European country (x) & P = ^(x has a queen) & true (P)))

True answers to (61a) are *England (has a queen)* and *The Netherlands (has a queen)*. Consider now multiple questions. As is known from the examples (8) through (10), which are repeated below, multiple questions can be formed such that the unmoved wh-phrases can be left in a syntactic island.

(8) a. ??**What** did you find evidence that Jim has bought?
b. Who found evidence that Jim has bought **what**?

(9) a. ??**What** did you know where we bought?
b. Who knows where we bought **what**?

(10) a. ??**Who** did you get jealous after I had spoken to?
b. Who got jealous after I had spoken to **who**?

If the indefinite NPs corresponding to the wh-in-situ elements have to undergo regular wh-movement, the grammar has the undesirable property that was broadly accepted in the GB-framework, namely that the derivation of LF from S-structure is somehow less constrained than the derivation of S-structure from D-structure. However, the situation is troubled by various additional aspects that have to be taken into account for the classical LF-theory and the QR-analysis to work. While quantifiers such as [*every* ...] generally observe syntactic islands, indefinites such as [*a* ...], [*some* ...], also [*two* ...], [*three* ...] etc. seem to be able to escape from any island.[30] In classical LF-theory, they would have to undergo „island-free QR“

[30] Consider the following examples, the second of which is from Farkas (1981):
(i) *We showed [an architect [who built [*every house in this area*]$_1$]] its$_1$ basement
(ii) Each student has to come up with [three arguments [which show [that [*some condition proposed by Chomsky*] is wrong]]]
The universally quantified NP in (i) is unable to bind the pronoun *its* for the obvious reason that it cannot be raised from the complex NP in which it occurs. The indefinite NP in (ii) can obviously be raised out of a similar island. The case at hand is particularly interesting as it has a natural reading according to which the indefinite is not specific: For each student there can easily be different condition by Chomsky for which he or she has to find three arguments which show that it is wrong. This shows that the island-free scope of indefinites cannot be reduced to their name-like behavior (specificity). For further discussion of the scope of indefinites see SynCom ## (by E.Ruys).
Reinhart (1997: 336) suggests that a universally quantified NP can be QRed out of its CP, but not out of a complex NP. Her examples are:
(iii) A doctor will make sure [that we give every new patient a tranquilizer]
(iv) A doctor will examine [the possibility [that we give every new patient a tranquilizer]]
If the universally quantified NP can take the indefinite of the matrix clause in its scope, the question remains, however, why a bound variable interpretation as indicated in (v) is still unavailable or at least very hard to get:

as Reinhart (1997) calls this process. As we have seen already, unselective binding seems to be an attractive possibility of avoiding the derivational complications GB and earlier versions of syntactic theory were troubled with. Wh-in-situ questions would then generally be analyzed such that the phrase in situ stays exactly where it is born and is simply coindexed with the Q-particle or +wh marked C-position that c-commands it. This amounts to Baker-style representations as we have already seen in (34), and which we repeat here for convenience.

(34) a. $[[_{Comp}\ Q_{i,j}\ \text{who}_i]\ t_i\ \text{read what}_j\ ]$
b. $[[_{CP}\ \text{who}\ [_{C'}\ [_{C^\circ}\ +\text{wh}]_{i,j}\ [\text{who}_i\ \text{read what}_j]$

As Reinhart (1997) shows, representations which make use of unselective binding can be connected with Karttunen's semantics in the same way as representations which make use of covert wh-movement of the earlier analyses we have already discussed. Assuming unselective binding, the example on which (34) rests - (62a) - would come out as (62b):

(62) a. Who read what?
b. $\lambda P\ (\exists xy\ (\text{person}\ (x)\ \&\ P = \hat{}(x\ \text{read}\ y\ \&\ \text{thing}\ (y))\ \&\ \text{true}\ (P)))$

Here the existential operator associated with the feature structure of the initial (overtly moved) wh-item may have as many indices (x, y, ...) as there are wh-phrases in the clause. Crucially, the restrictive clause remains in situ. Abstracting away from the subject for the moment, this squares with Chomsky's suggestion in the Minimalist Program that the only thing that actually moves to or retains a scope position at the C-I-interface („conceptual-intentional interface") of the grammar is the operator proper, i.e. the operator feature rather than the restrictive part.[31]

However, Reinhart (1992; 1997; 1998) has argued that this analysis, although attractive from a syntactic point of view, cannot be maintained because it yields wrong entailments. Let us therefore take a look at those arguments of Reinhart's which pertain to wh-in-situ. The multiple question in (63) and its informal and formal LF-representations in (64) and (65) are taken from Reinhart (1997: 359):

(63) Who will be offended if we invite which philosopher?

(64) *The unselective binding analysis*
a. For which <x,y>, if we invite y and y is a philosopher, then x will be offended
b. $\lambda P\ (\exists \langle x,y \rangle\ (P = \hat{}((\text{we invite y}\ \&\ \text{philosopher}\ (y)) \rightarrow (\text{x will be offended}))$

(v) ?*His_1 doctor will make sure [that we give [every new patient]$_1$ a tranquilizer]
See in this connection also the examples in note 1.

[31] As is widely known, any theory has to cope with the reconstruction problem that is visible in examples like
(i) [Which picture of himself_2]$_1$ does John_2 really like t_1?
where it must be guaranteed that the anaphor is bound by *John* although it appears outside its c-command domain. Chomsky (1995) gets rid of reconstruction by allowing the moved phrase to remain as a copy in situ. Different deletions apply to the copy representation at the two interfaces respectively. At the A-P („articulatory-perceptual") interface, the in-situ copy is deleted, while at the C-I interface everything but the +wh operator feature is deleted, whereas the operator part is deleted from the copy. Thus, the restrictive phrase is automatically in situ and the anaphor can be standardly bound. This is shown in (ii), a representation which appears to be extremely close to what we have seen as the standard format for interrogatives in wh-in-situ languages like Japanese which employ a Q-scope marker.
(ii) [Which ~~picture of himself$_2$~~] does John_2 really like [~~which~~ picture of himself_2]

& true (P)))

(65) *The QR analysis*

a. For which <x,y>, y is a philosopher, and if we invite y, then x will be offended

b. λP (∃<x,y> (philosopher (y) & P = ^((we invite y) → (x will be offended)) & true (P)))

(64) gives the unselective binding analysis according to which the restrictive clause („y is a philosopher“) appears inside the antecedent of the conditional. According to Reinhart, this analysis is too permissive as it yields the wrong entailment that we can invite anybody - including non-philosophers - and still make the conditional true. (65), on the other hand, gives the QR analysis according to which the restrictive clause appears outside the antecedent clause of the conditional. Here it is a prerequisite for the conditional to come out as true that the invitee is indeed a philosopher. This squares with our semantic intuitions. What exactly goes wrong in (64)? Reinhart says that according to the unselective binding analysis in (64) an appropriate answer could well be *Lucie will be offended, if we invite Donald Duck*, although we all understand that Donald Duck is not a philosopher. This means that whatever truth value is ascribed to the restrictive clause, the conditional will come out as true. This consequence can be checked by the truth table of propositional logic of which (66) mentions the relevant parts for convenience.

(66)

p	**q**	**p & q**	**p → q**
1	1	1	1
1	0	0	0
0	1	0	1
0	0	0	1

Assume that the conditional's antecedent is composed of the conjunction of the true proposition that we invite Donald Duck and the false proposition that Donald Duck is a philosopher. By the conjunction rule in the third column this makes the antecedent false. But this will now suffice to make the conditional true as one can see by inspecting the last two lines of the implication column under p → q.

If the argumentation based on the semantic analysis of interrogatives is correct, there is now a dilemma: Our intuitions about the meaning of multiple questions and their acceptable answers require a movement analysis of the indefinite in the sense of QR; on the other hand, a movement analysis is undesirable for well motivated syntactic reasons. In the case at hand, the indefinite would have to be lifted out of the conditional's antecedent. This antecedent has the status of an adjunct, and - as expected - overt movement gives a bad result:

(67) *Who$_1$ will Lucie be offended, if we invite t_1?

In the best of all worlds the indefinite attains wide scope without movement. Thus, another operation than QR must be available. Reinhart proposes CHOICE FUNCTIONS (CF) as such a possibility. The idea is that the existential closure operation that has been suggested by DRT in order to bind the variable corresponding to an indefinite NP does not bind an individual variable but rather a function that selects an entity of such and such kind from a (non-empty) set. Recall that the unselective binding analysis in (64) was such that ∃ can bind any occur-

rence of a variable (i.e. the indefinite) coindexed with it. If, however, ∃ is restricted to binding only a function that selects such and such, the restriction of the variable can be captured without moving the entire existential NP out of the clause as the QR-analysis would require. Under Reinhart's proposal, the LF of (63), *Who will be offended if we invite which philosopher?*, turns into (68), of which (68a) is again the informal and (68b) the Karttunen-style formal LF:

(68) *The choice function analysis*

a. For which <x,f>, if we invite f(philosopher), then x will be offended

b. λP (∃<x,f> (CH(f) & P = ^((we invite f(philosopher)) → (x will be offended)) & true (P)))

This LF expresses that we are looking for a person x and a function f which selects only philosophers such that if we invite anyone selected by f , x will be offended. One can see that by this move the proper scope of the existential operator outside the antecedent of the conditional (i.e. the syntactically offended island) can be captured without actually moving the relevant NP out. If the relevant model is such that Donald Duck is not a philosopher, an answer like *Lucie will be offended, if we invite Donald Duck* will not be appropriate because it cannot make the conditional true.

This leads to the delicate part of Reinhart's theory: Is the conditional false or is it simply undefined? Recall that the unselective binding approach was criticized because it was said to be overly permissive. If the restrictive clause is part of the conditional's antecedent clause, any value for the proposition „y is a philosopher", not only the intuitively favored value 1 but unfortunately also the value 0 will make the conditional come out true. By the conjunction rule (p&q) the choice function approach will convert any conditional that yields the value 1 into 0, if the existentially quantified part ∃f ... CH(f) fails to attain the value 1. This much is straightforward. The question is whether the unselective binding approach is really doomed to failure unless choice functions are admitted. One should notice that the adoption of choice functions supplies the semantic language with extra power, a step which needs motivation beyond the solution of the scope of indefinites. The immediate worry about LFs such as (64b) - λP (∃<x,y> (P = ^((we invite y & philosopher (y)) → (x will be offended)) & true (P))) - is that they fail to reflect the assertion/presupposition division of the corresponding natural language expression. The proposition that y is a philosopher is at no point under debate. So it seems to be wrong to use this presupposed information on a par with the asserted information for the computation of the truth value of the whole sentence. Assuming that we do not use this background information in computing the meaning of the conditional, the information of the restrictive clause would have to appear in the discourse context. If the truth of it is denied, as is the case when we allow Donald Duck into the relevant set of individuals the question in (63) is about, we witness a presupposition failure. But presupposition failure is essentially a pragmatic problem, and it seems to be undesirable to pack presuppositions in such a way into LF that they cannot be distinguished from the asserted material. Reinhart (1997:fn 19) refers to this problem. Although it seems to be acknowledged there that wh-expressions are presuppositional, and that presuppositions belong to pragmatics, she nevertheless rejects accounts along the lines which have been sketched above, because „(a)ssociating presuppositions with existentially quantified NPs is highly problematic within any of the familiar semantic systems, as it disables basic entailments." (p.360). Unfortunately, an evaluation of this claim would go beyond the scope of the present article. So the is-

sue has to be left unresolved.[32]

The positive result that has emerged from the preceding discussion is that wh-in-situ in multiple questions does not force a QR-analysis and its consequences of violating syntactic constraints on movement. In principle, unselective binding can deal with all sorts of cases of wh-in-situ, not just with the D-linked ones that Pesetsky had in mind. The discrepancy we saw between the a. and b. cases of examples (8) through (10) ceases to be a problem, once we can maintain that the LF of wh-in-situ is not necessarily established by movement. The question of this section, „Is unselective binding struck by a semantic problem?" can in principle be answered negatively, at least if it can be maintained that variable binding is not per se syntactic. The semantics of unselective binding may, however, have to be modified in the direction suggested by Reinhart's introduction of choice functions, if it turns out that the simpler approach of existential closure of individual variables is not sufficient.

So far it seems that for the purposes of wh-in-situ the LF-movement approach can be abandoned entirely. We have seen that in the languages considered up to this point there is either overt movement of a wh-phrase to SpecCP which can then license occurrences of other wh-elements in situ, or there is a functional Q-particle from the outset which binds wh-elements in situ. Both kinds of binding can be characterized as unselective and „island-free", i.e. in none of the cases can we observe subjacency restrictions, although there are - as we have seen - other restrictions that could, however, be reduced to conditions on well-formedness that lie outside bounding theory. We will in the next section take a look at wh-in-situ languages for which the simple picture developed so far does not seem to hold, i.e. for which we may nevertheless want to maintain derivations of wh-scope in terms of covert movement.

4. Wh-scope in Bengali: A case study

Most of the material in this section is from Bengali and has been discussed in Bayer (1995; 1996: ch.7; 1999a). Much pertains to other languages from the South-Asian linguistic area. Bengali together with Assamese, Oriya, Southern Hindi (Dakkini Hindi) and Marathi is particularly interesting, however, as it shows a mixture of types of sentential complementation. While the Dravidian languages are strictly head final and consequently have clausal complements (with a final complementizer) to the left of the matrix verb, Bengali and the other Eastern Indo-Aryan languages mentioned in the set have in addition complements (with an initial complementizer) to the right of the matrix verb like *ki*-clauses in Hindi and various other languages from Northern India. This duality in complement types interacts in interesting ways with the scope of wh-in-situ. The questions that emerge from this situation are of general importance for the present theorizing about wh-in-situ.

4.1 Simplex interrogatives and the lack of a Q-morpheme in constituent questions

Bengali has a clitic-like sentence-internal or –final element *ki* that serves as an interrogative marker to form yes/no-questions, but this *ki* (meaning „what") is optional and seems to be confined to the root clause. An example appears in (69a). As happens with the interrogative morpheme in other languages such as Japanese, this *ki* can be missing in root clauses. Obvi-

[32] For independent remarks on Reinhart's argument against the in-situ interpretation of the restrictive term cf. Pesetsky (2000:110f.).

ously question intonation can make up for the use of a Q-morpheme. Alternatively, the clause can be followed by the tag *ki na* (literally „what not“). This tag is able to type the clause in such a way that it can be used in a context that requires a +wh complement. This is shown in (69c). (69d) shows that in a context where a +wh complement is required neither the naked IP *ram ca khabe* is sufficient nor the IP which contains the internal Q-particle *ki*:

(69) a. tumi (ki) ca kinecho?
you Q tea bought
„Did you buy tea?“
b. tumi ca kinecho(ki na)?
you tea bought Q NEG
„Did you buy tea or not?“
c. Se jiggeS korche [ram ca khabe ki na]
(s)he question makes Ram tea drinks Q NEG
„(S)he is asking whether Ram will take tea“
d. *Se jiggeS korche [ram (ki)ca khabe]
(s)he question makes Ram Q tea drinks
„(S)he is asking whether Ram will take tea“

These data suggest that non-root interrogative clauses must be overtly typed as +wh, and that neither the internal *ki* nor a zero Q-morpheme would be able to do this job.

Constituent questions never appear with an interrogative marker that may overtly type the clause as +wh or indicate the scope position of the wh-item. The examples in (70) show nothing but the wh-words (actually „k-words“) *ke*, *ka-ke* etc. The appearance of the interrogative particle *ki* as in (71) makes the sentences ungrammatical:

(70) a. ke eSeche?
who come-has
„Who has come?“
b. tumi kake dekhecho?
you whom saw
„Who did you see?“
c. tomar bondhu kEno aSe ni?
Your friend why came NEG
„Why did your friend not come?“

(71) a. *ke eSeche ki? / *ke ki eSeche?
b. *tumi kake dekhecho ki? / *tumi kake ki dekhecho?
c. *tomar bondhu kEno aSe ni ki? / *tomar bondhu kEno ki aSe ni?

The wh-words are uniquely used for the formation of constituent questions. As is the case in Hindi and other related languages, relative operators are morphologically distinct. Thus, wh-words in Bengali and related languages obviously do not rely on a separate typing element. Like in many other languages, various members of the wh-series can be turned into -wh indefinites by attaching extra morphemes.[33]

[33] Examples are given in (i) and (ii); they can, however, only appear in the scope of negation.
(i) ke ("who") + o ⇒ keu ("someone", nom.)
(ii) ka + o + ke ⇒ kauke ("someone", obj.)

There are three possibilities for wh-phrases in situ to reach a scope position: (i) adjunction in the sense of QR, given that there is no obvious SpecCP landing site as in the Western languages; (ii) feature attraction by an element in scope position which, however, in Bengali would have to feature a zero morpheme; (iii) covert wh-movement as initially suggested by Huang (1982) for Chinese.[34] Option (i) has been argued for by Mahajan (1990) with respect to Hindi. Mahajan suggested, however, that the wh-phrase has to adjoin such that it will be governed by a +wh complementizer, an assumption that had also been made in Nishigauchi (1990). But neither in Hindi nor in Bengali do we ever see a morphological realization of such a complementizer, (unlike in Japanese). Thus, we would have to postulate a zero morpheme as under option (ii). As our earlier discussion in section 3 has shown, the presence of a Q-particle or some other +wh occurrence normally allows unselective binding. As a consequence, it is unclear why there should in addition be movement, provided that the indefinite's restrictive part can stay in situ, and the actual process of variable binding is independent as suggested by DRT. Assuming that in the presence of an unselective binder there is no movement, subjacency effects are not expected. If we see subjacency effects, this would be evidence in favor of option (iii), i.e. covert movement of the wh-element to scope position. Let us see what kind of evidence Bengali offers.

4.2 Subjacency

Consider first the adjunct clause introduced by *karon* („because") in (72):

(72) a. amar mon kharap [karon ram durga pujay aSbe na]
my mind bad because Ram Durga-Puja-atcome-will NEG
„I am annoyed because Ram will not show up for (the festival of) 'Durga Puja'"

b. *tomar mon kharap [karon ke durga pujay aSbe na]?
your mind bad because who Durga-Puja-atcome-will NEG
„You are annoyed because who will not show up for 'Durga Puja'"

As the ill-formedness of (72b) shows, *ke* does not seem to obtain scope over the matrix clause.[35]

Let us next consider relative clauses. Here one should notice that there are two types of relative clauses: Correlative relatives which appear obligatorily to the left and are followed by the main clause in which the relativization operator is picked up by a demonstrative pronoun or NP, [36] and right-hand relatives which can form a complex NP together with a „head" NP. Ex-

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See also note 5.

[34] A subcase of this would be „overt" movement of a zero operator as Watanabe (1992) has suggested. We will briefly turn to this possibility in section 4.4.

[35] (72b) should improve, if the matrix clause contains another wh-element not in an island. In that case we get a multiple question as shown in (i):

(i) kar mon kharap [karon ke durga pujay aSbe na]?
whose mind bad because who Durga-Puja-at come-will NEG
„Who is annoyed because who will not show up for 'Durga Puja'"

There is, in fact, an improvement indicating that *kar* can scope-license the *ke* in its island.

[36] For details consider the treatment of correlatives in Hindi in Srivastav (1991c).

amples of correlatives appear in (73) and (74).

(73) a. je behala-y thake Sey lokTa kal phon koreche
who Behala-in lives this man yesterday phone did
„The man who lives in Behala rang up yesterday“
b. *je kothay thake Sey lokTa kal phon koreche?
who where lives this man yesterday phone did
„The man who lives where rang up yesterday?“

(74) a. jake ram Taka diyeche take ami nemontonno korechi
whom Ram money gave him I invitation did
„I invited the one that Ram gave money to“
b. *jake ram koto Taka diyeche take tumi nemontonno korecho?
whom Ram how-much money gave him you invitation did
„You invited the one that Ram gave how much money to?“

From a correlative relative clause, a wh-in-situ phrase can obviously not obtain scope. This restriction cannot be reduced to a restriction such as the name constraint, because changing the verb *korechi* in (74) to the habitual form *kori* („I (usually) do“) leads to a non-specific interpretation of the NP on which the relative depends: „I invited whoever Ram gave money to“. Nevertheless, a wh-phrase would not be allowed in such a relative either. This impression is supported by the next examples which show that questioning out of right-hand relatives which are part of complex NPs and are clearly indefinite is likewise impossible:

(75) a. Ekjon lok je behalay thake kal phon koreche
a man who Behala-in lives yesterday phone did
„A man who lives in Behala rang up yesterday“
b. * Ekjon lok je kothay thake kal phon koreche?
a man who where lives yesterday phone did
„A man who lives where rang up yesterday?“

(76) a. ami Ekjon lokTake jake ram Taka diyeche
I a man whom Ram money gave
nemontonno korechi
invitation did
„I invited a man who Ram has given money to“
b. *tumi Ekjon lokTake jake ram koto Taka diyeche
you a man whom Ram how-much money gave
nemontonno korecho?
invitation did
„You invited a man who Ram has given how much money to?“

These data contrast with data from Malayalam discussed in Jayaseelan (2001) where Japanese-style relative clauses can be formed in which the wh-element occupies the left edge of the phrase.

(77) aarə ezhuti-(y)-a kawita waayicaa kuTTi karañña?
who wrote REL poem read child cried
„The child that read the poem that who wrote, cried?“

It seems that the phrase headed by *waayicaa* is in the specifier of *kuTTi*, the phrase headed by *kawita* is in the specifier of *waayicaa*, and the phrase headed by *ezhutiya* is in the specifier of *kawita*. If *aarə* types [*aarə*] as +wh the recursive embedding will lead to +wh marking of the big phrase headed by *kutti*. The situation is analogous to English *whose mother's dog's flea collar* which is also +wh specifier recursion. There is no need for extraction, and in fact overt extraction is blocked in any such case. The same situation holds in Bengali pre-nominal gerunds like in *hindi jana lok* (Hindi knowing man, "man who knows Hindi"). Overt extraction of *hindi* by scrambling is impossible, but it can be replaced by a wh-phrase as in (78):

(78) tumi [[kon bhaSa jana] lok -ke] nemontonno korecho?
you which language knowing man-ACC invitation did
„You invited a man who knows which language?"

Most plausibly, the entire phrase headed by *lok-ke* is +wh and can access sentential scope. No extra devices like a Q-particle seem to be needed. This impression is corroborated by the syntax of PPs. PPs are postpositional, and overt movement of the NP is impossible. Thus, the wh-element *kar* in (79b) or (79c) must gain scope without leaving the PP:

(79) a. *kar$_1$ ram [t$_1$ Satte] kotha bolte cae?
who Ram with talk say wants
b. ram [kar Satte] kotha bolte cae?
Ram who with talk say wants
„Who does Ram want to talk to?"
c. [kar Satte]$_1$ ram t$_1$ kotha bolte cae?
who with Ram talk talk say wants

If one follows the idea that covert movement affects nothing but the wh-phrase proper or even nothing but the wh-feature (cf. Chomsky, 1995), there is a massive problem for the movement account. Covert movement would ignore a constraint that is absolute in comparison with the known gradual loss of acceptability observed in typical subjacency violations (in English). The postulation of a silent Q-morpheme that could serve as a licenser of wh-in-situ offers no alternative as it would be far to unrestrictive (cf. (72) and (73) through (76)). If Bengali does not have a wh-scope marker, the conclusion must be that the island itself acquires the feature +wh and is subsequently moved to scope position, i.e. there is covert pied piping. As already indicated by (79c), overt movement shows exactly this.

Bengali has a number of infinitival adjuncts which prefer to stay in clause-internal or topicalized position. Extraposition seems to be tolerable, but leads to marked constructions. These adjuncts may contain wh-phrases. The answers to such questions preferably repeat the island, which we have seen is a typical sign of pied-piping. Consider the examples in (80) through (82) where b. is the question and c. the answer:

(80) *Past participial (PPT) adjunct*
a. [bhat kheye] ronjit ghumote jabe
rice eat-PPT Ranjit to-sleep go-will
„Having eaten rice, Ranjit will go to sleep"

b. [ki kheye] ronjit ghumote jabe?
what *eat-PPT* *Ranjit to-sleep* *go-will*
„Ranjit will go to sleep having eaten what?“
c. bhat ??(kheye)
rice *eat-PPT*
„(Having eaten) rice“

(81) *Imperfective participial (IMP) adjunct*
a. [kagojTa poRte poRte] ronjit kotha bolchilo
paper *read-IMP* *read-IMP* *Ranjit* *talk* *said*
„Ranjit talked while reading the newspaper“
b. [ki poRte poRte] ronjit kotha bolchilo?
what *read-IMP* *read-IMP* *Ranjit* *talk* *said*
„Ranjit talked while reading what?“
c. kagojTa ??(poRte poRte)
paper *read-IMP* *read-IMP*
„(While reading) the newspaper“

(82) *Conditional (COND) adjunct*
a. [tumi kolkatay gele] tomar ma khuSi hobe
you Calcutta-to go-COND *your mother happy become-will*
„If you go to Calcutta, your mother will be happy“
b. [tumi kothay gele] tomar ma khuSi hobe?
you *where* *go-COND* *your mother happy become-will*
„If you go where, your mother will be happy?“
c. kolkatay ??(gele)
Calcutta-to *go-COND*
„(If I go) to Calcutta“

In (80b) and (81b) the wh-word *ki* may reside in the specifier of the adjunct; by virtue of this, the +wh adjunct can access a scope position. It is not so clear how this reasoning would carry over to (82b) where the wh-word *kothay* is not the leftmost category. The same situation holds in (83) which involves a reason clause.
It shows that wh-in-situ may not only be licensed in non-finite adjuncts but also in finite ones. (82) involves the final head *bole* which here has the meaning of „because“.

(83) [[ram kobe aSbe na] bole] tomar mon kharap]?
Ram *when* *come-will NEG because* *your* *mind* *bad*
“You are annoyed because Ram will when not show up?”

As we shall shortly see, the head *bole*, which can also head an argumental clause, is compatible with the interrogative force of an operator. Therefore one can assume that after local raising of the wh-word *kobe*, the entire *bole*-adjunct will be marked +wh. Thus, *kobe* does not obtain wh-scope by island-violating LF-movement, but rather by pied-piping the entire adjunct.[37]

[37] That non-arguments allow for the percolation of a wh-feature is attested in adjoined PPs, but also in predicates, as the following rather puzzling German example from Trissler and Lutz (1992) shows in which a wh-adverb pied-pipes the past participle along:

How it is possible that the *bole*-clause is "recognized" as +wh although its complement contains a non-peripheral wh-word is not quite clear. It looks as if this wh-word can access the projection of *bole* by virtue of covert movement.

Before presenting more evidence to this extent let us pause here and ask which form covert wh-movement could take given the evidence presented so far.

4.3 What is covert wh-movement?

Wh-in-situ languages like Japanese have taught syntacticians a lesson that semanticists have learned from investigating the composition of generalized quantifiers.[38] Languages which employ a Q-scope marker show explicitly what the wh-moving languages (mainly) hide, namely the partition between the wh-feature and the „rest" which is again composed of something like an existential quantifier and a semantic restriction. In terms of Kamp's DRT and Heim's (1982) contribution to semantic theory, a wh-phrase being an indefinite NP would not itself carry an existential quantifier; it would rather be a variable which gets bound by some default operation such as existential closure. Ignoring this for the moment, wh-phrases like *where, which student* or *which student of linguistics* decompose as in (84).

(84)

WH-FEATURE	QUANTIFIER	RESTRICTIVE CLAUSE
+wh	∃	λx time (x)
+wh	∃	λx student (x)
+wh	∃	λx student of linguistics (x)

In LF-representations these atoms of meaning have to be systematically separated. Languages which employ a Q-scope marker or +wh typing morpheme have already done half the work in their visible representation by overt separation of the interrogative wh-feature from the rest. Languages which employ wh-phrases have to move them to a functional position. In the Minimalist Program (Chomsky, 1995) it is suggested that the C-head of CP may bear a feature +wh which attracts a wh-phrase whose +wh feature gets checked and is subsequently deleted. Movement is such that the trace left behind is actually a full but inaudible copy of the moved phrase. If what happens to the moved part will also happen to the copy, checking off the wh-feature will also lead to checking off the wh-feature in the copy. This leads to the structure in (85) where RC is short for „restrictive clause":

(85) $[_{CP}$ ~~+wh~~ ∃ RC $[_{C'}$+wh $[_{IP}$ ... ~~+wh~~ ∃ RC ...]]]

Assuming with Chomsky (1995) that deletion may apply to this structure in such a way that the RC does not belong to the operator position but rather stays in situ or elsewhere, i.e. the RC is essentially „reconstructed", the resulting structure is as in (86):

(i) [Wie schön geschrieben]$_1$ muß man t_1 haben, um eine Eins zu bekommen?
how beautifully written must one have to a one to get
„How beautifully does one have to have written in order to get an A?"

[38] To be fair, with respect to negative quantifiers the point was seen at least as early as Jespersen (1924) and Bech (1955/57), i.e. long before the advent of contemporary linguistic semantics.

(86) $[_{CP}$ ~~+wh~~ ∃ ~~RC~~ $[_{C'}$ +wh $[_{IP}$ ... ~~+wh~~ ∃ RC ...]]]

Had it not been for the quantifier, we would have almost the surface structure of a Japanese constituent question. If we now assume with DRT that the wh-phrase does not literally contain ∃, but that ∃ gets introduced by a default operation, it will disappear from both SpecCP and from the material in situ, and it will rather appear in a scope position immediately below the wh-operator.[39] Since indefinites are in this theory restricted variables, the ∃ in situ would be replaced by the variable x, and an existential quantifier would be inserted. Following Heim (1982: 138ff.), ∃ is adjoined to the nuclear scope of quantifiers, which we can for concreteness take to be IP (although the nuclear scope may in various cases be smaller than that). Assume that wh-operator, existential operator and restricted variable are connected by a selection index. These changes lead to the LF in (87):

(87) $[_{CP}$ ~~+wh~~ ~~RC (x)~~ $[_{C'}$ +wh_1 $[_{IP}$ $\exists_1$ $[_{IP}$ ... ~~+wh~~ RC (x_1) ...]]]

So much for the simplest kind of constituent questions formed by movement. What about wh-in-situ in those cases where there is no overt wh-scope marker? In this case the derivation starts with nothing but the wh-phrase. Crucially, this phrase will not be attracted by anything. But since it involves a wh-feature, which has been identified in section 3 as involving a disjunctive operator, this operator feature has to move to a scopal position. If it does not, the disjunctive operator will appear at the C-I interface as a meaningful but uninterpreted part. Thus, movement of this kind takes the form of *semantically driven* movement, an option that Chomsky (1995) tried to discard entirely. Let us here adopt the view that semantically driven movement exists nevertheless. The next question is how the wh-operator proper can access a scope position. In the simplest case, the features of some lexical item could just split up, and the wh-feature could raise and adjoin to IP, IP being the syntactic form of the proposition and the proposition being the required scope domain. If we do not wish to introduce feature movement (Move-F) as an island-free operation, something slightly fancier must happen, at least in those cases in which we have seen a discrepancy between overt and covert movement. This brings considerations close to Nishigauchi's theory of LF-pied-piping. Move-F or raising to SpecXP within a potential island will have the effect of turning the entire island into a +wh phrase. This phrase, for example a Bengali PP, will undergo covert movement, again in disagreement with the Minimalist stipulation that covert movement cannot be phrasal movement, but it is now obvious why it makes sense to accept this consequence. The wh-phrase - and certainly an island in which it may arise - will have to fission into proper parts that allow the wh-feature to take scope and to type the clause in the sense of Cheng (1991). The residue, namely the restricted variable (which perhaps is inside an island) has to split off and reconstruct into its base position. This can be achieved by the copy-and-deletion mechanism Chomsky (1993; 1995) has suggested for overt movement. The fissioning of features is not an issue in languages that employ a separate Q-morpheme in scope position and make use of unselective binding because the wh-feature is already represented by an autonomous lexical element. For overt wh-movement the Minimalist account proposes a wh-attractor in C which checks off the wh-feature of the attractee. Covert wh-movement cannot escape the pre-

[39] For both the moved wh-phrase and for wh-in-situ items we must assume that the position of the existential quantifier is identified by the +wh complementizer. As Jayaseelan (2001) argues, the wh-operator (in his case the Malayalam interrogativizer *-oo*) must take the highest position, which he identifies as the head of ForceP, because the clause has to be identified as a question. More semantically motivated reasons for the same ordering effect come to mind readily.

requisites of the standard account of interrogative semantics. This can only mean that after being adjoined to IP, the moved phrase has to fission accordingly. Let us suggest that this can be achieved by what Rizzi (1990; 1991) has called *dynamic agreement* in his CRITERION APPROACH. The relevant part is this: If an operator-headed phrase is moved to an operator position, it must agree with a corresponding head position. If no such head position is there, the phrase in XP-position will have to identify it. This amounts to claiming that semantically driven XP-adjunction can *create* a Spec-head configuration as shown in (88), where +F stands for the relevant feature of XP that defines the dynamically created F-projection:

(88) $XP_{+F}\ [_{YP} \ldots t \ldots] \quad \Rightarrow \quad [_{FP}\ XP_{+F}\ [_{F'}\ F^{\circ}\ [_{YP} \ldots t \ldots]]]$

Semantically complex phrases such as *kar Satte* („with whom“) in (79b) or *kon bhaSa jana lok* („man who knows which language“) in (78) which carry the +wh feature can then adjoin to a scope domain (here YP) and identify a +wh projection by dynamically agreeing with a functional head. The moved phrase can fission into the wh-part and the „rest“ which will reconstruct in the same way as under overt movement. Also the existential closure procedure (which is a covert operation anyway) can apply in analogy to derivations with overt movement. This implementation of covert movement is extremely close to what is believed to hold in overt movement. It is crucially free of the subjacency problem that has haunted LF-theory up to Chomsky's theory of feature movement.[40] An important aspect is that this account also avoids the problems of Nishigauchi's (1990) LF-pied-piping theory which has been criticized by von Stechow (1996) for its „non-transparent“ LF. As von Stechow pointed out, Nishigauchi's theory would have to be supplemented with additional mechanisms to arrive at what he calls a „transparent“ LF. The present proposal is in fact quite close to von Stechow's. There is an important difference, however. Von Stechow suggests pied-piping as an overt though invisible operation in the sense of Watanabe (1992). Once the pied-piped material is in SpecCP, the wh-part proper is extracted from the pied-piped island. This step whose sole motivation rests in the desire to derive a transparent, i.e. interpretable. LF is admittedly in violation of subjacency.[41] The conflict with subjacency does not arise for the present proposal, the crucial difference being that the wh-phrase proper is not isolated by movement but rather by the combination of spec-head agreement and the copy-and-delete mechanism: The pied-piped phrase must carry a +wh feature in order to identify a +wh head. This head will ultimately bind into the island which at LF appears in reconstructed position. Subjacency remains untouched.[42]

In the next subsection, data about transclausal wh-scope in Bengali will be presented which can be explained by covert wh-movement but hardly by the overly powerful device of a zero Q-scope marker.

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[40] It is conceptually more attractive than implementations that divorce overt and covert movement by attributing only overlapping but not isomorphic constraints to them. Since the pied-piping phenomenon is so ubiquitous in language, it can hardly be circumvented in the grammar of covert movement unless the discrepancy between overt and covert movement is taken to be axiomatic.

[41] Cf. von Stechow (1996: 84f.) as well as note 4; recall also that a similar proposal has already been made by Fiengo et al. (1988). See the comments in section 2 above.

[42] For independent motivation concerning the syntax of focusing particles and negation cf. Bayer (1996; 1996b).

4.4 Complement types, directionality, and wh-scope

Bengali is a typologically well-behaved head-final language with respect to one type of its sentential complements, but it appears to be not quite well-behaved with respect to another type. Consider the pair of examples in (89), where it is indicated that complementizers (or complementizer-like elements) can be involved in these constructions or not, depending on certain conditions which are not central to the present discussion:

(89) a. ora [[ram aSbe] (bole)] Suneche
they Ram come-will (C) heard-have
„They have heard that Ram will come"

b. ora Suneche [(je) [ram aSbe]]
they heard-have (C) Ram come-will
„They have heard that Ram will come"

The apparently optional C-elements are unrelated in status as well as origin: *bole* is the past participle of the verb *bola* („to say"). Its sentence-final appearance is a natural consequence of the fact that it is a verb that has been grammaticalized into a functional subordinating head. Verba dicendi as complementizers, traditionally called „quotatives", are an areal phenomenon and appear in all Dravidian and Eastern Indo-Aryan languages and languages that have close contact with them. *Je*, on the other hand, is formally identical with the relativization operator *je*. There is a tendency in the languages under consideration to move such operators („j-words") overtly to clause-initial position.[43] The two types of complements are in almost perfectly complementary distribution. While the extraposition of *bole*-complements is highly marked (and for some speakers impossible), topicalization of *je*-initial complements invaria-

[43]Various native speakers find fronted relative operators better than in-situ operators, but basically also tolerated the latter. Bal (1990: ch.3.4) reports that in Oriya, which is closely related to Bengali, fronting of j-operators is obligatory as soon as the relative appears in extraposed position:

(i) a. [jadu jaahaaku maarithilaa] se aaji aasiba — unextraposed (correlative)
Jadu whom had-beaten he today will-come
„He whom Jadu had beaten will come today"

b. *se aaji aasiba [jadu jaahaaku maarithilaa] — extraposed

c. se aaji aasiba [jaahaaku jadu maarithilaa] — extraposed

Srivastav (1991a: 199) gives examples from Hindi in which the j-operator has moved to the left of the complementizer *ki*, a position which is readily analyzed as SpecCP. Her example (26b) appears in (ii):

(ii) ek laRkii [jis -ko [ki sab pasand karte hai]]
one girl who-ACC that all like AUX
„A girl whom everybody likes"

Chung, Ladusaw and McCloskey (1995) analyze cases of sluicing such as *Someone called but I don't know who* as wh-movement plus copying of the antecedent IP (including the indefinite which they take to be a DRT-type variable). If they are right, Bengali must allow overt wh-movement in its postverbal complements. Notice that the language allows sluicing as shown by the examples in (iii):

(iii) a. kono Ek-jon aSbe, kintu ami jani na ke
some one-person come-will but I know NEG who
„Someone will come but I don't know who"

b. amake Ek-jon-er Satte kotha bolte hobe,
me one-person-GEN with talk speak be-will
kintu ami jani na ka-r Satte
but I know NEG who-GEN with
„I will have to talk to someone, but I don't know to who"

Cf. Merchant (1998) for a proposal that would allow cases of PP-pied-piping as in (iiib) to be covered in the Chung et al. account.

bly leads to ungrammaticality.[44] As can be expected, the two construction types are subject to different constraints. Most prominently, they differ with respect to the scope of in-situ operators contained in these complements. This is demonstrated by the scope of wh-in-situ. Consider first the example in (90):

(90) ora [ke aSbe] Suneche *ambiguous*
they who come-will heard-have
i. „They have heard who will come"
ii. „Who have they heard will come?"

As indicated by the translations in i. and ii., (90) can be either understood as a declarative, i.e. with the wh-expression having narrower scope than the matrix clause, or as a direct question, i.e. with the wh-expression having scope over the matrix clause. The structural ambiguity can be resolved by prosodic means. If *ke* does not carry a main accent, and there is a falling contour on *Suneche*, the declarative reading in i. will result. If *ke* does carry a main accent, and there is a rising contour on *Suneche*, the direct question reading results. Apart from intonation, there is no morphological sign of a surface scope marker that could guide the interpretation. Assuming that the clauses have to be typed clause-peripherally, the wh-item by itself could have targeted either SpecCP of the embedded clause or SpecCP of the matrix clause. The two readings in (90i) and (90ii) are assigned the disambiguated LF-representations in (91a) and (91b) respectively:

(91) a. ora [$_{VP}$ [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ e$_i$ aS-be]]] Sune]-che
b. [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ ora [$_{VP}$ [$_{CP}$ e$_i$ [$_{C'}$ [$_{IP}$ e$_i$ aS-be]]] Sune]-che]]]

The same scope ambiguity is achieved when the final complementizer *bole* is present. Thus, (92) shows the same ambiguity as (90):

(92) ora [[ke aSbe] bole] Suneche *ambiguous*
they who come-will C heard-have

Consider next the scope of a wh-operator in an embedded clause that appears to the right of the matrix verb. Only one reading is possible, namely the narrow scope reading.

(93) ora Suneche [ke aSbe] *unambiguous*
they heard-have who come-will
i. „They have heard who will come"
ii. NOT:"Who have they heard will come?"

In contrast with the examples in (90) and (93), there is no way of achieving a wide scope interpretation of *ke* by prosodic means. Even if *ke* receives the main accent and there is a rising contour, no interrogative interpretation will result.[45] There must be a strong syntactic factor that prevents a sentence such as (93) to be associated with the LF given in (94b):

(94) a. ora Suneche [$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ t$_i$ aSbe]]]
they heard-have who come-will

[44] Cf. Bayer (1999a) and references therein for various details which cannot be provided here.
[45] This effect seems to be without exception in all South-Asian languages which show post-verbal CPs.

b. *[$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ ora Suneche [$_{CP}$ t$_i$ [$_{C'}$ [$_{IP}$ t$_i$ aSbe]]]]]]
who *they heard-have come-will*

As (95) shows, the presence of *je* is always incompatible with a wh-element in IP.

(95) *ora Suneche [je [ke aSbe]]

One could argue that *je* prevents the wh-element from raising to SpecCP because it disallows feature sharing with +wh. But under this explanation it would still be an open question why the wh-phrase cannot take scope in a clause further up.

The scope contrast between the two clause types can also be observed in cases where the semantic selection of the matrix verb disallows interpretive ambiguity. Take *bhab-* ("think") as the matrix verb. Its subcategorization is roughly the same as for English *think*, *believe* or for German *denken*, *meinen*, *glauben*. These verbs select a -wh complement, as shown by the ill-formedness of **You thought who will build a house.* Notice now the difference between (96a) and (96b):

(96) a. tumi [[ke baRi korbe] (bole)] bhabcho?
you who house make-will (C) think
"Who do you think (that) will build a house?"
b. *tumi bhabcho [ke baRi korbe]
you think who house build-will
*You think who will build a house

The complement type which fits into the pattern of head-finality allows the wh-in-situ item to scope out of the scope of the domain of the verb *bhab-*. This is the only way of getting the sentence grammatical. Nothing of this sort seems to be possible in (96b), i.e. the „deviant" complement forces the wh-in-situ element to take narrow scope. This makes the semantic selection violation unavoidable. Thus, the earlier intuitions about ambiguity are now corroborated by intuitions about grammaticality.

How can this be explained? Within the GB-framework, a natural conclusion could have been that the (*je-*) clause in the position to the right of the verb is extraposed, and that as a consequence it is in an A'-position from which no extraction can take place.[46] However, there are reasons to believe that the post-verbal complement has never been anywhere else, and that it cannot have been adjoined to IP by an extraposition rule. (97) demonstrates that the „extraposed" clause is c-commanded by NPs in the matrix clause. Otherwise the pronoun *take* could not get the attested bound variable interpretation:

(97) tumi prottekTa cheleke$_i$ bolecho [$_{CP}$ ke take$_i$ durga pujo-Y
you each boy say who him Durga Puja-at
notun jama kapoR debe]
new clothes give-will

[46] See Mahajan (1990) for argumentation along these lines with respect to Hindi *ki*-clauses where the scope of wh-phrases is constrained accordingly. Mahajan argued that the *ki*-complement originates as a left sister of V, and that overt extraction is possible from there. After the complement is (obligatorily) extraposed, it is in an A'-position. The S-structure that has been reached would then disallow LF-movement from the extraposed CP.

"You told each boy who will give him new clothes at (the festival of) Durga Puja"

Similar data are reported from Hindi in Dayal (2000). The same must be true for (98) where the focused NP - indicated by capital letters - must be c-commanded by the focus particle *Sudhu* („only"):

(98) ami Sudhu bolechi[$_{CP}$ je RAM aSbe na]
I only said that Ram come-will not
"I only said that it is RAM who will not come"

Having established that the postverbal (*je*-) complement appears in its underlying position and is in all likelihood directly selected by the matrix verb, as seems to be the case in a Dutch or German *dat*-/*daß*-CP, let us now return to the scope of wh-in-situ as exemplified in (90) through (96). Free insertion of a zero Q-scope marker appears to be consistent with the intuitions about wh-scope in (90), (92) and (96a), which are repeated here without glosses:

(90) ora [ke aSbe] Suneche *ambiguous*
i. "They have heard who will come"
ii. "Who have they heard will come?"

(92) ora [[ke aSbe] bole] Suneche *ambiguous*
(same as in (90))

(96) a. tumi [[ke baRi korbe] (bole)] bhabcho?
"Who do you think will build a house?"

A silent typing particle or scope marker could be inserted either at the edge of the embedded (*bole*-) clause or at the edge of the matrix clause. In (90/92) we get scope ambiguity due to the fact that the verb *Sona*- („hear") is semantically consistent with both +wh and -wh. Insertion in the embedded clause in (96a) would, of course, lead to a clash with semantic selection by the attitude verb *bhab*-. Thus, we observe only the wide scope reading. The problem is how to prevent the same mechanism from applying to the constructions in (93) and in (96b):

(93) ora Suneche [ke aSbe] *unambiguous*
i. "They have heard who will come"
ii. NOT: "Who have they heard will come?"

(96) b. *tumi bhabcho [ke baRi korbe]
"*You think who will build a house"

There is no reason why a silent typing particle or scope marker could not be inserted in the matrix clause. This would give us the unattested wide scope reading in (93ii.) and predict grammaticality for (96b). One can be sure that such a device would give the grammar far too much expressive power. In fact, a scope „marker" that never marks anything visibly or audibly seems to be a very odd construct to begin with.

Our suspicion would be strengthened, if there still were something like a lexical reflex of wh-scope available in the language, and if the presence of such an item would trigger wide scope from post-verbal CPs. Evidence that points in this direction is indeed available in Bengali. To

see this, consider the following minimal expansions of (93) and (96) seen in (99) and (100) respectively:

(99) ora **ki** Suneche [ke aSbe]?
they Q heard-have who come-will
"Who have they heard will come?"

(100) tumi **ki** bhabcho [ke baRi korbe]?
you Q think who house make-will
"Who do you think will build a house?"

In these examples, *ki* („what") has been inserted in the matrix clause. Section 4.1 has already identified this element as a clause-internal optional marker for disjunctive scope. There is a controversy whether the *ki* in (99) and (100) and the corresponding element *kyaa* in Hindi would be properly characterized as a scope marker. Both examples obviously fall under what van Riemsdijk (1983) has called the *Correspondence Effect* and McDaniel (1988) the *Partial Movement* construction. This construction which appears in many languages of the world has lead to much controversy in the past few years.[47] Dayal (1994; 2000) has argued that in Hindi - and therefore certainly in Bengali etc. too - *ki* is in an argument position. It is a nominal that occupies the A-position that otherwise is reserved for the complement-CP. This CP, which contains the wh-element to obtain wide scope, is adjoined but coindexed with *ki*. In Dayal's theory, the wh-in-situ item *ke* in (99) and (100) would neither covertly move toward *ki*, nor would *ki* unselectively bind *ke*. Dayal rather argues that *ke* obtains wide scope by virtue of being in the CP that is coindexed with *ki*, and by the fact that *ki* takes (local) scope over the clause in which it appears. Thus, (100) does not directly ask „for which person x do you think that x will build a house"; this reading is rather a consequence of the semantic composition of the question (i) „for which proposition y did you think that y is true" and (ii) „for which person x is it true that x will build a house", where y equals (ii). The details of Dayal's theory are not central to the present discussion about wh-in-situ. For the issues at hand it is important to see, however, that once Q-scope is indicated overtly, the positioning of the complement post-verbally ceases to be an obstacle to wide wh-scope from such clauses. This point is quite elementary, and one can remain neutral with respect to the theoretical particulars of a direct scope marking approach or the indirect dependency approach.

Given that we find partial movement in the South-Asian wh-in-situ languages under discussion, it is not surprising to also find overt movement. Although Bengali is in its core properties a typical wh-in-situ language, many speakers accept sentences with an overt displacement of a phrase into the matrix clause. The following example from Bayer (1996) is broadly accepted by native speakers.

(101) tumi [ki oSukhe]$_i$ bhabcho [$_{CP}$ je ram t_i mara gEche]?
you which illness-of think that Ram die went
"Of which illness do you think that Ram died?"

Such movement is never possible from adjoined clauses, i.e. from CPs with an expletive correlate (*e kotha*, „this news" or „this story") or from pure adjuncts. This is shown in (102a) and (102b):

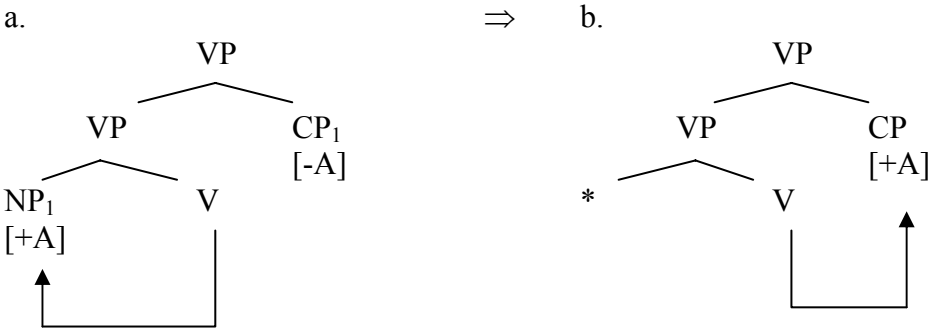
(102) a. *tumi [ki oSukhe]$_i$ [e kotha]$_j$ bhabcho [$_{CPj}$ je ram t_i mara gEche]?

[47] The interested reader is referred to individual contributions in Lutz et al. (2000); see also Sabel (1998, ch. 4).

b. *ke$_i$ tumi k:adcho [karon t$_i$ mara gEche]?
who you weep because die went
*"Who are you weeping because died?"

Overt movement in (101) shows that the post-verbal complements from which we have seen wh-in-situ elements cannot attain wide scope are truly arguments and must be L-MARKED by the matrix predicate, although they appear in an atypical position. The ban against wide scope of wh-in-situ in (93) and (96b) thus cannot be attributed to the purported adjunct status of the complement CP. Bayer (1996; 1997) argues that the constraint on wh-scope follows from the fact that the CP in right-hand position is exceptionally selected by virtue of deletion of the expletive nominal that seems to be responsible for the appearance of such clauses in the first place. Once the licensing element is deleted, the adjoined CP acquires argument status by now being directly L-marked by the matrix predicate. This process, which amounts to the shifting of the argument position, seems to be highly motivated and diachronically rooted not only in Indo-Aryan but also in West Germanic. The transition is as in (103) where A stands for „argument", * for the deletion site, and the arrow for L-marking:

(103) *A-Shift*



Given the assumption that head-final order is a possible word order choice and is not necessarily derived from head-initial order as suggested by Kayne (1994), the VP in (103b) that results from A-shift can be argued to constitute a barrier for movement in head-final languages. The verb in head-final languages L-marks its object to the left. L-marking to the right as in (103b) is exceptional.[48] If as a result of this, VP becomes a barrier, the ban against wide scope of the wh-in-situ element in (93) and (96b) follows. Self-driven movement will target the closest available scope position, a position which may be a specifier created in the derivation as in (88). Under this view, wide scope can only be made possible if the numeration involves an attractor. This is the case in overt movement as in (101). Assume that (101) involves some feature +F in a functional position associated with the matrix-VP, not necessarily a +wh, since -wh phrases may also move in this fashion. This position which has the qualities of an A-position must be lexicalized, and it can be lexicalized if it overtly attracts a +F phrase. The CP from which the wh-phrase moves is L-marked, thus not an island. Transclausal movement in languages of that type appears to be different from movement into clause peripheral positions such as SpecCP. The landing site is clause internal (although scrambling operations may apply in addition). Thus, transclausal movement leads into an „in-situ" position, and not to a typical wh-operator position which would automatically type the clause as a +wh CP.[49] If this is correct actual scoping must still follow this process of overt

[48] It is not exceptional in head-initial languages, of course, with serious consequences. See Bayer (1996) for cross-linguistic evidence with respect to transclausal scope.

[49] Sabel (1998) suggests a feature-based parameterization according to which languages can choose between a

displacement. (101) would end up with the LF in (104) where overt movement is indicated with a solid and covert movement with a broken line:

(104) $[_{CP}$[ki oSukhe]$_1$ $[_{C'}$+wh $[_{IP}$ tumi $[_{FP}$ $t_1$$[_{F'}$ +F $[_{VP}$ bhabcho $[_{CP}$ je ram t_1 mara gEche]]]]]]]

By assumption, the matrix clause of (93) does not contain an appropriate feature. Self-driven LF movement would have to target SpecCP of the matrix clause without first going through FP. This is, however, made impossible due to the barrier status of the matrix VP. In (105), the VP-barrier is set up by the verb's exceptional L-marking which blocks wide scope of *ke*:

(105) $[_{CP}$ [ke]$_1$$[_{C'}$ +wh $[_{IP}$ tumi $[_{VP}$ bhabcho $[_{CP}$ je t_1 baRi korbe]]]]]

The so far established view of SOV word order and wh-in-situ has been challenged by Simpson and Bhattacharya (2000; 2003). Following Kayne's (1994) proposal of a universal spec-head-complement order, Simpson and Bhattacharya suggest that the position which hosts the wh-phrase in Bengali is in fact "high in the C-domain as in other languages". Wh-phrases move into this focus-related SpecCP. Thus, no further (covert) movement is required. But why does it still look as if the wh-phrase were in situ? The reason is that, according to Simpson and Bhattacharya, the true nature of the wh-phrase is "heavily disguised" by remnant material moving still higher than the wh-phrase. The wide scope interpretation of *ke* in (90), i.e. reading ii, would be derived as follows.

(106) a. [ke aSbe] — RAISE *ke* TO SPECCP ⟶
who come-will

b. $[_{CP}$ ke$_1$ [t_1 aSbe]] — MERGE *Suneche* ⟶
who come-will

c. Suneche $[_{CP}$ ke$_1$ [t_1 aSbe]] — MERGE SUBJECT ⟶
heard-have who come-will

d. ora Suneche $[_{CP}$ ke$_1$ [t_1 aSbe]] — RAISE CP TO SPECCP ⟶
they heard-have who come-will

e. $[_{CP}[_{CP}$ ke$_1$[t_1 aSbe]]$_2$ [ora Suneche t_2]] — RAISE SUBJECT ⟶
who come-will they heard-have

f. [ora$_3$ $[_{CP}[_{CP}$ ke$_1$[t_1 aSbe]]$_2$ [t_3 Suneche t_2]]]
they who come-will heard-have

As one can verify in this derivation, the CP in (106b) is +wh, and *ke* is in a proper scope position. Pied-piping the entire +wh CP into the specifier of the dominating CP, as in (106e), will turn this CP into a +wh CP. The word order observed in (90) is achieved by raising the sub-

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±strong wh-feature and a ±strong focus feature. According to Sabel, an in-situ language like Bengali which shows wh-movement to a quasi "in-situ" position would have a +strong focus feature but a –strong (weak) wh-feature. According to conventional assumptions some movement to a wh-scope position would in this case still be required.

ject (which may be +topic) to some higher position. Thus, wide scope wh is achieved without movement of the wh-word proper but rather by clausal pied-piping. The narrow scope of *ke* that has been observed in (93) and (96b) is the result of the +wh CP not undergoing raising to SpecCP of the dominating CP. For wide scope to be blocked in (90), i.e. reading i, the agreement mechanism in SpecCP has to be interrupted by prosodic means which have already been mentioned in the text following (90). Simpson and Bhattacharya's proposal is interesting because it seems to rest on more parsimonious assumptions than previous accounts: There is no word order parameter. Bengali is underlyingly like English. There is no covert movement of wh-phrases or -features, there is only overt movement (cf. Kayne 1998). On the other hand, various new questions arise:

a. How can one speak of clause peripheral typing in the sense of Cheng (1991) if the wh-phrase is linearly next to the verb and can be preceded by any amount of residual material in the clause which seems in no obvious way displaced?

b. If the wh-element must be in a focus position (which is assumed to be associated with Spec CP) in order to gain scope, how can it still undergo scrambling or even be base-generated in a position which is remote from the verb as is often the case?

c. Given that wh-phrases in SpecCP have reached a scope position and can therefore not be "absorbed" (cf. Baker, 1970), how is it possible that (107) is grammatical and therefore must allow a multiple question reading?

(107) Ke bhabchilo [je ronjit ka -ke bhalobaSe]?
who thought C Ranjit who-ACC loves
"Who thought that Ranjit loves whom?"

Kayne (1998: 173) realized that multiple wh-questions may pose a problem for his overt-movement account. He suggests that the scope of the "in-situ" wh-phrase is reached by overt movement of an empty operator which is associated with this phrase. One prediction that Kayne makes is that scoping by empty operator movement which in his system is overt movement should be possible only from domains from which PF-visible overt movement can take place. As (101) shows, the *je*-CP is exactly such a domain. The device which is suggested will then predict that the wh-phrase in (93) can take wide scope. This prediction is wrong. So the problem of how to account for multiple questions as in (107) remains.

d. From languages like English and German it is clear that material in SpecCP disallows subextraction. As shown in Bayer (1999a), however, such is possible from the purported SpecCP position in Bengali.

e. It is largely unclear what the trigger for the remnant material could be which has to move, often recreating what has been identified as the unmarked SOV-order.

f. Related to the last point are questions about learning and parsing because the predicted structures involve far more movements than assumed so far. If the proposed movements have any relation to the parser, there will be predictions about linguistic performance (acquisition, on-line comprehension, aphasic language etc.) according to which wh-in-situ is tougher than overt wh-movement without disguising remnant movement. Such predictions do in all likelihood not conform to empirical findings.

It looks as if Simpson and Bhattacharya's proposal is the beginning of an interesting new alternative to covert wh-movement. At the moment, however, it suffers from certain problems which may well be overcome once the nature of SOV-languages and especially the spec-head relation is better understood.

4.5 Conclusion

Where does this leave us? Our earlier discussion about multiple questions in wh-moving languages as well as wh-in-situ languages has shown that much of the burden of former LF-movement and its problematic status in syntactic theory can be shifted to unselective binding, i.e. by a mechanism that does not require movement. The discussion of wh-in-situ in Bengali, a language that is representative for relevant aspects of grammar that are found in various other South-Asian languages as well, has shown that the world might be a bit more complex. The scope of wh-in-situ elements is not as free as could be expected under island-free scope. In fact, wh-scope seems to be under the control of subjacency. We have in addition seen that the language does not have any overt wh-scope marker or typing particle like Japanese. If these two facts allow us to draw conclusions, the conclusion should be that Bengali wh-in-situ reaches scope by covert movement. A proposal has been made as to how scoping may take place. The proposal was more concrete in the details of wh-head identification and reconstruction than in the aspects of movement proper, intermediate landing sites etc. What has been arrived at is a proposal that keeps overt and covert movement together as closely as possible. The LF-representations that are achieved by both types of movement and the copy-and-deletion mechanism which are assumed to apply uniformly resemble the LFs achieved by unselective wh-binding in all the relevant details. At LF the different scoping strategies collapse into a single form that consists of a +wh head which types the clause and marks the scope of the interrogative, a restricted variable, and an existential operator that binds this variable. Although Bengali and closely related languages are said to be wh-in-situ languages, the language seems to freely make use of other scoping strategies too. Bengali employs some version of partial movement as well as overt movement. Interestingly, both strategies enter the picture exactly where covert wh-movement is inhibited. Scoping by partial movement or overt movement is not used in those complements which are typologically „well-behaved", i.e. in (*bole*-) clauses in canonical pre-verbal position, although scrambling from *bole*-clauses is well possible.[50] Wh-scope from these complements seems to rest entirely on covert movement. If Simpson and Bhattacharya are right, wh-elements in pre-verbal position have taken scope exactly where we see them, and no further process is necessary.

A mixed picture of wh-scoping is not unusual at all. Wahba (1992) has shown that Iraqi Arabic can use overt movement, covert movement and partial movement side by side. Cole and Hermon (1994) discuss evidence from a variety of languages which suggests that the scoping strategies are much less homogeneous across closely related languages and even within a single language than syntacticians working in GB-theory have assumed. They observe that Imbabura Quechua has overt wh-movement, while Ancash Quechua has either overt or covert wh-movement. In Ancash Quechua both (108a) and (108b) are possible:

(108) a. May-man-taq$_i$ [José munan [María t_i aywanan -ta]]?
where-to-Q José wants María will-go -ACC
"Where does José want María to go?"

b. [José munan [María may-man$_i$ aywanan -ta]]?
José wants María where-to will-go -ACC
(same as (108.a))

In (108a) the Q-morpheme *taq* seems to be responsible for the attraction of the wh-phrase

[50] Relevant data - not only from Bengali - can be found in Bayer (1999a).

may-man. In (108b) no such morpheme appears. Cole and Hermon observe both subjacency and ECP effects in Ancash overt movement, but no such effects in the in-situ cases. Their conclusion is that the latter involve a silent Q-particle which is located in C(OMP) and unselective binding. Following Aoun and Li (1993) they assume a null wh-operator in SpecCP which binds the in-situ phrase in the sense of variable binding. Nevertheless, internally headed relatives in Ancash Quechua do show island effects. Cole and Hermon argue that for interrogatives the language has a zero wh-operator which allows „wh-indexing", essentially making movement superfluous, while it lacks a corresponding operator for internally headed relatives. Thus, scope must be achieved in relatives by covert movement.

The discussion of wh-movement, partial wh-movement and wh-in-situ in Cole and Hermon (1998) focuses on Malay, a language where all three types seem to coexist peacefully. According to their analysis, wh-in-situ is licensed by a visible or invisible operator which serves as an unselective binder. But why should the language make use of the other two options – full as well as partial movement – in addition? Cole and Hermon suggest that the variation reduces to certain lexical options which exist in Malay but not in pure in-situ languages such as Chinese or in pure movement languages such as English. Pure movement languages have wh-words of the form [OP+Var], i.e. lexical combinations of operator and variable features, whereas pure in-situ languages only have [Var] type pronouns, i.e. pronouns which lack the operator feature. This would explain why they do not undergo movement but have to rely on an external operator. Malay is said to involve both options: The feature OP either stems from the lexicon as part of the relevant pronoun, or it is generated separately in SpecCP, in which case the pronoun is a variable that gets bound by OP. This leaves the third option, partial movement. Here one can observe island effects not only between the trace and the spelled-out operator, but also between the spelled out operator and its ultimate scope position.[51] The partial movement chain is island-sensitive by definition. The covert chain results, according to Cole and Hermon, from the fact that there is an expletive which must be replaced by covertly moving the OP-feature of the head of the overt chain upwards. They also consider the possibility that OP-movement is forced by the PROPER BINDING CONDITION. In any of these cases island sensitivity is predicted.

The discussion of wh-in-situ in South Asian languages suggests three things: First, that languages are unlikely to always fall into the simple +/- wh-movement parameter that the linguistic theory of the eighties had suggested. Mixed strategies seem to exist, for some of which one might want to explore to what extent they interact with variations in word order. Secondly, a uniform account of wh-in-situ in terms of unselective binding by a Q-particle runs the risk of importing too much permissivity. Especially where one cannot observe an overt sentence-peripheral Q-morpheme that could function as an unselective binder one may want to take a close look at the morpho-syntax of the variables that are supposed to get bound. In various cases there might be good reasons for them to still undergo movement, although this movement would be abstract or, for that matter, overt but disguised by other factors. Third, at least in those cases where subjacency effects can be observed, movement op-

[51] Consider the following contrast between overt, covert and partial movement type of scope from a relative clause, where the intended reading should be a direct question:

(i) *Di mana$_i$ [kamu fikir [Ali suka [perempuan yang tinggal t_i]]]
at where you think Ali like woman who lives
"You think Ali likes the woman who lives where?"

(ii) Kamu fikir [Ali suka [perempuan yang tinggal di mana]]]

(iii) *Kamu sayang [perempuan yang Ali fikir [apa$_i$ yang telah makan t_i]]
you love woman that Ali thinks what that already eat
"You love the woman who Ali thinks ate what?"

erations seem to be involved. It is likely that for the grammar of wh-in-situ licensing by unselective binding and licensing by covert movement may not be very different. The difference seems to largely reduce to the morpho-lexical inventory of the language.

5. Summary

The present survey of wh-in-situ has taken its start from ideas which were central to GB-theory and which still have an influence on current theorizing. Main points were that there is a parameterization that splits languages into wh-moving and wh-in-situ languages, that wh-scope is always reached by movement which may either be overt or covert, and that the latter is not under the control of subjacency. It has later been shown that it is far from obvious that in all cases of wh-in-situ the wh-phrase in-situ has to move. The innovation came from two sides: (i) From the idea that more than the wh-phrase proper may undergo movement, i.e. the pied-piping which can be observed in overt movement could as well be assumed for LF-movement. (ii) From the insight that a wh-phrase is composed of elements that may not be co-represented in one and the same phrase across languages. According to this line of thought, the interrogative force may rest in a clause-peripheral functional position, while the element in situ is not an interrogative operator at all but rather a kind of variable that is in construction with the peripheral interrogativizer. Another option could be that the element in situ is indeed a wh-phrase, whose interrogative potential can, however, not be activated unless it moves to a scope position where it can also identify an interrogative head. The shift from GB-syntax to Minimalism introduced the concept of derivational economy which takes movement to be a last-resort operation that is needed for convergence in core syntax. Movement is reduced to feature movement, unless (PF-)convergence forces generalized Pied-Piping. In order to explore the space between wh-in-situ and alternative possibilities of wh-scoping, the Indo-Aryan language Bengali was chosen. Languages like Bengali are interesting for a number of reasons: (i) They normally do not have an overt clause peripheral Q-particle (comparable to Japanese *ka* or *no*). (ii) Although they are strictly head-final languages, they show post-verbal CPs in certain types of relatives and clausal complements. Together with certain kinds of adjuncts, these are strict islands for wh-in-situ, a fact which can hardly be explained under the assumption of a generally available mechanism of unselective binding by an ever invisible Q-particle or by overt movement of an empty operator. (iii) They allow - to some extent - for both overt and partial movement. Typically such movement is seen where abstract scoping is blocked. On the basis of this evidence it was suggested that there may be different kinds of movement in one and the same language.

Revived interest in word order which has received an important impulse through Richard Kayne's work is likely to uncover much about wh-scope and wh-in-situ which has so far escaped proper understanding. The variation around the syntax of wh will certainly stay with linguistic research for a long time.

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