Wh-in-situ

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CONTENT

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 or 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-phases 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 (SYNCOMREF??): 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 com-

posed 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 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 of a larger class of movements which comprises topicalization, relativization, clefting, comparation 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 question. 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 exists 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 SpecCP). We will briefly return to partial movement in section 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. 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 I have suggested in earlier work.
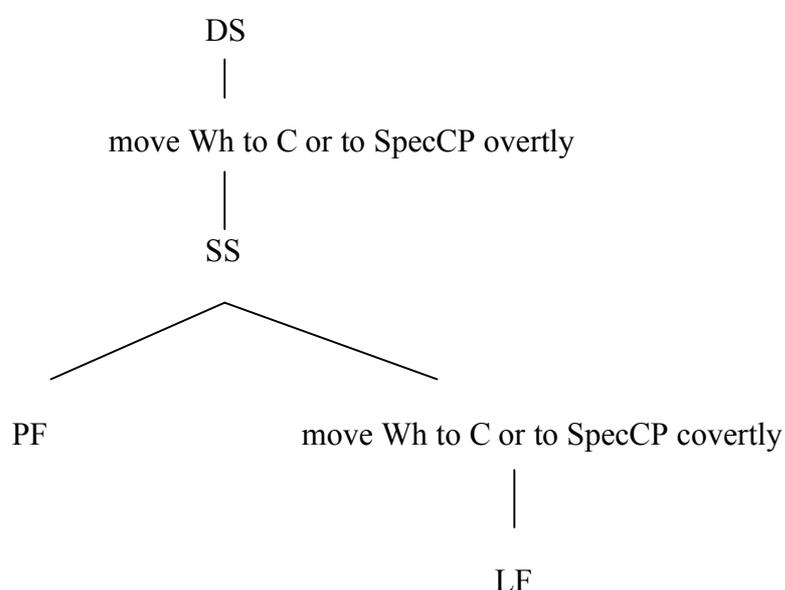
1.   The phenomenon in the context of LF theory

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*

<div align="center">

DS

|

move Wh to C or to SpecCP overtly

|

SS

PF   move Wh to C or to SpecCP covertly

|

LF

</div>

A sentence like (7a), *Who bought what?*, is then analyzed as in (7b) where *who* has been moved either to C° or in - later versions of the theory - to SpecCP overtly, while the in-situ phrase *what* has been moved covertly. According to Aoun, Hornstein & 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 straightforwardly "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 information, 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** 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**?

(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, all of which fall under subjacency. 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 inter-

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[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?

rogatives. In (12a) *who* governs its trace locally. *What* has been moved to SpecCP and has 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 greatly inspired by Huang's (1982) groundbreaking work on the Logical Form of Chinese. In Chinese as well as in many other languages inter-rogative phrases remain where other arguments are. Nevertheless, the sentences are inter-preted 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 with English words) that could be derived when the wh-in-situ phrases are associated with either the em-bedded clause or with the matrix clause.

(13) a. Ni   xiang-zhidao [Lisi **zeme** mai-le   **sheme**]
          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 at-tested 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 sub-jacency 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]

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

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

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 still forms the standard of LF-theory for many researchers, 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 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 have 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

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[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 are in fact after 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.

(21)   a.   I wonder [$_{+wh}$ [$_{+wh}$ whose books] we should read]
        b.   *I wonder [$_{-wh}$ [$_{-wh}$ books by whom] we should read]

Of course, there are the notorious cases of pied-piping à la Ross (1967), but it would be surprising to see that these are the rule in the LF component.

There have been attempts at 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).[4] I call this the "debarrierization-by-A'-movement analysis". 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 subextraction 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:

(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

In my view these observations make an LF-pied-piping and debarrierization-by-A'-movement analysis unfeasible. I will therefore not consider it in more detail.

The above criticism of the pied-piping solution of the wh-in-situ problem does not in any way undermine the important insights that it has contributed to current theorizing. Although various aspects of pied-piping are still in the dark, the approach has been successful in shaping

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[4]   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*.

our understanding of Wh-movement, Wh-in-situ and related constructions in the area of quantification, negation etc. My criticism focuses on two aspects that have played a role in the discussion: The first is that the morphosyntactic operations underlying the 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 at least semi-functional head such as P. In the latter case, we assume that features of the complement of P raise to P, essentially marking the whole PP with whatever 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 in my view 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 me 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 exactly to be put 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.[5] Thus, a scoped wh-phrase or a Q-particle in sentence peripheral 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

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[5] 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")
	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 (199?) for a typological investigation.

reason for the wh-in-situ element to undergo movement to the scope position in order to get its wh-feature checked. It would be rather the wh-phrase in SpecCP that needs to reconstruct into its underlying position in order to associate its non-interrogative feature complex with licensing heads that are independent of interrogation proper.[6] If I am right, 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 the economy idea of the Minimalist Program (Chomsky, 1995). 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 more recently become known as "unselective binding". This is the phenomenon as well as a class of approaches that we will turn to 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.[7] 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:[8]

(24)   Dare-mo-ga   nani-ka   o   tabe-te-iru 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 acquire the force of a wh-phrase by being c-commanded and bound by the peripheral element *–ka*.[9] The wh-phrases and wh-pronouns of the European languages would – according to this

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[6] My thinking about this has been inspired by Jayaseelan (1998).
[7] In (15) we have seen *-no* in this function. I will not turn to a discussion of possible differences.
[8] We have already seen similar examples from German, cf. note 4.
[9] Almost the same is found in Malayalam, a genetically unrelated Dravidian language. As Jayaseelan (1998) and

picture – be simply blends of heterogeneous features just like negative indefinite quantifiers (INQs) which are standardly taken to be fusions of a feature of negation and an indefinite of some sort.[10] 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 propositions in its scope, the operator ranges over the truth values 1 and 0.[11] 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 may bind any number of such information gaps by virtue of ranging over an open proposition. The meaning of a constituent question is 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. $[\{p\}, \{\ p\}]$

          b. $[\{p_1\}, \{p_2\}, ..., \{p_n\}]$

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.[12] 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 disjunction {john saw mary} { john saw susan} { john saw fred}.

Following Rizzi (1995), Jayaseelan (1998) 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. 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):

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 in *John-oo Bill-oo* ("John or Bill") resembles Japanese *–ka* and is disjunctive.

[10] Consider German *nichts* which derives from OHG *niwiht* which decomposes into NEG+(some)thing.

[11] 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*.

[12] The semantics sketched here is compatible with the standard analyses in Hamblin (1973) and Karttunen (1977); Higginbotham (1993) prefers the term "partitioning" rather than disjunction, but his account of interrogativity seems to amount to basically the same idea.

(26)

ForceP

... Force

FocP [+Q]

Spec Foc'

XP₁ VP Foc

t₁
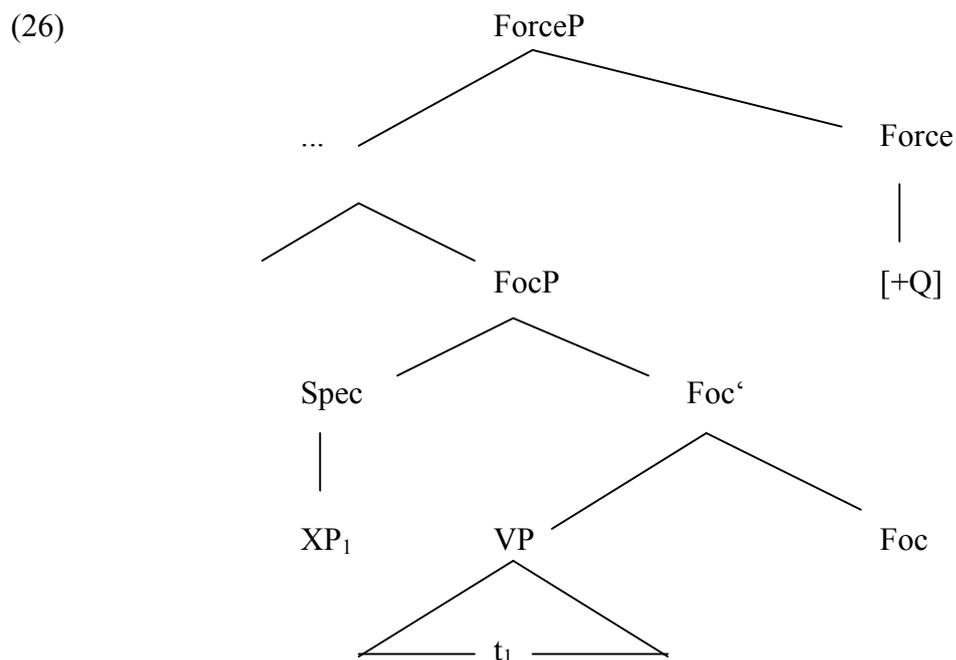
As the embedded clause in (23) shows, there can be multiple occurrences of pronominals which may associate with the operator in the head of the ForceP. If it can be maintained that indefinites and indeterminates are pure variables which are existentially bound by a default operation, as Heim (1982) has 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.[13]

(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**?

(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?

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[13] 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. I will return to problems with this proposal.

In the context of the Minimalist Program (Chomsky, 1995), unselective binding should be a preferred option because of the economy conditions that syntactic derivations are subject to. If movement is a last-resort operation to guarantee convergence at the interfaces of grammar, unselective binding would be preferred over movement, and 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. I will turn now to a review of the arguments in favor of such movement.

3.1   Adjuncts

We have seen 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.[14]

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

This suggests that the ECP could be at work. Both *naze* and *pourquoi* would be ungoverned and could be subject to a constraint that requires proper government of a trace at LF.[15] As a

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[14] My impression is that similar restrictions 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 judgements on English, *why* in situ should always be excluded. For a discussion of the largely unclear behavior of *why* see Hornstein (1995).

[15] Although it is, of course, not clear why *pourquoi* could not be moved locally and therefore antecedent-govern

matter 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 géometrie
          to   study   geometry
      b. parce que   je   suis   malade
          because   I   am   sick

Similarly, quoting Dominique Sportiche's judgements, 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-

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its trace.

adverbials rather denote functions ranging over higher-order entities. I agree with the implicit requirement that wh-in-situ in multiple questions must meet the formation of pairs, triplets etc. of entities. It is unclear to me, however, how Reinhart's suggestion would be able to integrate time and place adverbials. Let me therefore suggest something quite elementary that returns to Rizzi's (1990) notion of a "referential 🗎-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.[16] 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 is not of type-theoretical (ontological?) nature, but is rather a matter of conceptual semantics. 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 not in connection with *how* and *why*. These 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 believe. The fact that judgements 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. Easiest would be 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 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. I cannot see why this should 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 is not clear to me 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 more recently been investitated by 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 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 for-

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[16] We will refer to D-linking in more detail below.

mulaic 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 ritual exchanges, as has repeatedly been observed and described in research on linguistic pragmatics.[17] 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):[18]

(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 I am on the right track in suspecting that adjuncts like *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 what I suggested above 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 such as the adverb *naze*.

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[17] 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 t went with you how?
[18] 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

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*, 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)
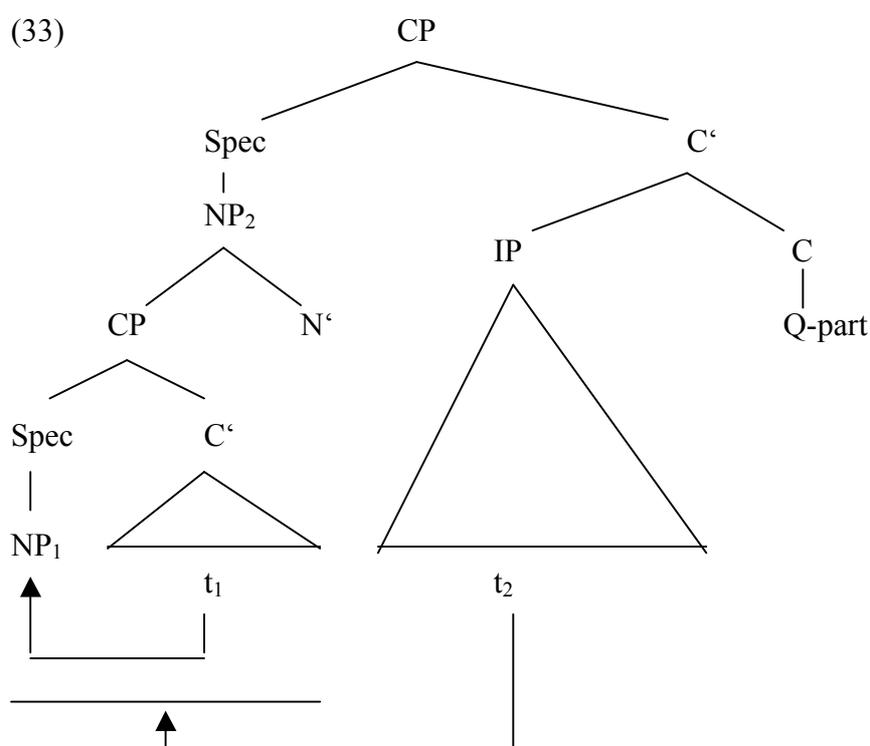
The reason why *naze* is out if it occurs in the complex NP (NP$_2$) should be that it lacks a +N feature and that, as a consequence, cannot derive the +wh feature that is needed for NP$_2$ to count as a +wh phrase. Translated into the minimalist theory of movement, Nishigauchi's theory requires feature percolation within islands such that islands can be attracted by the Q-particle. I am not entitled to evaluate the implications about Japanese phrase structure that arise from this proposal. From what we know about feature percolation (e.g. within Grimshaw's (1991) theory of projection extension), however, neither one of the movements shown in (33) seems to be obvious as long as we don't make strong assumptions about phrase structure, in particular about the availability of specifier positions which are never activated in overt syntax.[19]

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[19] 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).

Summarizing, we can say that 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".[20] My suggestions above remained vague. It seems to be clear enough though 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 discourse entities. By this question we are naturally lead 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 seen already 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 associated with these construction 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 we distinguish between the head C, the specifier of CP, and where we retain a copy of the phrase in SpecCP in the subject (A-)position:

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

According to (34), *what* never actually moves. It is rather "absorbed".[21] The reason why both Chomsky-style movement and Baker-style non-movement are needed is that there are em-

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[20] Notice that doubts about the 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 I did not discuss), and that this is unexpected under the ECP theory.

[21] 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.

pirical 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 do we 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 am 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 movement economy (cf. Chomsky's (1995: §4.5.5) Minimal Link Condition). Pesetsky derives it from a ban against crossing (versus nested) dependencies. Superiority accounts for the contrast in (35):

(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 transistor, but I'll be damned if I can figure out from the instructions *where what* goes!

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.[22]

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

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 such as 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:

(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. My impression is that in English, French and German the use of intensifiers is a root phenomenon, and that 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 phenomenon; the same is true in German as the examples in (45) shows:

(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 be related to constraints on LF movement at all.[23] Constraints 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.[24]

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[23] Largely the same constraints can be observed in German clauses with modal particles 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:

(i)   a.   Wo   habt ihr   **denn**   übernachtet?
               where   have you   PARTICLE   spent-the-night
        b.   Du   bist   **ja**   verrückt!
               you   are   PARTICLE   crazy
(ii)   a.   Sie   wollten wissen, wo   wir **denn**   übernachtet   hätten
               they wanted (to)know   where   we PARTICLE   spent-the-night   had$_{SUBJ}$
        b.   Sie   sagten,   daß   ich **ja**   verrückt sei, wenn ich sie   heiraten würde
               they   said   that   I   PARTICLE   crazy   be, if   I   her marry   would
(iii)   a.   *Es ist unklar,   wo   sie   **denn**   übernachtet   haben
               it is unclear   where   they   PARTICLE   spent-the-night   have
        b.   *Sie   bedauerten, daß ich **ja**   verrückt bin, wenn ich sie   heirate
               they   regretted   that   I   PARTICLE   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 PARTICLE 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.

[24] Notice also that there must be constraints that exclude **whose the hell books*, **who the hells's books*, **whose books the hell* etc. some of which could be seen as constraints on covert movement; **who the hell's books* is incompatible with the Left-Branch Condition (LBC), but other deviant cases cannot be captured by Ross constraints accordingly. The rule seems to be that only simplex wh-pronouns (up to the level of PP) can be modified by the intensifier. The reason for this restriction is unknown as far as I know.

I conclude that Pesetsky's account has revealed interesting properties of wh-in-situ, in particular about D-linking, while it has given no convincing evidence in favor of 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 lead 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:

(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. 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?

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[25] Notice 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?

(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 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 view of the present 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 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, however, 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 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 (199?), 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):

(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 judgements both sentences are deviant and have the mark *?. Since I disagree with her judgements, I put the judgements in brackets.

(57)   a.   (*?)   Was für Opern mögen denn   was für Menschen?
                    what for operas like   PRT   what for people

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

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. In my view 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   completeed   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 & Sternefeld, 1993) have argued that wh-phrases cannot undergo scrambling. We must distinguish, however, between intermediate positions 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. I would not exclude the possibility that D-linking effects can be revealed by wh-scrambling as Wiltschko (199?) has suggested. For the time being, however, I fail to see 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 we use the particle *denn* as 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, we have seen no forceful argument in favor of LF-movement of the wh-in-situ element 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.[27] 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.[28] Our considerations so far have indirectly made a point in favor of unselective binding. Here we meet with much current research on wh-constructions, e.g. Aoun & Li (1993), Cole & 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 recently received criticism. The next section is devoted to an evaluation of this criticism.

3.3   Is unselective binding struck 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 & Reyle, 1993; Heim, 1982) according to which indefinites are not themselves generalized quantifiers as in earlier semantic theories and in the earlier QR-approaches, 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. $\lambda P\ (\exists x\ (\text{European country } (x)\ \&\ P = {}^\wedge(x \text{ has a queen})\ \&\ \text{true } (P)))$

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[27] How this Q-opertor is syntactically represented is a matter of debate. Koopman (1995) 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. I would personally prefer an analysis in which interrogative intonation is responsible for the possibility of wh-in-situ in languages that usually move their wh-elements.

[28] This can in no way mean that the WCO-account is free of problems, of course; cf. Haider (1996) 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.

True answers to (61a) are *England (has a queen)* and *The Netherlands (has a queen)*. Consider now multiple questions. As we know 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 its 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.[29] In classical LF-theory, they would have to undergo „island-free QR" 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.

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[29] 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:
(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.

(34)   a. $[[_{Comp} Q_{i,j}$ who $_i]$ t $_i$ read what$_j$]

         b. $[[_{CP}$ who $[_{C'} [_{C°}$ +wh$]_{i,j}$ [who$_i$ 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. λP ($\exists xy$ (person (x) & P = ^(x read y & thing (y)) & 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.[30]

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.[31] 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. λP ($\exists$<x,y> (P = ^((we invite y & philosopher (y)) $\rightarrow$ (x will be offended))

             & true (P)))

---

[30] 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 gurateed 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$_2$]

[31] Reinhart (1997) goes much beyond the construction type the present article is concerned with; as far as I can see, however, every kind of problem that is considered reduces to the fact that under the unselective binding analysis the restrictive clause remains in situ. For evidence in favor of Reinhart's solution see also SynCom## (E.Ruys).

(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 goes exactly 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 I represent the relevant parts in (66) 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 requires 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 occurrence

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 our 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 brings us 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 in my view would need 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 don't use this 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. As shown in her footnote 19, Reinhart (1997) has, of course, witnessed this point. Although she seems to acknowledge the fact that wh-expressions are presuppositional, and that presuppositions belong to pragmatics, she nevertheless rejects accounts along the lines I have sketched, 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 I have to leave the issue unresolved.

The positive result that has emerged from the preceding discussion is that wh-in-situ in multiple questions does not force us to adopt 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 we can abandon the LF-movement approach 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 South-Asian languages

Most of the material in this section is from Bengali and has been discussed in Bayer (1995; 1996: ch.7; 1999a). I believe that much of what I have to say here could also be said about 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 complement CPs (with a final complementizer) to the left of the matrix verb, Bengali and the other Eastern Indoeuropean languages mentioned in the set have in addition CPs (with an initial complementizer) to the right of the matrix verb like *ki*-clauses in Hindi and various other languages from Northern India. We will see that this duality in complement types interacts in interesting ways with the scope of wh-in-situ. I hope to show that 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 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. Obviously question intonation suspends the use of a Q-morpheme. Alternatively, the clause can be followed by the tag *ki na* (literally „what not"). This tag obviously types 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 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 most other related languages I know about, relative operators are morphologically distinct. Thus, wh-words in Bengali and elsewhere 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.[32]

There are three possibilities for wh-phrases in situ to reach a scope position: (i) adjunction in the sense of QR; (ii) attraction by a scope marker which, however, in Bengali would have to be a zero morpheme; (iii) covert wh-movement as initially suggested by Huang (1982) for Chinese.[33] 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 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, we do not expect to see subjacency effects. 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 now 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 interrogative scope overt the matrix clause.[34]

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[32] 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.)
See also note 5.
[33] A subcase of this would be „overt" movement of a zero operator as Watanabe (199?) has suggested. I will not consider this possibility because I am incapable of finding empirical arguments in Bengali that would distinguish this case from covert movement.
[34] (72b) should turn to full acceptability, 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]?

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, [35] and right-hand relatives which can form a complex NP together with a „head" NP. Examples 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"

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     whose   mind   bad   because who   Durga-Puja-at   come-will NEG
     „Who is annoyed because who will not show up for 'Durga Puja'"
This sentece is better than (72b) but according to my informant still not perfect, although similar multiple questions are grammatical in Bengali. I have to leave this as an open problem.
[35] For details consider the treatment of correlatives in Hindi in Srivastav (1991c).

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 (1998). Malayalam - one of the major Dravidian languages - has a disjunctive particle (*-oo*) which head yes/no questions, and which turns wh-phrases into indefinites when attached to them. Jayaseelan argues that this particle also heads constituent questions, although it does not show up in constituent questions overtly. The presence of this silent *-oo* enables wh-phrases to be licensed inside complex NPs involving relative clauses as the following example from Jayaseelan (1998) shows:

(77) aarɯ ezhuti-(y)-a   kawita waayicaa   kuTTi karaññu?
      who wrote REL poem read   child cried
      „The child that read the poem that who wrote, cried?"

One reason why Bengali cannot have similar constructions could be that it simply lacks the appropriate morpheme that could operate as a scope marker, and that the wh-element itself has to do the job of deriving a scope position. In that case it is expected that Bengali shows subjacency effects where Malayalam does not.

Bengali has various constructions, however, in which a wh-element may occur in an extraction island, but which are nevertheless fully grammatical. One such case are (postpositional) PPs. Like most languages, Bengali does not permit P-stranding. In principle it could, because it is a scrambling language which in addition allows wh-scrambling. As the pair of examples in (78) shows, overt movement from PP is impossible, whereas covert movement is perfect; (78c) is added to show that once movement takes place, it can only be the whole PP that moves:

(78) 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 we follow the idea that covert movement affects nothing but the wh-phrase proper or even nothing but the wh-feature as suggested in 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). I take this to be undesirable under any conception of UG. Therefore, the only way out would be to postulate a silent Q-particle which acts as an unselective binder of the wh-element inside PP. We have, however, seen already that such a silent head would cause trouble in the case of the adjunct clause in (72) and in the relative clauses shown in (73)

through (76). There seems to be no reason why it could not bind into a adjunct or relative clause (or complex NP) as it happens in Malayalam and in many other languages. If we want to maintain that Bengali does not have a wh-scope marker, we are forced to the conclusion that the island itself acquires the feature +wh and is subsequently moved to scope position, i.e. we are dealing with covert pied piping. As already indicated by (78c), overt movement shows exactly this. Before I discuss this consequence in more detail, let me present more cases which point in this direction.

Bengali has a number of infinitival adjuncts which prefer to stay in clause-internal or topical-ized 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 (79) through (81) where b. is the question and c. the answer:

(79) *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"

(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"

Let us assume here that the wh-phrase can covertly move to a specifier position essentially turning the adjunct into a +wh phrase. Since wh-phrases typically occur (in the focus position) to the left of the verb, we can assume that the adjunct has been in such a position before topicalization.[36]

The example in (82) 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".

(82)   [[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 I 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]

Consider finally a case in which a wh-phrase resides in a pre-nominal modifier. The gerund that precedes the noun *lok* („man") in *hindi jana lok* („man knowing Hindi") is clearly an extraction island. Nevertheless, a wh-phrase in the place of *hindi* is licit as shown by (83).

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

Again there seems to be no firm reason to assume either island-violating movement or unselective binding by an ever-invisible Q-particle. The entire phrase kon *bhaSa jana lokke* is obviously marked +wh and moves covertly as a whole.[38]

So far the picture does not look entirely conclusive. We have seen subjacency effects in some cases but not in all. The success of an account in terms of covert movement depends on mechanisms of feature percolation or wh-raising in syntactic islands. However, before I move on to presenting more evidence in favor of covert movement, let me pause here and ask which form covert wh-movement could take under the evidence presented so far[39]

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[36] Similar observations hold for Hindi, as shown by Srivastav (1991b). Srivastav suggested for these cases an analysis which is simila but certaily not identical; she follows Fiengo et al. (1988) and assunes with them that LF-extraction from an an adjunct has to be preceded by the adjuncts movement to an A'-position.

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

(i)   [Wie schön   geschrieben]₁   muß   man t₁   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] Although I know far too little about the Bengali NP, it seems plausible that the gerund occupies a specifier position, and that the phrase *kon bhaSa* itself moves to or occupies a specifier position of the gerund. This would amount to feature percolation by recursive spec-head agreement as is familiar from such complex NPs as *which student's mother's ... letter to the dean*.

[39] Of course, we do not consider construction specific mechanisms. What I suggest pertains to other constructions as well. In Bayer (1996; 1999b) I have argued extensively for the same mechanisms in deriving the scope

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.[40] 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. This much is already present in Karttunen (1977). 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	$\exists$	λx time (x)
+wh	$\exists$	λx student (x)
+wh	$\exists$	λx student of linguistics (x)

Together with other current work in syntax and semantics I assume that in LF-representations these atoms of meaning have to be systematically separated. Languages which employ a Q-scope marker 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 provides us with the structure in (85) where RC is short for „restrictive clause":

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

If we assume 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, i.e. the RC is essentially „reconstructed", we arrive at the structure in (86):

(86) $[_{CP}$ +wh $\exists$ RC $[_{C'}$ +wh $[_{IP}$ ... +wh $\exists$ 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 $\exists$, but that $\exists$ 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

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of focus particles such as *only*. In Bayer (1996) I also show how it can account for negation.
[40] To be fair, with respect to negative quantifiers the point was at least seen as early as Jespersen (1924) and Bech (1955/57), i.e. long before the advent of contemporary linguistic semantics.

the wh-operator.[41] 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). Also following Heim, we assume that wh-operator, existential operator and restricted variable are connected by a selection index. These changes lead to the LF in (87):

(87) $[_{CP}$ +wh̶ ̶R̶C̶ ̶(̶x̶)̶ $[_{C'}$ +wh$_1$ $[_{IP}$ ∃$_1$ $[_{IP}$ ... +wh̶ 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 we have earlier identified as 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, but which I think cannot ultimately be discarded. Let me without further discussion adopt the view that semantically driven movement exists. The next question is how the wh-operator proper can access a scope position. In the simples case, the features of some lexical item could just split up, and the wh-feature could raise and adoin 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 in those cases in which we have seen a discrepancy between overt and covert movement. This brings our considerations close to Nishigauchi's theory of LF-pied-piping. Move-F (or old-fashioned raising to SpecXP) within a potential island will have the effect of turning the entire island into a +wh phrase.[42] 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 we have to accept this consequence. Movement in the style of QR can only be the first step. As we have just argued, 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. I assume that this is 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 Q-scope marker and make use of unselective binding, because the wh-feature is already represented by an autonomous lexical element. For overt wh-movement we have adopted the Minimalist account according to which there is a wh-attractor in C which checks off the wh-feature of the attractee. Covert wh-movement cannot escape the prerequisites of the standard account of interrogative semantics. This can only mean that after being adjoined to IP, the

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[41] 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 (1998) 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.

[42] I have presented parts of a percolation theory in terms of Move-F in a number of talks, e.g. in Bayer (1998). Important forerunners of it are Grimshaw (1991), Grosu (1994) and Moritz and Valois (1994).

moved phrase has to fission accordingly. I believe 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 as in the attraction/feature-checking scenario, the phrase in XP-position will 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) $XP_{+F} [_{YP} ... t ...]$ $\Rightarrow$ $[_{FP} XP_{+F} [_{F'} F° [_{YP} ... t ...]]]$

Semantically complex phrases such as *kar Satte* („with whom") or *kon bhaSa jana lok* („man who knows which language") from (83) 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 we assume 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 we know about overt movement. It is crucially free of the subjacency problem that has haunted LF-theory up to Chomsky's Minimalist theory of feature movement.[43] An important aspect is that the present 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. My 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.[44] As far as I can see, the conflict with subjaceny does not arise for my 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.

  I believe that this combination of Nishigauchi's theory with my particular version of covert movement and dynamic agreement will go a long way in resolving the apparent conflict between derivational integrity and semantic interpretability. To be sure that my proposal is not construction specific, i.e. independent of wh-scope and wh-in-situ, notice that it also accounts successfully to "in-situ" phrases such as [*only* [*JOHN*]] or [*about* [*nothing*]]. *Only* being an adverbial eliminative operator and the negative part of nothing being a propositional operator, these phrases ultimately have to fission into logical operators and restrictive parts,

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[43] In my view this is conceptually more attractive than theories 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.

[44] 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 my comments in section 2 above.

focus etc. in the same way as wh-phrases.[45]

In the next subsection I will present further data about wh-scope in Bengali that can be explained by covert wh-movement but hardly by unselective binding via a zero Q-scope marker.

4.4 Complement types, directionality, and wh-scope

Bengali is a typologically well-behaved head-final languages 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 optional elements which I categorize as C(OMP) are of very different status and 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 sub-ordinating head. Verba dicendi as complementizers, traditionally called „quotatives", are an areal phenomenon and appear in all Dravidian and Eastern Indoeuropean 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.[46] I take the complementizer *je* to

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[45] For details with respect to the syntax of focusing particle constructions and to some extent negation see Bayer (1996).

[46] Various native speakers I consulted found 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 (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) have analyzed 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 righthand 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

be a grammaticalized form of the nominative relativizer *je*. 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 invariably leads to ungrammaticality. In Bayer (1999a) it is shown that these two types of complements should in no way be transformationally related, and that as a consequence languages of this kind are "hybrid" with respect to word order typology.[47] 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 most readily 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. According to what has been said at the end of the last section, the wh-item by itself must 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*

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	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"							

See 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.

[47] This property applies to the South-Asian languages mentioned in the text, but also to various other languages which are genetically not related. See among others Koopman (1984) for Vata and Gbadi, and Noonan (1985) for Azerbaidjani.

Consider next the scope of a wh-operator in an embedded clause that appears to the right of the matrix verb. Here, one reading only is possible, namely the narrow scope reading. The reading indicated by # is excluded:

(93)　ora Suneche　[ke aSbe]　　　　　　*unambiguous*
　　　they heard-have who come-will
　　　i.　„They have heard who will come“
　　　ii.　#“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.[48] 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]]]
　　　b.　*[$_{CP}$ ke$_i$ [$_{C'}$ [$_{IP}$ ora Suneche [$_{CP}$ t$_i$ [$_{C'}$ [$_{IP}$ t$_i$ aSbe]]]]]]

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 simple explanation it would be all the more surprising that 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* etc. 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 regular 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

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[48] To my knowledge this holds without exception in all Sout-Asian languages which show „extraposed“ CPs. Hindi is the most well-known example, but besides Bengali it is at least also true for Assamese, Gujrati, Kashmiri, Marathi, Punjabi and Oriya.

corroborated by intuitions about grammaticality.

How can all 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 due to the Condition on Extraction Domains (CED) no extraction can take place.[49] However, it is easily demonstrated that this explanation cannot be maintained. I do not want to invoke the conceptual arguments against rightward movement that have been presented especially in the antisymmetry theory of syntax.[50] There are clear enough data to show that the right-hand complement stays in place, i.e. it must be generated where we see it.[51] (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 pujoY
      you each   boy   say   who him   Durga Puja-at
      notun jama kapoR   debe]
      new   clothes   give-will
      "You told each boy who will give him new clothes at (the festival of) Durga Puja"

Similar data are reported from Hindi in Dayal (1996: 126). 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"

Interestingly, it can be shown that the righthand complement is also in the scope of a clause-final particle of the matrix clause. The examples in (99) demonstrate that the clause final negation particle *na* which normally licenses negative polarity items to its left, as is the case in (99a), can also license negative polarity items in the *je*-clause. This is shown in (99b) and (99c). Notice that all these sentences, in which we highlight the negative polarity items by boldface, are impossible without negation:

(99) a.   Sipra amake   **EkTu-o**   bhalobaSe   *(na)
            Sipra me   little-even   loves   not
            "Sipra doesn't love me at all"
      b.   ami   biSSaS kori   *(na) [$_{CP}$ je Sipra **EkTu-o**   ingreji bolte pare]
            I   believe do   not   that Sipra little-even   English speak can
            "I don't think that Sipra can speak English at all"

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[49] 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 will block LF-movement from the extraposed CP.
[50] Kayne (1994), Haider (1993b)
[51] For detailed argumentation including evidence that extraposition is also diachronically highly unlikely cf. Bayer (1999a).

c.	amar	mone	hoy	*(na)	[_CP_ je	Sipra	**Ek**	**din -er -o**
	my	*mind-in*	*is*	*not*	*that*	*Sipra*	*one*	*day-GEN-even*

jonne ekhane aSbe]
for here come-will
"I don't think that Sipra will come here for even one day"

Having established that the righthand (*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 I repeat 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?"

The 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 problem 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. #"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 zero Q-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). Thus, a zero scope marker which can unselectively bind occurrences of wh-in-situ 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 scope available in the language, and if the presence of such an item would trigger wide scope from righthand 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 (100) and (101) respectively:

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

(101) 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. We have introduced this element already as a clause-internal optional marker for disjunctive scope. There is a controversy, however, whether the *ki* in (100) and (101) 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 worlds has lead to much controversy in the past few years.[52] Dayal (1994; 1996) 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 (100) and (101) 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, (101) 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 righthand complement ceases to be an obstacle to wide wh-scope from such clauses. This point is quite elementary, and we can remain neutral with respect to the theoretical particulars of a direct scope marking approach or Dayal's indirect dependency approach.[53]

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[52] I refer the interested reader to the proceedings of a Tübingen workshop about this topic: Lutz and Müller (1996); see also Sabel (1998 ch. 4).

[53] If we are right in arguing that Bengali does not have a morphological Q-scope marker, we cannot claim, as I did in Bayer (1996), that *ki* is such a scope marker. This would rather support Dayal's theory of indirect dependency. Notice in this context that German is another language which shows the partial movement phenomenon. The semantics of Dayal's indirect dependency approach has recently been elaborated on for this language in Staudacher (2000). Partial movement in German, shows, however, certain properties that seem to be absent in the South-Asian languages. For example, instead of asking (i), in many dialects or colloquial varieties one may also ask (ii):

(i)   Was glaubst du [wer sich ein Haus bauen will]?
          what believe you who REF a house build wants
          „Who do you belive wants to build a house?"

(ii)   Wer glaubst du [wer sich ein Haus bauen will]?
         who believe you who REF a house build wants
         (same as (i))

While Dayal's theory may cover (i), it obviously can't deal with (ii), since the initial wh-element is a copy of the lower wh-element and not a wh-expletive related to CP. It is likely that we are not at all dealing with a unitary phenomenon but rather with a cluster of strategies of scope extension which yield identical or close to identical semantic representations. See Reis (1996: 276) who suspects that there might be "non-accidental parallels between two constructions". Thanks also to Peter Staudacher (p.c.) for discussion of this point.

Given that we find partial movement in the 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, a construction that seems to be more or less standard in Hindi and other closely related languages anyway. The following example from Bayer (1996) turned out to be fully grammatical for almost any native speaker I could ask.

(102)   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 (103a) and (103b):

(103)   a.   *tumi [ki oSukhe]$_i$ [e kotha]$_j$ bhabcho [$_{CPj}$ je ram t$_i$ mara gEche]?
        b.   *ke$_i$ tumi   k⬜adcho   [karon t$_i$ mara   gEche]?
                who   you   weep   because   die   went
                *"Who are you weeping because died?"

This shows once again that the righthand complement 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. I have argued in Bayer (1996; 1997) that the constraint on wh-scope follows from the fact that the CP in righthand 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. The process, which I prefer to call *A(rgument) Shift*, seems to be highly motivated and diachronically rooted not only in Indoeuropean Indic but also in Westgermanic. The transition is as in (104) where A stands for „argument", * for the deletion site, and the arrow for L-marking:

(104)   *A-Shift*
        a.   ⇒   b.

If contrary to certain claims, directionality of selection (L-marking, or government in GB-theory) still plays a role in grammar, the VP in (104b) that results from A-shift can be argued to constitute a barrier for movement in head-final languages. The verb in head-final lan-

guages L-marks its object to the left. L-marking to the right as in (104b) is exceptional.[54] 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 we may take to be a specifier position 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 (102). Assume that (102) 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, and certainly no operator feature. 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 and is clearly 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.[55] Therefore I assume that actual scoping must still follow this process of overt displacement. For (102) we get the simplified LF in (105) where overt movement is indicated with a solid and covert movement with a broken line:

(105) $[_{CP}[$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 (92) and (96b) 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 (106), the VP-barrier is set up by the verb's exceptional L-marking which blocks wide scope of *ke*:

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[54] 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.

[55] Sabel (1998) suggests a feature-based parameterization according to which languages can choose between a 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 weak wh-feature. I assume that in this case movement to a wh-scope position would still be required.

Simpson and Bhattacharya (2000) analyze Bengali as underlyingly SVO. In their account, wh-in-situ is actually not in situ but is rather the result of movement to a sentence internal functionally defined position to the left of V. The account is not explicit about the precise status of the position. The assumption seems to be that interrogative scope is achieved from this position itself. If true, the Simpson and Bhattacharya account could neatly explain why there is no wh-scoping out of the *je*-clause (or out of the *ki*-clause in Hindi). The reason would be that the wh-phrase's scope has already been fixed; and we know that operators in scope position do not move on. What becomes utterly unclear in their account is why there should be wide scope of a wh-operator from a clause-medial complement such as in example (90) from the text which I repeat for convenience:

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

If *ke* is already in an operator position at S-structure, how can it move on? This is all the more surprising as Simpson and Bhattacharya assume that (90) ii. is the preferred interpretation. Unclear is also how wh "absorption" can take place in multiple questions, if the "in-situ" wh-phrase's scope is already fixed due to a movement process that raises it from an underlying position to the right of V.

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

The data discussed in this section suggest that free insertion of a zero wh-scope marker would give the grammar far too much expressive power. In Bengali we do see wide scope of wh-in-situ, but we only do where there is an overt sign of +wh in the matrix clause. Pure LF-movement is obviously blocked in the very specific environment where the CP is exceptionally selected. In those cases where the complement-CP is selected in accordance with the parameter of head-finality - namely in (90) and (96a) - wide scope of the wh-in-situ element is readily available. In the absence of a more concrete theory of covert wh-movement I simply assume that the wh-phrase moves cyclically and invokes a +wh projection where it terminates.

4.5 Conclusion

Where does this leave us? We have seen in the earlier discussion about multiple questions in wh-moving languages as well as wh-in-situ languages 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 I take to be 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. We have seen that 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 standard overt wh-scope marker in the sense of other languages such as Japanese, where scoping out of relative clause- and adjunct-islands seems to be the rule. If these two facts allows us to draw conclusions, the conclusion should be that Bengali wh-in-situ reaches scope by covert movement. We have made a proposal 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 that I assume applies unitarily, resemble the LFs achieved by unselective wh-binding in all the relevant details. At LF the different scoping strategies we have observed 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. We have shown that 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 left-of-the-verb position, although scrambling from *bole*-clauses is well possible.[56] Wh-scope from these complements seems to rest entirely on covert movement. If Chomsky is right in claiming that overt movement is an unfavored operation, if the same goal could be

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

achieved by a covert operation, we have an explanation why wh-scoping does not make use of potentially available but uneconomical strategies. Such strategies are only being used where covert operations would violate principles of grammar.

This picture 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 so far. They observe that Imbabura Quechua has overt wh-movement, while Ancash Quechua has either overt or covert wh-movement. In Ancash Quechua both (107a) and (107b) are possible:

(107) 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 (107.a))

In (107a) we see the Q-morpheme *taq* which seems to be responsible for the attraction of the wh-phrase *may-man*. In (107b) 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 explains 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 we see island effects not only between the trace and the spelled-out operator, but also between the spelled out operator and its ultimate scope posi-

tion.[57] 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. Third, at least in those cases where subjacency effects can be observed, movement operations 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

We have started this survey of wh-in-situ with some ideas which were central to GB-theory and which still have a lot of influence in 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. what could 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 an 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 this 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

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[57] Consider the following contrast between overt, covert and partial movement type of scope from a relative clause:

(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?"

scope position where it can also identify an interrogative head. The shift from GB-syntax to Minimalism introduced the concept of derivational economy which globally requires that movement can only take place if there is not other way, and that the elements to undergo movement should be confined to those which are needed for convergence, ultimately features rather than syntactic categories, unless (PF-)convergence forces generalized Pied-Piping. It is immediately clear, however, that taking this tack which one may call an "anti-pied-piping requirement" is not free of cost: If there are cases which do not fall under unselective binding, feature movement turns out to be an operation which may freely violate subjacency. This brings Minimalism as proposed in chapter 4 of Chomsky (1995) again close to Huang's (1982) acceptance of an asymmetry between overt and covert syntax. Instead of trying to resolve these complex issues on a theoretical level, we have taken a closer look at the South Asian languages, especially on Bengali, in order to explore the space of wh-in-situ and the alternative possibilities which exist in these languages to mark wh-scope. Bengali as well as other South Asian languages 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 right-hand 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). (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 we have suggested that there may be different kinds of movement in one and the same language. In this scenario overt wh-movement is likely to be an epiphenomenon of overt focus movement, a process that targets a focus position to the immediate left of the (clause-final) verb rather than a clause-peripheral position. This position has all the qualities of a wh-in-situ position. Wh-phrases seem to undergo abstract movement from this position, and since this movement is constrained in various ways, it has been suggested that it still needs to be characterized as covert movement. Interestingly, phrases from which overt movement cannot take place such as PPs and certain infinitival adjunct phrases turn out to be no obstacles for wh-scoping, while others such as finite adjuncts clauses, relative clauses and extraposed CPs are. Closer inspection reveals, however, that in the former the wh-phrase in situ may occupy a position which turns the entire island into a +wh phrase. In that case it is plausible that it is the entire island that is affected by the movement process rather than the wh-element alone. Since there is no evidence that wh-scoping (movement to a clause peripheral position) is an overt process (in the sense of von Stechow, 1996 or Kayne, 1998), we continue to characterize this process as covert phrasal movement. It has been indicated that this proposal escapes much of the criticism of LF-Pied-Piping, if Chomsky's (1993; 1995) theory of reconstruction in terms of copying and deletion is adopted.

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