

## CHAPTER 5

### THE DISTRIBUTION OF *WH*-ELEMENTS IN-SITU

#### 5.0 Introduction

This chapter considers the distribution of *wh*-elements in-situ. It is shown that there are asymmetries concerning the distribution of *wh*-elements in-situ which have not been given any principled account under the MP. I will propose that the Q-feature of a *wh*-element in-situ should undergo "overt" movement to an interrogative C in Japanese-type languages but not in English-type languages. It is shown that "overt" Q-feature movement coupled with our theory of phrase structure gives us a minimalist account of the asymmetries. If the analysis to be presented is on the right track, the distribution of *wh*-elements in-situ constitutes another empirical evidence in favor of our theory of the composition of phrase structure.

The organization of this chapter is as follows. Section 5.1 presents asymmetries with regard to the distribution of *wh*-elements in-situ which need to be given an account. Section 5.2 reviews previous analyses of *wh*-elements in-situ. I will first review EST analyses of *wh*-elements in-situ, arguing that they are incompatible with the MP and thus cannot be adopted as they stand. I will then review previous minimalist accounts of *wh*-elements in-situ. It is shown that they are confronted with conceptual and empirical difficulties. Section 5.3 considers *wh*-elements in-situ in Japanese-type languages. I will argue that their distribution straightforwardly follows from "overt" Q-feature movement together with our theory of phrase structure. It is also shown that the variation

between English-type and Japanese-type languages concerning the existence of overt *wh*-movement can be attributed to the difference in the make-up processes of *wh*-elements between these two types of languages. Section 5.4 deals with *wh*-elements in-situ in English-type languages. I will argue that unlike in Japanese-type languages, "overt" Q-feature movement does not take place in English-type languages. It is shown that the nonexistence of "overt" Q-feature movement accounts for the immunity of *wh*-elements in-situ in English-type languages from both the "domain barriers" and the relativized minimality. Section 5.5 makes concluding remarks.

### 5.1 Locality Restrictions on *Wh*-elements In-situ

In languages like English, *wh*-elements must move overtly from their base-generated positions to clause-peripheral positions in singularly interrogatives, as shown in (1):<sup>1</sup>

- (1) a. **what** did John buy *t*  
 b. \*John bought **what**

In (1a), the *wh*-element *what* overtly moves to the clause-initial position. The result is acceptable. In (1b), on the other hand, the *wh*-element *what* stays in-situ. The result is deviant. In multiple interrogatives, on the other hand, *wh*-elements stay in-situ as far as there is another *wh*-element which ends up in a clause-peripheral position, as shown below:

- (2) **who** *t* bought **what**

The *wh*-element *what* is not moved to the clause-peripheral position but rather staying in-situ.

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<sup>1</sup>(1b) is acceptable as an echo question, which is irrelevant to the present discussion.

Unlike in languages like English, there is no overt *wh*-movement in languages like Chinese, Japanese, and Korean. In this type of languages, *wh*-elements never undergo overt *wh*-movement but rather stay in-situ even in singularly *wh*-interrogatives, as exemplified by the following Japanese examples:

- (3) a. John-wa **nani**-o katta no  
           -Top what-Acc bought Q  
           'what did John buy'
- b. John-wa [Bill-ga **nani**-o katta to] itta no  
           -Top     -Nom what-Acc bought Comp said Q  
           'what did John say that Bill bought'

In (3a-b), the *wh*-element *nani-o* 'what-Acc' is not dislocated but staying in-situ. (3a-b) can properly be interpreted as matrix *wh*-interrogatives, where the *wh*-phrase *nani-o* 'what-Acc' is associated with the matrix Q-morpheme *no*. This subsection investigates the distribution of *wh*-elements in-situ, presenting asymmetries with locality restrictions on *wh*-elements in-situ which need to be given a principled account.

It has been observed by, among others, Aoun and Li (1993), Kim (1991), Huang (1982), Lasnik and Saito (1984, 1992), May (1985), Nishigauchi (1986, 1990), Pesetsky (1987), Reinhart (1992, 1993), Tiedeman (1990), Tsai (1994), and Watanabe (1992a, 1992b) that the distribution of *wh*-elements in-situ is relatively free in comparison with that of the traces left by overt *wh*-movement. First, unlike overt *wh*-movement, *wh*-arguments in-situ are not sensitive to the "domain barriers." *Wh*-arguments in-situ in English-type languages are free of the "domain barrier" effects, as shown by the following English examples:

- (4) Complex NP Constraint
- a. Relative Clauses  
who likes [books that criticize **who**]
  - b. Non-relative Complex NPs  
who studied [the evidence that John stole **what**]
- (5) Subject Condition  
who thinks that [pictures of **whom**] are on sale
- (6) Adjunct Condition  
who got jealous [because I talked to **whom**]
- (7) Non-bridge Verb Condition  
who whispered [that John bought **what**]

In (4-7), although the *wh*-arguments in-situ stay within the "domain barriers," they can properly be interpreted as matrix questions.

Similarly, *wh*-arguments in-situ in Japanese-type languages do not exhibit any "domain barrier" effects either, as shown by the following Japanese examples:<sup>2</sup>

- (8) Complex NP Constraint
- a. Relative Clauses  
John-wa [**nani**-o katta hito]-o sagasite iru no  
-Top what-Acc bought person-Acc looking-for Q  
Lit. 'John is looking for the person who bought what'

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<sup>2</sup>Recall that the Subject Condition does not hold in Japanese.

## b. Non-relative Complex NPs

John-wa [Bill-ga **nani-o** katta koto]-o sonnani  
 -Top -Nom what-Acc bought fact-Acc so much  
 okotte iru no  
 be angry Q

Lit. 'John is so angry with the fact that Bill bought  
 what'

## (9) Adjunct Condition

John-wa [**nani-o** yonde kara] dekaketa no  
 -Top what-Acc read after went out Q

Lit. 'John went out after he read what'

## (10) The Non-bridge Verb Condition

John-wa [Bill-ga **nani-o** katta tte] tubuyaita no  
 -Top -Nom what-Acc bought Comp murmured Q

Lit. 'John murmured that Bill bought what'

In (8-10), the *wh*-arguments are within the "domain barriers" while the Q-morphemes are outside of them. The *wh*-arguments are nonetheless properly associated with the Q-morphemes.

Second, *wh*-arguments in-situ in English-type languages are also exempt from the Wh-island Constraint. As first observed by Baker (1970), a *wh*-argument within a wh-island may be associated with an interrogative Comp outside the island, as exemplified by (11-12):

(11) who remembers [why John bought **what**]

(12) who wonders [whether (or not) John bought **what**]

In (11), the *wh*-argument in-situ *what* may take either matrix or embedded scope. In (12), the *wh*-argument in-situ *what* takes matrix

scope. This is in contrast with overt *wh*-movement in English-type languages, which obeys the Wh-island Constraint.

It is not the case, however, that *wh*-elements in-situ never exhibit any locality effects. First, as argued by Nishigauchi (1986, 1990) and Watanabe (1992a, 1992b), *wh*-elements in-situ in Japanese are constrained by the Wh-island Constraint:<sup>3</sup>

- (13) Tanaka-kun-wa [**dare-ga nani-o** tabeta ka] oboete imasu  
 Tanaka-Top      who-Nom what-Acc ate    Q    remember  
 ka  
 Q  
 a. 'does Tanaka know who ate what'  
 b. NOT 'who is the person *x* such that Tanaka knows  
 what *x* ate'  
 c. NOT 'what is the thing *x* such that Tanaka knows who  
 ate *x*'  
 d. NOT 'who is the person *x*, what is the thing *y* such that  
 Tanaka knows whether *x* ate *y*'

(adapted from Nishigauchi 1986:37)

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<sup>3</sup>Huang (1982) observes that Chinese *wh*-elements in-situ do not exhibit any wh-island effects, pointing out that the following example is acceptable as a matrix question:

- (i) ni xiang-ahidao [shei mai-le sheme]  
 you wonder      who buy-Asp what  
 a. 'who is the person *x* such that you wonder what *x* bought'  
 b. 'what is the thing *x* such that you wonder who bought *x*'

There is, however, disagreement regarding the wh-island effects with Chinese *wh*-elements in-situ. Lisa Cheng (personal communication) observes that examples like (i) are only acceptable as echo questions not as matrix questions. Tsai (1994), on the other hand, proposes an account of the contrast between Chinese and Japanese based on the observation that the wh-island effects are observed in the latter but not in the former. I will leave this important subject for future research, restricting the following discussion to Japanese *wh*-elements in-situ.

- (14) a. ?John-wa [Mary-ga **nani**-o katta ka dooka]  
           -Top       -Nom what-Acc bought whether or not  
           siritagatte iru no  
           want to know Q  
           Lit. 'what does John want to know [whether or not  
           Mary bought *t*']

(Watanabe 1992b:257)

- b. \*John-wa [Mary-ga **naze** sono hon-o katta  
           -Top       -Nom why that book-Acc bought  
           ka dooka] siritagatte iru no  
           whether or not want-to-know Q  
           Lit. 'why does John want to know [whether or not  
           Mary bought that book *t*']

(13) has only one interpretation where both of the *wh*-elements in-situ *dare* 'who' and *nani* 'what' are associated with the embedded Q-morpheme *ka*. Neither *dare* 'who' nor *nani* 'what' may be associated with the matrix Q-morpheme *ka*. The entire sentence (13) therefore can only be interpreted as a yes/no question.<sup>4</sup> In (14a), the *wh*-argument in-situ *nani* 'what', which is contained within the embedded *wh*-question, is intended to be associated with the matrix Q-morpheme *no*. The result is deviant, though the degree of its acceptability varies among speakers. In (14b), the *wh*-adjunct in-situ *naze* 'why' is contained within the embedded *wh*-question. It is totally impossible to associate *naze* 'why' with the matrix Q-morpheme *no*. These examples suggest that the association of *wh*-

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<sup>4</sup>There are some speakers including myself who find that (13) is more severely deviant on reading (13c) than on readings (13b) and (13d). We will later address ourselves to this contrast in acceptability.

elements in-situ with Q-morphemes is constrained by the Wh-island Constraint in Japanese-type languages. This is in contrast with English-type languages, where *wh*-arguments in-situ are not subject to the Wh-island Constraint.

Second, as pointed out by, among others, Aoun and Li (1993), Fukui (1988), Huang (1982), Lasnik and Saito (1992), Nishigauchi (1986, 1990), Reinhart (1992 1993), Tsai (1994), and Watanabe (1992a, 1992b), unlike *wh*-arguments in-situ, *wh*-adjuncts in-situ in Japanese-type languages are constrained by the "domain barriers":<sup>5</sup>

(15) Complex NP Constraint

a. Relative Clauses

\*John-wa [Bill-ga **naze** Mary-ni watasita tegami]-o  
 -Top -Nom why -Dat gave letter-Acc  
 sagasite iru no  
 looking-for Q

Lit. 'John is looking for the letter which Bill gave to Mary why'

b. Non-relative Complex NPs

\*?John-wa [Bill-ga **naze** sono kuruma-o katta  
 -Top -Nom why that car-Acc bought  
 koto]-o sonnani okotte iru no  
 fact-Acc so much be angry Q

Lit. 'John is so angry with the fact that Bill bought that car why'

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<sup>5</sup>Recall that *wh*-adjuncts are never allowed to stay in-situ in English-type language.

## (16) Adjunct Condition

\*John-wa [Bill-ga **naze** totuzen okoridasita kara]  
 -Top -Nom why suddenly got angry because  
 sonnani odorote iru no  
 so much be surprised Q

Lit. 'John is so surprised because Bill suddenly got angry  
 why'

## (17) The Non-bridge Verb Condition

\*?John-wa [Bill-ga **naze** sono hon-o katta tte]  
 -Top -Nom why that book-Acc bought Comp  
 tubuyaita no  
 murmured Q

Lit. 'why did John murmur that Bill bought that book *t*'

In (15-17), the *wh*-adjunct in-situ *naze* 'why', which is contained within the "domain barrier," may not be associated with the matrix Q-morpheme. The association of *wh*-adjuncts in-situ with Q-morphemes is constrained by the "domain barriers." This is in contrast with *wh*-arguments in-situ, which never exhibit any "domain barrier" effects.

Let us summarize the distribution of *wh*-elements in-situ. I have shown that the following four asymmetries exist regarding the distribution of *wh*-elements in-situ:

- (18) a. There is an asymmetry between overt argument *wh*-movement and a *wh*-argument in-situ concerning the "domain barrier" effects. While the former is constrained by the "domain barriers," the latter is not.

- b. There is an argument/adjunct asymmetry with *wh*-elements in-situ concerning the "domain barriers." While *wh*-adjuncts in-situ are constrained by the "domain barriers," *wh*-arguments in-situ are not.
- c. There is an asymmetry between the "domain barriers" and the Wh-island Constraint with *wh*-arguments in-situ in Japanese-type languages. *Wh*-arguments in-situ in Japanese-type languages are constrained by the Wh-island Constraint, but not by the "domain barriers."
- d. There is an asymmetry between English-type and Japanese-type languages regarding the Wh-island Constraint with *wh*-elements in-situ. While *wh*-elements in-situ in Japanese-type languages are constrained by the Wh-island Constraint, those in English-type languages are not.

In the next section, I will review previous approaches to these asymmetries.

## 5.2 Previous Analyses of *Wh*-elements In-situ

### 5.2.1 EST Approaches to *Wh*-elements In-situ

Analyses of *wh*-elements in-situ within the framework of the EST can be classified into three groups, i.e., LF-movement analyses, pied-piping analyses, and non-movement analyses. It is shown that apart from their incompatibility with the MP, they are also confronted with empirical difficulties.

### 5.2.1.1 Huang (1982): An LF-movement Analysis

It is Huang (1982) which marks the first substantial step toward establishing the theory of *wh*-elements in-situ within the EST. Developing the idea advocated by Aoun, Hornstein, and Sportiche (1981), Chomsky (1981), and Jaeggli (1981), Huang argues that *wh*-elements in-situ move in the covert component. According to his view, languages do not differ with respect to whether or not they have *wh*-movement. They differ in where *wh*-movement applies. In English-type languages, *wh*-movement applies both in the overt and covert components. In Japanese-type languages, on the other hand, *wh*-movement only applies in the covert component. The beauty of his theory resides in the parallelisms that it envisions among languages. In all languages, a *wh*-element is related to an interrogative Comp. *Wh*-interrogatives in all languages therefore look alike at LF.

Huang presents the locality restrictions on *wh*-elements in-situ as evidence in support of LF *wh*-movement. Following Chomsky (1981), Huang assumes that movement operations are constrained by the subjacency condition and the ECP, whose proper government requirement is satisfied by either lexical government or antecedent government. Huang, however, departs from Chomsky in arguing that while the ECP regulates the mapping both in the overt and covert components, the subjacency condition only regulates the one in the overt movement. He argues that if we assume that *wh*-elements in-situ move covertly, their distribution follows from the subjacency condition and the ECP.

Let us first consider the immunity of *wh*-arguments in-situ from the "domain barriers." Huang assumes that subject as well as object positions in Japanese-type languages are properly governed. Hence,

under his analysis, covert argument *wh*-movement in these languages always satisfies the ECP. Although covert argument *wh*-movement out of a "domain barrier" crosses more than one cyclic nodes, it vacuously satisfies the subjacency condition. This is because the subjacency condition is not operative in the covert component. Hence, his LF *wh*-movement analysis can correctly predict that *wh*-arguments in-situ are immune from the "domain barriers."

Huang also argues that the locality restrictions on *wh*-adjuncts in-situ follow from his LF *wh*-movement analysis. As shown above, *wh*-adjuncts in-situ exhibit the "domain barrier" and *wh*-island effects. Unlike argument *wh*-movement, adjunct *wh*-movement in the covert component violates the ECP. Since the trace left by covert adjunct *wh*-movement, being in an adjunct position, is not lexically governed, it must be antecedent-governed to satisfy the proper government requirement. The trace, however, is within an island and thus not antecedent-governed; this violates the ECP. Hence, his LF *wh*-movement analysis can correctly predict that *wh*-adjuncts in-situ are constrained by the "domain barriers" and the Wh-island Constraint.

There is, however, an empirical problem with Huang's LF *wh*-movement analysis. Let us consider *wh*-arguments in-situ in Japanese. Recall that under Huang's analysis, *wh*-arguments in-situ in Japanese appear in lexically-governed positions and thus always satisfy the ECP. His analysis would then expect that *wh*-arguments in-situ in Japanese never exhibit any locality effects. This is because he assumes that the ECP is the only locality condition that regulates LF movement. As pointed out above, however, *wh*-arguments in-situ in Japanese exhibit the *wh*-island effects. Hence, his LF *wh*-movement analysis is empirically

inadequate in that it cannot account for the asymmetry between the "domain barrier" effects and the *wh*-island effects regarding *wh*-arguments in-situ in Japanese.<sup>6</sup>

It should also be noted that Huang's LF *wh*-movement analysis is incompatible with the MP in the following respects. First, his analysis claims that the subjacency condition regulates the mapping in the overt component but not the one in the covert component. His analysis, however, does not give us any reason why such an overt/covert asymmetry with the effectiveness of the subjacency condition exists. There is no a priori reason why the subjacency condition is operative in the overt component but not in the covert component, not vice versa. His analysis therefore does not count as a true explanation but only as a descriptive generalization.

Second, within the EST, it was possible to claim that overt and covert movement should be subject to different constraints. This is because it would constitute evidence for the existence of the covert component as distinct from the overt component. It should be pointed out, however, that any overt/covert asymmetry is incompatible with the MP where the computation from N to LF should be uniform. There is only one derivation from N to LF, which can be spelled out at any stage. Under the MP, therefore, there is no way to state that up to the branching to PF, we have to obey a certain constraint, but we do not have to from there on.<sup>7</sup>

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<sup>6</sup>As mentioned in note 3, Huang's (1982) arguments are based on the observation that *wh*-arguments in-situ in Chinese do not exhibit any *wh*-island effects.

<sup>7</sup>Tsai (1994) points out that making reference to the point of Spell-Out might be allowed in the MP, since it does not necessarily mean that we are associating any property with the point of Spell-Out. As Tsai argues, however, even if we are allowed to make

Third, as extensively argued in chapter 3, the subjacency condition and the ECP themselves are incompatible with the MP, since they crucially make use of notions like cyclic nodes and government which are no longer available under the MP.

### 5.2.1.2 Pied-piping Analyses

This subsection reviews LF pied-piping analyses advocated by, among others, Choe (1987), Hasegawa (1986), Nishigauchi (1986, 1990), and Watanabe (1992a, 1992b). Contrary to Huang's (1982) LF movement analysis, LF pied-piping analyses claim that like overt *wh*-movement, *wh*-elements in-situ are also constrained by the subjacency condition. The apparent immunity of *wh*-arguments in-situ from the "domain barriers" in Japanese-type languages are accounted for in terms of LF pied-piping. As their representatives, I will review Nishigauchi (1986, 1990) and Watanabe (1992a, 1992b) in detail. It is shown that apart from their incompatibility with the MP, they are confronted with empirical difficulties.<sup>8</sup>

#### 5.2.1.2.1 Nishigauchi (1986, 1990)

Following the insight given by Kuroda (1965), Nishigauchi (1986, 1990) assumes that *wh*-elements in Japanese-type languages are variables, which must be bound by unselective binders in the sense of Lewis (1975), Kamp (1984), and Heim (1982). The relation between *wh*-

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reference to the point of Spell-Out, Huang's analysis cannot be accommodated under the MP. This is because Huang's analysis would then assume the arbitrary ordering between the subjacency condition and the point of Spell-Out.

<sup>8</sup>See Fiengo et al. (1988) and Hornstein and Weinberg (1987, 1990) for other syntactic arguments against LF pied-piping. See von Stechow (1993) for syntactic and semantic arguments against LF pied-piping.

elements in-situ and unselective binders is established by the relation of government at LF. Among unselective binders in Japanese is the Q-morpheme *ka/no*. When unselectively bound by the Q-morpheme, *wh*-elements in-situ are interpreted as interrogative operators. In order to satisfy the government requirement on unselective binding, *wh*-elements must move to the Spec of the Q-morpheme *ka/no* at LF, where they are properly interpreted as interrogative operators.

Nishigauchi agrees with Huang (1982) in that *wh*-elements in-situ move in the covert component. The former, however, departs from the latter in arguing that the subjacency condition is operative in the overt and covert components. This account for the fact that the distribution of *wh*-elements in-situ are constrained by the Wh-island Constraint in Japanese-type languages.

Nishigauchi argues that the apparent immunity of *wh*-arguments in-situ from the "domain barriers" can be accounted for by the large-scale pied-piping mechanism at LF. Let us consider the relative clause case of the CNPC, taking (8a) (repeated here as (19)) as an example:

- (19) John-wa [**nani**-o katta hito]-o sagasite iru no  
 -Top what-Acc bought person-Acc looking-for Q  
 Lit. 'John is looking for the person who bought what'

Since covert *wh*-movement is restricted by the subjacency condition, the *wh*-phrase *nani* 'what' cannot be extracted from the relative clause. The *wh*-phrase *nani* 'what' instead moves to the embedded Spec of CP, as shown below:

- (20) John-wa [NP<sub>[WH]</sub> [CP<sub>[WH]</sub> **nani** [ *t*-o katta]] [N' hito]]-o  
 sagasite iru no

Adopting the head-feature percolation convention proposed by Selkirk (1981), Nishigauchi claims that the [WH] feature of *nani* 'what', which is in the Spec of CP, percolates up to the CP. On the assumption that relative clauses stay in the Spec of NP, the [WH] feature assigned to the CP further percolates up to the dominating NP. As a result, the complex NP as a whole gets the [WH] feature. The complex NP as a whole therefore moves to the Spec of the matrix CP without violating the CNPC. The resultant LF-representation is as below:

- (21) [[NP [CP *nani* [ *t-o katta*]] [N' *hito*]] [[John-wa *t-o sagasite iru*]] *no*]

In (21), since the *wh*-element *nani* 'what' is governed and thus unselectively bound by the Q-morpheme *no*, it is properly interpreted as an interrogative operator. Hence, the apparent immunity of *wh*-arguments in-situ from the subjacency condition follows from the large-scale pied-piping mechanism at LF.

Recall that unlike *wh*-arguments in-situ, *wh*-adjuncts in-situ are constrained by the "domain barriers," as exemplified by (15a) (repeated here as (22)):

- (22) \*John-wa [Bill-g **naze** Mary-ni watasita tegami]-o  
           -Top    -Nom why       -Dat gave    letter-Acc  
           *sagasite iru no*  
           looking-for    Q  
           Lit. 'John is looking for the letter which Bill gave to Mary  
           why'

Nishigauchi argues that examples like (22) can be ruled out if we assume that the head-feature percolation convention is subject to the category identity requirement. The category identity requirement claims that a

*wh*-element must be identical in syntactic category with the dominating node in order for the [WH] feature of the former to be percolated up to the latter. Specifically, a *wh*-element and its dominating node must share [+/- N] for the [WH] feature to climb up. In (22), *naze* 'why' moves to the Spec of the embedded CP, resulting in the following structure:

- (23) John-wa [NP [CP<sub>[WH]</sub> **naze** [Bill-ga *t* Mary-ni watasita]]  
[N' tegami]]-o sagasite iru no

In (23), the [WH] feature of *naze* 'why', which stays in the Spec of the embedded CP, percolates up to the embedded CP in accordance with the category identity requirement. He claims that C and its projections, not being lexical categories, are neutral with respect to [+/- N]. The [+/- N] status of CP is determined on the basis of the feature associated with an element which occupies C or the Spec of CP. Since *naze* 'why', which is adverbial and thus assigned [-N], is in the Spec of the embedded CP, the embedded CP, which is neutral with respect to [+/- N], inherits the [-N] feature from *naze* 'why'. Hence, the [WH] feature may be percolated up from *naze* 'why' to the embedded CP. The [WH] feature of the embedded CP, however, cannot be percolated up to the dominating NP due to the category identity requirement. This is because the embedded CP has [-N] while the dominating NP has [+N]. The complex NP as a whole therefore cannot be assigned [WH] feature and thus may not be pied-piped to the Spec of the matrix CP. Hence, there is no other way than to move *naze* 'why' itself to the Spec of the matrix CP in order for *naze* 'why' to be governed by the Q-morpheme *no*. Movement of *naze* 'why' to the Spec of the matrix CP, however, results in a subjacency violation. Hence, we can correctly predict that examples like (22) are deviant.

Nishigauchi's analysis, however, is confronted with empirical difficulties. His analysis cannot account for the argument/adjunct asymmetry with respect to the adjunct condition and non-bridge verb condition effects. Let us consider the adjunct condition effects, taking (9) and (16) (repeated here as (24) and (25), respectively) as examples:

(24) *Wh*-arguments In-situ

John-wa [**nani**-o yonde kara] dekaketa no

-Top what-Acc read after went out Q

Lit. 'John went out after he read what'

(25) *Wh*-adjuncts In-situ

\*John-wa [Bill-ga **naze** totuzen okoridasita kara]

-Top -Nom why suddenly got angry because

sonnani odorite iru no

so much be surprised Q

Lit. 'John is so surprised because Bill suddenly got angry why'

In order to account for the contrast in acceptability between (24) and (25), we have to ensure that the [WH] feature percolates up to the adjunct in (24) but not in (25). Then, the adjunct in (24) can be pied-piped to the Spec of the matrix CP while the one in (25) cannot be; the contrast between (24) and (25) follows. There is, however, no way for the category identity requirement to account for the contrast between these two examples.

Although there is a controversy over the categorial status of adjunct introducing elements like *kara* 'after' and *kara* 'because', they count as either prepositions or complementizers. If they are prepositions, the adjuncts in (24) and (25) count as PP, which is identified as [-N]. The

category identity requirement on the head-feature percolation convention would claim that when *naze* 'why', being identified as [-N], moves to the Spec of the embedded CP, its [WH] feature may be percolated up to the adjunct in (25). In (24), on the other hand, when *nani* 'what', being identified as [+N], moves to the Spec of the embedded CP, its [WH] feature may not be percolated up to the adjunct. It would then follow that while the adjunct in (25), being assigned [WH] feature, could be pied-piped to the matrix Spec of CP, the one in (24) could not be. Hence, we would wrongly predict that while (25) is acceptable, (24) is not.

The problem cannot be solved even if we assume that the adjunct introducing elements are complementizers. The adjuncts are then identified as CPs. As mentioned above, since C and CP are neutral with respect to [+/- N], the latter is determined on the basis of an element which occupies C or the Spec of CP. In (24), when *nani* 'what', being identified as [+N], moves to the Spec of the adjunct, the adjunct, being a CP, is also identified as [+N]. In (25), when *naze* 'why', being identified as [-N], moves to the Spec of the adjunct, the adjunct, being a CP, is also identified as [-N]. The [WH] features may percolate from the *wh*-elements to the adjuncts in both cases. We would then expect that the large-scale pied-piping of the adjunct should be possible in both cases. Hence, we would wrongly predict that not only (24) but also (25) is acceptable. The same problem arises with the argument/adjunct asymmetry concerning the non-bridge verb condition effects.

It should also be noted that Nishigauchi's LF pied-piping analysis is incompatible with the MP. First, LF pied-piping is inconsistent with the MP where the operation Move  $\alpha$  is reinterpreted as Attract/Move-F. Within the EST, the operation Move selects  $\alpha$  and raises it, where  $\alpha$  is a

category constructed from one or more lexical items. The EST therefore assumes that category movement, which is observed in the overt component, counts as a primitive operation. Given that derivations should be uniform, it is reasonable to claim that category movement, being a primitive operation, takes place not only in the overt component but also in the covert component. We could therefore claim in the EST that since pied-piping is available in the overt component as an instance of category movement, it should also be available in the covert component. Under the MP, however, Move  $\alpha$  is reinterpreted as Attract/Move-F. The MP assumes that feature movement should count as a primitive operation. Category movement takes place in the overt component for satisfaction of interface conditions, which counts as a departure from "perfection." It does not count as a primitive operation anymore but as a derivative operation. Hence, although pied-piping, an instance of category movement, is available in the overt component, this cannot be taken as evidence for the existence of LF pied-piping any more under the MP. LF pied-piping is unmotivated under the MP and such an unmotivated mechanism should be abandoned.<sup>9</sup>

Second, recall that Nishigauchi's analysis assumes that a *wh*-element first moves within an island and then the whole island moves to the Spec of an interrogative Comp. It is not clear, however, what motivates *wh*-movement within an island. This is against the minimalist view that every movement operation is triggered by a formal feature.

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<sup>9</sup>I will argue later in this chapter that no movement, whether category movement or feature movement, takes place in the covert component.

Third, Nishigauchi's analysis crucially assumes the subjacency condition as a locality principle. As extensively argued in chapter 3, however, the subjacency condition is not compatible with the MP, since it crucially makes use of notions which are not available under the MP.

#### 5.2.1.2.2 Watanabe (1992a, 1992b)

Watanabe (1992a, 1992b) agrees with Nishigauchi (1986, 1990) in claiming that pied-piping in the covert component takes place in Japanese-type languages. The former, however, differs from the latter in arguing that the subjacency condition only regulates the mapping in the overt component but not in the covert component. Watanabe argues that a null *wh*-operator, which is base-generated in the Spec of DP, is required to move to the Spec of CP in the overt component to be associated with an interrogative Comp. In the covert component, the entire *wh*-phrase moves to the Spec of CP, replacing the chain formed by the S-structure *wh*-operator movement. *Wh*-operator movement, which takes place in the overt component, is constrained by the subjacency condition as well as the ECP. Under his analysis, therefore, the *wh*-island effects with *wh*-elements in-situ in Japanese-type languages are induced by overt *wh*-operator movement.

Let us look at Watanabe's analysis of the exemption of *wh*-arguments in-situ from the "domain barrier" effects, taking (19) as an example again. Watanabe argues that a null *wh*-operator may be base-generated in the Spec of the whole complex NP and then moves to the matrix Spec of CP in the overt component, as represented below:

(26) [CP **Op** [John-wa [DP **t** [nani-o katta hito]]-o sagasite iru] no]

Since the *wh*-operator moves from outside the complex NP to the matrix Spec of CP, it does not violate the subadjacency condition. The whole complex NP from whose Spec position *wh*-operator movement takes place counts as a *wh*-element and thus undergoes pied-piping to the matrix Spec of CP in the covert component.

Let us next look at Watanabe's analysis of *wh*-adjuncts in-situ. Recall that unlike *wh*-arguments in-situ, *wh*-adjuncts in-situ exhibit the "domain barrier" effects. Under Watanabe's analysis, we should expect that an empty *wh*-operator originates in the Spec of the whole complex NP and then moves to the matrix Spec of CP. The whole complex NP, which counts as a *wh*-element, should be allowed to undergo pied-piping in the covert component. He argues, however, that unlike *wh*-arguments, *wh*-adjuncts like *naze* 'why' are resistant to unselective binding. On the assumption that pied-piping always involves unselective binding, the "domain barriers" containing *naze* 'why' may not undergo pied-piping. Hence, the "domain barrier" effects with *wh*-adjuncts in-situ follow.

Apart from the incompatibility of LF pied-piping with the MP discussed in the last subsection, Watanabe's analysis suffers from empirical difficulties. Let us first look at the following example:

- (27) ?John-wa [[Mary-ga **nani**-o katta ka dooka]  
           -Top      -Nom what-Acc bought whether or not  
           siritagatte iru hito]-o      sagasite iru no  
           want to know person-Acc looking-for Q  
           Lit. 'John is looking for the person who wants to know  
           whether or not Mary bought what'

In (27), the *wh*-element in-situ *nani* 'what' is contained within the indirect *wh*-interrogative, which is further contained within the relative

clause. The result is as deviant as an ordinary *wh*-island violation. As Watanabe (1992b) himself notes, however, his analysis would wrongly predict that examples like (27) are acceptable. Under his analysis, a null *wh*-operator may originate in the Spec of the whole complex NP and then overtly move to the matrix Spec of CP. Since the *wh*-operator moves from outside of both the complex NP and the *wh*-island, there should be no violation of the subjacency condition. In the covert component, the whole complex NP moves to the Spec of CP. Recall that the relation between the interrogative Comp *no* and the *wh*-element *nani* 'what' is established by unselective binding. Since unselective binding is not subject to either the subjacency condition or the ECP, *nani* 'what' could be properly associated with the matrix interrogative Comp *no*, contrary to fact.

Another empirical difficulty with Watanabe's analysis is that it cannot account for the immunity of *wh*-arguments in-situ from the Adjunct Condition and the non-bridge verb condition. Under his analysis, when a *wh*-argument in-situ appears in an adjunct or non-bridge verb "complement," a null *wh*-operator originates in the Spec of the *wh*-element and then overtly moves to the matrix Spec of CP. Since the null *wh*-operator is moved out of the adjunct or the non-bridge verb "complement," this movement violates the subjacency condition. Hence, his analysis would wrongly predict that *wh*-arguments may not appear within adjuncts or non-bridge verb "complements." Note that since neither adjunct clauses nor non-bridge verb "complements" are identified as DP, it is highly unlikely that there is a place outside them where we can base-generate a null *wh*-operator.

### 5.2.1.3 Aoun and Li (1993): A Non-movement Analysis

Aoun and Li (1993) (hereafter called A&L) argue that *wh*-elements in-situ never undergo movement. Their analysis claims that *wh*-elements in-situ get co-indexed and interpreted with respect to Qu-operators. Qu-operators must appear in the Spec of CP at S-structure in order to take scope. The *wh*-elements in-situ are variables A'-bound by Qu-operators, with the scope of the former being determined by reference to the latter.

A&L argue that the argument/adjunct asymmetry with *wh*-elements in-situ concerning the locality effects follows from their analysis. Given the theory of generalized binding proposed by Aoun (1985a, 1985b), they treat the relation between Qu-operators and *wh*-elements in-situ as a binder-bindee relation. They claim that whatever the exact formulation of the ECP effects may be, the following generalizations should be captured concerning the argument/adjunct asymmetry:

- (28) a. A *wh*-in-situ such as *why* in adjunct position must have an antecedent (i.e., must be antecedent governed) in the minimal clause in which it occurs.
- b. A *wh*-in-situ such as *who* or *what* in argument position need not have a local antecedent in the minimal clause in which it occurs.

(A&L 1993:219)

Let us first consider the immunity of *wh*-arguments in-situ from the "domain barriers," taking the relative clause case of the CNPC (19) as an example again. Under A&L's analysis, (19) would be assigned the following S-structure:

- (29) [CP **Qui** [IP John-wa [**nani**<sub>i</sub>-o katta hito]-o sagasite iru] no]

In (29), the argument *wh*-element *nani* 'what' stays within the relative clause. The *Qu*-operator is base-generated in the matrix Spec of CP, which is outside the relative clause. According to (28b), *nani* 'what', being a *wh*-argument in-situ, need not have a local antecedent within the minimal clause in which it occurs. Hence, *nani* 'what' can be properly interpreted by being A'-bound by the *Qu*-operator in the matrix Spec of CP.

Let us turn to A&L's analysis of *wh*-adjuncts in-situ, taking the relative clause case of the CNPC (22) as an example again. Under A&L's analysis, there are two possible types of derivations for (22). In the first type, the *Qu*-operator is base-generated outside the relative clause, as in (30):

- (30) [CP ***Qu<sub>i</sub>*** [IP John-wa [[Bill-ga ***naze<sub>i</sub>***; Mary-ni watasita] tegami]-o sagasite iru] no]

In (30), while the *wh*-element is within the relative clause, the *Qu*-operator is base-generated outside of it. This representation violates (28b), however, since the adjunct *wh*-element in-situ *naze* 'why' does not have any antecedent within the minimal clause in which it occurs. In the second type, on the other hand, the *Qu*-operator originates within the relative clause and then moves to the matrix Spec of CP. (31a-b) are instances of this type:

- (31) a. [CP ***Qu<sub>i</sub>*** [IP John-wa [[CP ***t<sub>i</sub>*** [Bill-ga ***naze<sub>i</sub>***; Mary-ni watasita]] tegami]-o sagasite iru] no]  
 b. [CP ***Qu<sub>i</sub>*** [IP John-wa [[CP ***t'<sub>i</sub>*** [CP ***t<sub>i</sub>*** [Bill-ga ***naze<sub>i</sub>***; Mary-ni watasita]]] tegami]-o sagasite iru] no]

In (31a), the *Qu*-operator moves directly to the matrix Spec of CP while in (30b), it first adjoins to the embedded CP and then moves to the matrix Spec of CP. Neither (31a) nor (31b) violates (28b). This is because the

adjunct *wh*-element in-situ *naze* 'why' has its antecedent, i.e., the trace of the *Q*-operator, within the minimal clause in which it occurs. A&L argue, however, that (31a-b) are both ruled out by the lexical government requirement of the ECP. On the assumption that the head of the relative clause is not a lexical governor, neither  $t_i$  in (31a) nor  $t'_i$  in (31b) satisfies the lexical government requirement. Hence, there is no legitimate way of deriving (22).

There is, however, empirical evidence which suggests that A&L's analysis is not tenable. Their analysis cannot account for the asymmetry between the "domain barriers" and the Wh-island Constraint with *wh*-arguments in-situ in Japanese-type languages. Let us consider (14a) (repeated here as (32)) as an example:

- (32) ?John-wa [Mary-ga **nani**-o katta ka dooka]  
           -Top           -Nom what-Acc bought whether or not  
           siritagatte iru no  
           want to know Q  
           Lit. 'what does John want to know [whether or not Mary  
           bought  $t$ ']

(32) would be assigned the following representation:

- (33) [CP **Qui** [IP John-wa [CP **Quj** [IP Mary-ga **nani**<sub>i</sub>-o katta]  
           **ka dooka**<sub>j</sub>] siritagatte iru] no]

Following Huang (1982), A&L claim that the A-not-A question element *ka dooka* 'whether or not' should be treated as an adjunct *wh*-element. It therefore needs a local antecedent, as required by (28a). Since the A-not-A element is locally A'-bound by the *Q*-operator in the embedded Spec of CP, it satisfies (28a). The argument *wh*-element in-situ *nani* 'what', on the other hand, is subject to (28b) and thus may be A'-bound by a *Q*-

operator outside the island. In (33), it is A'-bound by the Qu-operator in the matrix Spec of CP; this satisfies (28b). Hence, A&L would wrongly predict that examples like (32) are acceptable.<sup>10</sup>

It should also be pointed out that A&L's analysis is incompatible with the MP, since it crucially makes use of notions like generalized binding and government which are no longer available under the MP.

## 5.2.2 Minimalist Approaches to *Wh*-elements In-situ

### 5.2.2.1 Reinhart (1992, 1993)

Reinhart (1992, 1993) gives a minimalist account of *wh*-elements in-situ, arguing that *wh*-elements in-situ may be interpreted and assigned scope without moving covertly. The mechanism she assumes for the interpretation of *wh*-elements in-situ is what Chomsky (1995) calls absorption, which is originally proposed by Higginbotham and May (1981).

Let us consider how Reinhart's analysis works, taking (34) as an example:

(34) which lady read **which book**

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<sup>10</sup>It should be noted that there is actually a way of ruling out examples like (32) under A&L's analysis, though they themselves do not mention it. They assume the minimality requirement on the linking of a *wh*-element:

- (i) The linking of a *wh*-element with an operator is subject to Minimality. The linking of A with B [... A ... B ...] obeys Minimality iff there is no intervening C [... A ... C ... B ...] such that C is linked to another element D, D ≠ B ≠ A.

(A&L 1993:216)

Given this minimality requirement, the argument *wh*-element *nani* 'what' in (32) may not be linked to the matrix Qu-operator due to the intervening Qu-operator in the embedded Spec of CP. The *wh*-island effects therefore follow. If we adopt this line of reasoning, we should expect that the *wh*-island effects always emerge with argument *wh*-elements in-situ. This prediction, however, is invalidated by the immunity of *wh*-arguments in-situ from the *Wh*-island Constraint in English-type languages.

Following, among others, Karttunen (1977), she assumes that *wh*-elements are translated as existential quantifiers. She claims that existential quantifiers, including *wh*-elements, should be represented in terms of choice functions. The choice function applies to a set, yielding an individual member of the set. The function variable is then bound by an existential operator which may be arbitrarily far away. Under her analysis, therefore, (34) would be assigned the following representation:

(35) for which  $\langle x, f \rangle$  (lady ( $x$ ) and ( $x$  read  $f$  (book)))

In (35), the choice function is applied to the *wh*-element in-situ *which book*, yielding  $f$  (book). The function variable is then bound by the question operator, which counts as an existential operator. (35) means that (34) denotes the set of true propositions  $P$ , each stating for some lady  $x$  and for some function  $f$ , that  $x$  read the book selected by  $f$ .

Reinhart's analysis can correctly predict that an argument *wh*-element in-situ may stay within a "domain barrier." This is because the choice function applies to *wh*-arguments in-situ like *dare* 'who' and *nani* 'what', yielding function variables like  $f$  (person) and  $f$  (thing). The function variable may be bound by the matrix question operator, since there is no locality requirement imposed on the linking between the operator and the function variable. Hence, her analysis can correctly predict that *wh*-arguments in-situ are immune from the "domain barriers."

Concerning the argument/adjunct asymmetry with *wh*-elements in-situ concerning the "domain barrier" effects, Reinhart argues that *wh*-adjuncts are only interpretable in the Spec of CP. This is because unlike *wh*-arguments, *wh*-adjuncts do not have N-sets but rather denote functions ranging over higher-order entities. *Wh*-adjuncts cannot be

interpreted in terms of choice functions, which select an individual from a set. Hence, *wh*-adjuncts in-situ must move to the Spec of CP in the covert component, exhibiting the locality effects.

Reinhart's analysis, however, suffers from the following empirical difficulty. Recall that *wh*-arguments in-situ are constrained by the Wh-island Constraint in Japanese-type languages, as exemplified by (32). Under Reinhart's analysis, (32) would be assigned the following representation:

- (36) for which  $f$  (John wants to know whether Mary bought  $f$   
(thing))

In (36), the choice function applies to the *wh*-argument in-situ *nani* 'what', yielding the function variable  $f$  (thing). Recall that there is no locality requirement imposed on the linking between the operator and the function variable. The function variable is therefore properly bound by the matrix question operator. Hence, her analysis would wrongly predict that examples like (32) are acceptable.<sup>11</sup>

#### 5.2.2.2 Tsai (1994)

Tsai (1994) proposes a minimalist analysis of *wh*-elements in-situ, arguing that their distribution can be accounted for by economy conditions. Following the idea proposed by Kuroda (1965) and further developed by Nishigauchi (1986, 1990) and Watanabe (1992a, 1992b), Tsai claims that

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<sup>11</sup>It is worth noting that Reinhart's theory of the interpretation of *wh*-elements in-situ, though insufficient to account for the syntactic behavior of *wh*-elements in-situ, is compatible with the analysis to be proposed below. I will propose that only Q-feature but not a *wh*-element as a whole undergoes movement in the case of *wh*-elements in-situ in Japanese-type languages. As Reinhart claims, some interpretation mechanisms are still needed unless *wh*-elements in-situ as a whole move in the covert component. Hence, it is possible to claim that her interpretation rules apply to the output of the syntactic component generated by our Q-feature movement analysis.

*wh*-elements in Japanese-type languages are free variables. These free variables are properly interpreted through being unselectively bound by Q-operators.

Let us consider how Tsai's analysis works, taking (3a) (repeated here as (37)) as an example:

- (37) John-wa **nani**-o katta no  
 -Top what-Acc bought Q  
 'what did John buy'

Under Tsai's analysis, (37) would be assigned the following representation:

- (38) [CP **Op<sub>i</sub>** [IP John-wa [DP **t<sub>i</sub>** [NP **nani<sub>i</sub>]]]-o katta] no]**

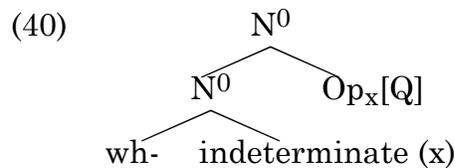
Following Watanabe (1992a, 1992b), Tsai claims that Q-operators originate in the Spec of DP in Japanese. In (38), the Q-operator *Op* originates in the Spec of DP and then moves to the Spec of CP. The *wh*-element *nani* 'what', being a variable, is licensed through being unselectively bound by the Q-operator *Op*. Under his theory, therefore, *wh*-elements in-situ themselves never undergo movement.

Tsai argues that his non-movement analysis of *wh*-elements in-situ is theoretically desirable while giving an account of the language variation concerning the existence of overt *wh*-movement. He claims that there are two possible strategies of deriving *wh*-dependencies under the MP: binary generalized transformation (= Merge) as in (39a) and singularly generalized transformation (= Attract/Move) as in (39b):

- (39) a. [X" Δ [X' ... wh ...]] → [X" Op [X' ... wh ...]]  
 b. [X" Δ [X' ... wh ...]] → [X" wh<sub>i</sub> [X' ... t<sub>i</sub> ...]]

Following Chomsky (1993, 1995), Tsai assumes that Merge is cost-free while Attract/Move is not. The economy condition claims that UG would prefer (39a) to (39b), since the former is less costly than the latter. It then follows that if a language may introduce Q-operators in terms of Merge, that language does not resort to Attract/Move. Since Japanese-type languages may introduce Q-operators, they do not employ Attract/Move in order to form *wh*-dependencies.

Unlike Japanese-type languages, English-type languages employ overt *wh*-movement to form *wh*-dependencies. Following Watanabe (1992a, 1992b), Tsai argues that English-type languages establish an operator-variable pair under X<sup>0</sup>-level, as shown below:



Unlike *wh*-elements in Japanese-type languages, those in English-type languages are not free variables. Although the economy condition tells us that the insertion of a Q-operator should be preferred over movement, a Q-operator may not be inserted in English-type languages. This is because if a Q-operator were inserted, the inserted Q-operator would remain dangling without binding any variable. This would result in a vacuous quantification, which would violate the condition on the operator-variable construction. Hence, overt *wh*-movement instead of the insertion of a Q-operator takes place in English-type languages. Given that the [+*wh*] feature of C is strong in English, *wh*-movement must take place before Spell-Out in order to construct a *wh*-dependency.

Tsai argues that apart from this theoretical support, his analysis also receives empirical support. First, his analysis can account for the

immunity of *wh*-arguments in-situ from the "domain barriers" along the line of the reasonings given by Watanabe (1992a, 1992b).

Second, his analysis can correctly account for the distribution of *wh*-adjuncts in-situ in Japanese-type languages. Tsai claims that unlike *wh*-arguments, *wh*-adjuncts do not count as free variables but as intrinsic operators. In the case of the interrogative with a *wh*-adjunct in-situ, if we inserted a Q-operator, it would result in two instances of vacuous quantification. This is because the *wh*-adjunct in-situ, being an intrinsic operator, as well as the inserted Q-operator would not have any variables to bind. Hence, the *wh*-adjunct in-situ is required to undergo movement. On the assumption that [+wh] features are weak in Japanese, the *wh*-adjunct in-situ undergoes movement in the covert component. This covert movement of the *wh*-adjunct in-situ is constrained by the locality effects.

Third, along the line of reasoning given by Watanabe, Tsai's analysis can account for the fact that *wh*-arguments in-situ are constrained by the Wh-island Constraint in Japanese-type languages.<sup>12</sup>

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<sup>12</sup>Tsai's analysis can also account for an asymmetry between *wh*-elements in-situ in Chinese and those in Japanese with respect to the Wh-island Constraint if the contrast between the two languages really exists. Following the observation made by Huang (1982), he claims that unlike Japanese *wh*-arguments in-situ, Chinese *wh*-arguments in-situ are not constrained by the Wh-island Constraint:

- (i)   ni    xiang-ahidao [shei   mai-le   sheme]  
       you wonder                            who buy-Asp what  
       a.     'who is the person *x* such that you wonder what *x* bought'  
       b.     'what is the thing *x* such that you wonder who bought *x*'  
       c.     'do you wonder who bought what'

He observes that (i) is acceptable under the wide scope construal of either of the *wh*-elements in-situ. He argues that the difference between Chinese and Japanese resides in the fact that while Q-operators originate in the Spec of DP in the latter, they originate in the Spec of CP in the former. (i) would therefore be assigned the following representations depending on which *wh*-element in-situ is unselectively bound by which Q-operator:

Tsai's analysis, however, is confronted with empirical as well as conceptual difficulties. Let us first consider its empirical problem. First, exactly like Watanabe's analysis, his analysis would wrongly predict that examples like (27) (repeated here as (41)) are acceptable:

- (41) ?John-wa [[Mary-ga **nani**-o katta ka dooka]  
           -Top      -Nom what-Acc bought whether or not  
           siritagatte iru hito]-o      sagasite iru no  
           want to know person-Acc looking-for Q  
           Lit. 'John is looking for the person who wants to know  
           whether or not Mary bought what'

Under Tsai's analysis, a Q-operator may originate in the Spec of the relative clause as a whole and then move to the matrix Spec of CP. Since this movement does not cross any island, the result should be acceptable. (41), however, is in fact deviant.

Second, exactly like Watanabe's analysis, Tsai's analysis would wrongly predict that *wh*-arguments in-situ exhibit the adjunct condition and non-bridge verb condition effects in Japanese. This is because it is highly unlikely that there is a place outside these islands where a Q-operator may be base-generated.

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- (ii) a. [CP **Op<sub>i</sub>** [IP ni xiang-ahidao [CP **Op<sub>j</sub>** [IP **shei<sub>i</sub>** mai-le  
           **sheme<sub>j</sub>**]]]]  
       b. [CP **Op<sub>j</sub>** [IP ni xiang-ahidao [CP **Op<sub>i</sub>** [IP **shei<sub>i</sub>** mai-le  
           **sheme<sub>j</sub>**]]]]

In (iia-b), the Q-operators in the embedded and matrix Spec's of CP are both base-generated there. Since no movement is involved in this derivation, we can correctly predict that (i) does not violate any locality condition. Hence, the asymmetry between Chinese and Japanese with respect to the existence of the *wh*-island effects follows. It should be pointed out, however, that there is disagreement among speakers over the judgment concerning the existence of the *wh*-island effects in Chinese.

Let us turn to its conceptual problems. First, apart from the inherent global property associated with the economy conditions, his analysis needs very global considerations. Recall that under his analysis, the insertion of a Q-operator should always be available unless it would lead a derivation to crash. In order to decide whether to insert a Q-operator at a certain stage of a derivation, we have to look ahead to see whether the insertion of a Q-operator at that stage would result in an LF-interface only with legitimate objects. Such global considerations, however, should be avoided, since it would necessarily induce computational intractability.

Second, his claim that the economy condition prefers insertion of a Q-operator to movement of a *wh*-element is untenable. Recall that the economy conditions only compare the convergent derivations which belong to the same reference set. Chomsky (1993) claims that the derivations with the same LF representation constitute a reference set. Chomsky (1995), on the other hand, claims that the derivations with the same N constitute a reference set. (39a-b), however, never belong to the same reference set whichever definition of the reference set is to be adopted. (39a-b) do not have the same N, since the reference set of the former includes a Q-operator while that of the latter does not. Furthermore, it is clear that (39a-b) do not have the same LF-representation, either. Hence, (39a-b) are not comparable by the economy conditions.

Third, his analysis of overt *wh*-movement in English-type languages is problematic. He claims that if we did not apply overt *wh*-movement but rather inserted a Q-operator in English-type languages, it would result in a vacuous quantification. Since this would violate the condition on the operator-variable construction, overt *wh*-movement must

take place. Note that his analysis crucially relies on the assumption that the condition on the operator-variable construction functions as a driving force for movement operations. This is against Chomsky's (1993, 1995) minimalist view that movement operations are only triggered by feature-checking. This is because the construction of an operator-variable pair does not involve any feature-checking. The condition on the operator-variable construction therefore should not function as a driving force for movement operations. Hence, Tsai's analysis of overt *wh*-movement in English-type languages, which uses the condition on the operator-variable construction as a driving force, is not compatible with the minimalist view.

To summarize this section, I have first reviewed the previous EST analyses of *wh*-elements in-situ. I have argued that they are incompatible with the MP and thus cannot be adopted as they stand. It was also shown that those analyses are empirically problematic. I have then reviewed the previous minimalist approaches to *wh*-elements in-situ. It was shown that they are not tenable on the conceptual and empirical grounds. In the next section, I will consider the distribution of *wh*-elements in-situ in Japanese-type languages and propose "overt" Q-feature movement. It is shown that the "overt" Q-feature movement analysis coupled with our theory of phrase structure enables us to account for the hitherto unexplained asymmetries concerning the distribution of *wh*-elements in-situ in Japanese-type languages.

### 5.3 *Wh*-elements In-situ in Japanese-type Languages

#### 5.3.1 Indeterminate Elements

Essentially following the idea originally proposed by Kuroda (1965) and further developed by, among others, Nishigauchi (1986, 1990), Tsai (1994), and Watanabe (1992a, 1992b), I claim that unlike *wh*-elements in English-type languages, so called *wh*-elements in Japanese-type languages are not intrinsic interrogative operators. They should rather be identified as free variables which are to be bound by something else. Following Kuroda (1965), let us call so called *wh*-elements in Japanese-type languages indeterminate elements in order to avoid complications that the term "*wh*-element" might induce.

Unlike *wh*-elements in English-type languages which are always construed as interrogative operators, indeterminate elements can be construed as either interrogative or noninterrogative elements depending on the context where they appear. This has been taken as evidence in support of the view that indeterminate elements are free variables rather than intrinsic interrogative operators. Japanese indeterminate elements, for example, can be construed in the following ways:

(42) *Wh*-elements (Interrogative Operators)

- a.     **dare-ga**   sono hon-o   kaimasita **ka**  
           who-Nom that book-Acc bought     Q  
           'who bought that book'
- b.     John-wa **nani-o** kaimasita **ka**  
           -Top what  
           'what did John buy'

- c. John-wa sono hon-o **doko**-de kaimasita **ka**  
 where  
 'where did John buy that book'
- d. John-wa sono hon-o **itu** kaimasita **ka**  
 when  
 'when did John buy that book'
- e. John-wa sono hon-o **naze** kaimasita **ka**  
 why  
 'why did John buy that book'
- f. John-wa **dono** hon-o kaimasita **ka**  
 which  
 'which book did John buy'

## (43) Existential Quantifiers

- a. dare-ka 'someone'
- b. nani-ka 'something'
- c. doko-ka 'somewhere'
- d. itu-ka 'sometime'
- e. \*naze-ka<sup>13</sup> 'for some reason'

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<sup>13</sup>*Naze-ka* is acceptable, but can only be interpreted as 'do/does not know why' not as a existential quantifier. Hence, examples like (i) are deviant:

- (i) \*John-wa [Bill-ga naze-ka Mary-to-no konyaku-o kaisyoo sita  
 -Top -Nom -with-Gen engagement-Acc has broken  
 to] uwasa siteiru  
 Comp spread the rumor  
 'John is spreading the rumor that Bill has broken his engagement with  
 Mary for some reason'

Note that if *naze-ka* could be interpreted as 'for some reason', (i) would be acceptable, as shown by the acceptability of (ii), where *nanraka-no riyuu-de* 'for some reason' is used instead of *naze-ka*:

- f. dono N'-ka 'some-N'
- (44) Universal Quantifiers (Continuous Cases)<sup>14</sup>
- a. DAre-mo 'everyone'
- b. ?NAni-mo<sup>15</sup> 'everything'
- c. DOko-mo 'everywhere'
- d. Itu-mo 'whenever'
- e. \*NAze-mo 'for whatever reason'
- f. DOno-N'-mo 'every N'
- (45) Universal Quantifiers (Discontinuous Cases)
- a. [**dare-ga** kite **mo**] boku-wa awa-nai  
 everyone-Nom come I-Top meet-Not  
 'for all  $x$ ,  $x$  a person, if  $x$  comes, I will not meet  $x$ '

- 
- (ii) John-wa [Bill-ga nanraka-no riyuu-de Mary-to-no konyaku-o  
 -Top -Nom some-Gen reason-for -with-Gen engagement-Acc  
 kaisyoo sita to] uwasa siteiru  
 has broken Comp spread the rumor  
 'John is spreading the rumor that Bill has broken his engagement with  
 Mary for some reason'

<sup>14</sup>The universally-quantified particle *-mo* is isomorphic with the negative polarity particle *-mo*, though they have different pitch patterns. As extensively discussed by McCawley (1968), Japanese is a pitch-accent language and an accent falls on the last syllable of a stretch of high-pitch tones. High-pitch tones are indicated by the upper case and low-pitch tones, by the lower case here and in the relevant examples to follow.

<sup>15</sup>As pointed out by Watanabe (1992a), *NAni-mo* 'everything' can only be used in the fixed expression as in (i), though even examples like (i) are not perfect:

- (i) ??NAni-mo-ga iyani natta  
 -Nom hateful became  
 'Everything has become hateful/I have become sick with everything'  
 (Watanabe 1992a:49, the judgment is mine)

In a colloquial speech, *NAni-mo-kamo* instead of *NAni-mo* is used:

- (ii) NAni-mo-kamo-ga tetigai darakeda  
 everything-Nom has gone wrong  
 'everything has gone wrong with me'

- b. [John-ga **nani**-o katte **mo**] boku-wa  
 -Nom everything-Acc buy I-Top  
 kamaima-sen  
 care-Not  
 'for all  $x$ ,  $x$  a thing, if John buys  $x$ , I don't care'
- c. [John-ga **doko**-de sono hon-o katte **mo**]  
 -Nom everywhere-at that book-Acc bought  
 boku-wa kamaima-sen  
 I-Top care-Not  
 'for all  $x$ ,  $x$  a place, if John buys that book at  $x$ , I don't care'
- d. [John-ga **itu** sono hon-o katte **mo**] boku-wa  
 -Nom whenever that book-Acc bought I-Top  
 kamaima-sen  
 care-Not  
 'for all  $x$ ,  $x$  a time, if John buys that book at  $x$ , I don't care'
- e. \*[John-ga **naze** sono hon-o katte  
 -Nom for whatever reason that book-Acc bought  
**mo**] boku-wa kamaima-sen  
 I-Top care-Not  
 'for any  $x$ ,  $x$  a reason, if John buys that book for  $x$ , I don't care'

- f. [John-ga **dono** hon-o katte **mo**] boku-wa  
 -Nom every book-Acc buy I-Top  
 kamaima-sen  
 care-Not  
 'for all  $x$ ,  $x$  a book, if John buys  $x$ , I don't care'
- (46) Negative Polarity Items (NPIs)
- a. daRE-MO 'anyone'  
 b. naNI-MO 'anything'  
 c. doKO-MO 'anywhere'  
 d. \*iTU-MO 'anytime'  
 e. \*naZE-MO 'for any reason'  
 f. dono N'-MO 'any N''

When indeterminate elements are linked with the Q-morpheme *ka/no* in Comp, they are construed as *wh*-elements, i.e., interrogative operators, as exemplified in (42). When combined with the existentially-quantified morpheme *ka*, the universally-quantified morpheme *mo*, and the negative polarity morpheme *mo*, on the other hand, indeterminate elements are construed as existential quantifiers, universal quantifiers, and negative polarity items, respectively, as shown in (43)-(46). Based on these observations, Nishigauchi (1986, 1990) proposes that morphemes like *ka* and *mo* should be analyzed as unselective binders. Under this view, indeterminate elements are construed in various ways through being given a quantificational force by their unselective binder. For example, indeterminate elements are construed as *wh*-elements, i.e., interrogative operators, through being unselectively bound by the Q-morpheme *ka/no*.

As the syntactic basis for the above mentioned semantic interpretations of indeterminate elements, I propose that indeterminate

elements should be assigned UFFs which are to be checked by the corresponding interpretable features of their unselective binders. In other words, the checking relation provides the syntactic basis for unselective binding:

(47) *Wh*-elements (Interrogative Operators)  
 $\text{dare}_{[Q]} \dots \text{ka/no}_{[Q]} \rightarrow \text{dare} \dots \text{ka/no}_{[Q]}$

(48) Existential Quantifiers  
 $\text{dare}_{[E]} \text{-ka}_{[E]} \rightarrow \text{dare-ka}_{[E]}$

(49) Universal Quantifiers  
 $\text{DAre}_{[U]} \text{-mo}_{[U]} \rightarrow \text{DAre-mo}_{[U]}$

or

$\text{DAre}_{[U]} \dots \text{mo}_{[U]} \rightarrow \text{DAre} \dots \text{mo}_{[U]}$

(50) Negative Polarity Items (NPIs)  
 $\text{daRE}_{[N]} \text{-MO}_{[N]} \rightarrow \text{daRE-MO}_{[N]}$

In (47)-(50), a question feature, an existential quantification feature, a universal quantification feature, and an NPI feature are represented as [Q], [U], [E], and [N], respectively. For a purpose of illustration, let us look at (47) in detail. The indeterminate element which is to be construed as a *wh*-element, i.e., an interrogative operator, is assigned a Q-feature. The Q-feature of the indeterminate element enters into a checking relation with that of the Q-morpheme *ka/no*. Note that while the Q-feature of the indeterminate element is uninterpretable, that of the Q-morpheme is interpretable. This view is plausible, since it is the Q-morpheme *ka/no* but not the indeterminate element that has an interrogative quantificational force. Hence, after the checking operation

takes place, the Q-feature of the indeterminate element gets erased while that of the Q-morpheme remains intact. This gives us the syntactic basis for the semantic fact that indeterminate elements can only be construed as *wh*-elements (interrogative operators) through being associated with Q-morphemes. The checking processes in (48)-(50) proceed in a similar fashion.<sup>16</sup>

There is an important point which must be kept in mind in the discussion to follow. We observe from (42)-(46) that the indeterminate elements but *naze* are construed in various ways according to their unselective binders. The indeterminate element *dare*, for instance, is construed as a *wh*-element, an existential quantifier, a universal quantifier, and a negative polarity item when it is unselectively bound by the Q-morpheme *ka/no*, the existentially-quantified morpheme *ka*, the universally-quantified morpheme *mo*, and the negative polarity morpheme *mo*, respectively. In other words, *dare* may be assigned a Q-feature, an E-feature, a U-feature, or an N-feature according to the context where it appears. Hence, its UFF, which is to be checked by its unselective binder, should count as an optional feature in the sense of Chomsky (1995). The indeterminate element *naze*, on the other hand, can only be bound by the Q-morpheme *ka/no* and construed as an interrogative operator, as in (42e). As shown in the (e) examples of (43)-(46), it may not be bound by the existentially-quantified morpheme *ka*, the

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<sup>16</sup>One might argue that the indeterminate elements should have not only UFFs which are to be checked by their unselective binders but also interpretable features which would represent their semantic import. Considering *wh*-elements as examples, one might say that they also have interpretable [WH]-features. Even if it is correct to assume that *wh*-elements have [WH]-features, the latter, being interpretable, does not have to enter into any checking relation. The arguments to follow therefore hold regardless of whether such interpretable features of the indeterminate elements exist or not.

universally-quantified morpheme *mo*, or the negative polarity morpheme *mo*. In other words, *naze* is always assigned a Q-feature, which is to be checked by the Q-morpheme. Hence, its uninterpretable Q-feature should count as an intrinsic feature in the sense of Chomsky (1995). As we will see in the next section, this difference between *naze* and the other indeterminate elements plays a crucial role in deriving the argument/adjunct asymmetry with respect to the locality restrictions on *wh*-elements in-situ.

### 5.3.2 "Overt" Q-feature Movement

With the discussion in the previous subsection in mind, this subsection considers how to construct simplex *wh*-interrogatives in Japanese-type languages. I will argue that the Q-feature of an indeterminate element moves overtly to a Q-morpheme in order to be checked off.<sup>17</sup>

Let us first consider how to construct simplex *wh*-interrogatives with *wh*-arguments in-situ, taking (37) (repeated here as (51)) as an example:

- (51) John-wa **nani**-o katta no  
       -Top what-Acc bought Q  
       'what did John buy'

The indeterminate element *nani* 'what', which is required by the uninterpretable selectional restriction feature of the verb *katta* 'bought', must be inserted in a cyclic manner in accordance with the ICP, yielding

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<sup>17</sup>Maki (1995) also proposes a feature movement analysis of *wh*-elements in-situ in Japanese, though he assumes that feature movement takes place in the covert component.

*nani-o katta* 'what-Acc bought'. Recall that the indeterminate element *nani* 'what' in (51), which is to be construed as a *wh*-element (an interrogative operator), has a Q-feature. Although the Q-feature of *nani* 'what' is uninterpretable, it is optional and thus not introduced into the derivation when *nani* 'what' is selected from the N.

As the derivation proceeds, we come to the stage where C is selected:

(52) [[John-wa [nani-o katta ]] C<sub>[Q]</sub>]

I argue that exactly like in English-type languages, the Q-feature of C is also strong in Japanese-type languages.<sup>18</sup> The Q-feature of C, being strong and thus uninterpretable, must be checked immediately in conformity with the ICP in Japanese-type as well as English-type languages. Recall that in English-type languages, the strong Q-feature of C is required to be checked immediately by overt *wh*-movement when the feature becomes accessible to a computation in conformity with the ICP. In Japanese-type languages, on the other hand, the strong Q-feature of C is checked off immediately by merger of the Q-morpheme *no*, which has an interpretable Q-feature:

(53) [[John-wa [nani-o katta ]] **no**<sub>[Q]</sub>]

After the checking operation takes place, the Q-feature of C, being uninterpretable, is erased while that of the Q-morpheme, being interpretable, remains.

At this stage, we add a Q-feature to *nani* 'what'. Since it is uninterpretable, it must be checked immediately in conformity with the ICP. I argue that the Q-feature of *nani* 'what' enters into a checking

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<sup>18</sup>See Watanabe (1992a, 1992b) for the claim that the feature of an interrogative Comp is universally strong.

relation with that of the Q-morpheme *no* through feature-movement, as represented in (54a):<sup>19</sup>

(54) [[John-wa [**nani**<sub>[Q]</sub>-o katta]] **no**<sub>[Q]]</sub>

| \_\_\_\_\_ ↑

After the checking operation takes place, the Q-feature of *nani* 'what', being uninterpretable, is erased while that of the Q-morpheme *no*, being interpretable, remains intact, resulting in the following structure:

(55) [[John-wa [nani-o katta]] no<sub>[Q]]</sub>

In this way, we can construct interrogatives with *wh*-arguments in-situ like (51).

It should be noted that at stage (52) when the interrogative C is introduced, the EP prevents its strong Q-feature from entering into a checking relation through Q-feature movement from *nani* 'what'. A question now arises what happens if we start with such an N that contains the same elements as the one of (51) except that it does not include any Q-morpheme. In the derivation based on that N, the strong Q-feature of the interrogative C can only be checked by Q-feature movement from *nani* 'what'. Hence, the derivation converges, yielding the following:

(56) \*John-wa nani-o katta  
-Top what-Acc bought

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<sup>19</sup>Recall that we have been assuming that Attract/Move is not an primitive operation but a complex operation consisting of two primitive operations, i.e., Copy and Merge. Checking relations are therefore established by Copy or Merge but not by Attract/Move. Hence, to be precise, the Q-feature of *nani* 'what' first undergoes a copy operation and gets deleted. It is then merged with the Q-morpheme and erased. For expository purposes, however, I pretend to assume that Q-feature undergoes Attract/Move in order to enter into a checking relation.

I argue that although this derivation converges, the resultant LF-representation is gibberish due to the fact that the indeterminate element *nani* 'what' does not have any unselective binder and thus may not be properly interpreted. In other words, the checking relation between the indeterminate element and the Q-morpheme, which provides the syntactic basis for unselective binding, is not properly established.

Note also that Q-feature movement takes place before Spell-Out under our analysis. Recall that UFFs must be converted to their corresponding phonological properties through entering into checking relations before Spell-Out. The Q-feature of an indeterminate element therefore must enter into a checking relation before Spell-Out. More generally, our analysis claims that movement, whether category or feature movement, always takes place in the overt component. No movement ever takes place in the covert component. If this conjecture is correct, the covert component is minimized, remaining only with operations like the construction of an operator-variable pair.<sup>20</sup>

Let us next consider how to construct simplex *wh*-interrogatives with *wh*-adjuncts in-situ like the following example:

- (57) John-wa **naze** sono hon-o katta no  
       -Top why that book-Acc bought Q  
       'why did John buy that book'

Recall that the indeterminate element *naze* 'why' is assigned an intrinsic uninterpretable Q-feature. Merger of the indeterminate element *naze* 'why', being an adjunct, is not triggered by any UFF. It is therefore forced to be inserted postcyclically. Crucially, when the Q-morpheme *no*

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<sup>20</sup>Bobaljik (1995) and Brody (1995) also deny the existence of LF-movement.

is merged to check the strong Q-feature of C, *naze* 'why' has not been selected from the N yet, as represented below:<sup>21</sup>

(58) [[John-wa [sono hon-o katta]] no<sub>[Q]</sub>]

At this stage, *naze* 'why' is selected from the N. Its uninterpretable Q-feature must be checked immediately in accordance with the ICP. The Q-feature of *naze* 'why' therefore undergoes movement to be checked, as depicted below:

(59) [[John-wa [**naze**<sub>[Q]</sub> [sono hon-o katta]]] **no**<sub>[Q]</sub>]

| \_\_\_\_\_ ↑

After the checking operation, the Q-feature of *naze* 'why', being uninterpretable, is erased while that of the Q-morpheme, being interpretable, remains. This yields the following structure:

(60) [[John-wa [naze [sono hon-o katta]]] no<sub>[Q]</sub>]

In this way, we can construct interrogatives with *wh*-adjuncts in-situ like (57).

### 5.3.3 Category Movement and Feature Movement

The analysis presented in the previous subsection crucially assumes that feature movement takes place before Spell-Out. This assumption is against Chomsky's (1995) view that a category, not just a feature, is required to move before Spell-Out. Recall that in Chomsky (1995) where the traditional theory of movement is reinterpreted as the theory of feature movement, what is raised should be just a feature unless it would

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<sup>21</sup>Recall that the checking relation between an indeterminate element and a Q-morpheme provides the syntactic basis for unselective binding. If the *wh*-adjunct in-situ *naze* 'why' instead of the Q-morpheme *no* were merged into C to check its strong Q-feature, the checking relation between *naze* 'why' and the Q-morpheme *no* would never be established. Hence, *naze* 'why' would end up not having any unselective binder and thus would not be properly interpreted.

result in a crashed derivation. In order to ensure this, he proposes the "no extra baggage" condition, which is one of the economy conditions:

(61) "No Extra Baggage" Condition

F carries along just enough material.

(adapted from Chomsky 1995:262)

According to the "no extra baggage" condition, the derivation that raises just a feature should be chosen as "optimal" unless it would violate the FI and therefore crash. This is because the raising of just a feature does not carry along any "extra baggage." Chomsky argues, however, that unlike in the covert component, a category, not just a feature, should be raised in the overt component. If only a feature moved in the overt component, features of a single lexical item would be scattered. Only the raised feature would be in the checking domain but all the other features would remain in-situ. Chomsky assumes that there is a PF requirement that features of a single lexical item must be within a single  $X^0$ . A derivation with such scattered features violates this PF requirement and therefore crashes. Chomsky therefore claims that in the overt component, an "extra baggage" is required for PF-convergence; the whole category, but not just a feature, undergoes a movement operation.

As pointed out by Takano (1996), however, Chomsky's claim that feature movement before Spell-Out leads a derivation to crash at PF is questionable. Recall that Spell-Out is the operation which strips away from an object those elements which are relevant to the phonological component, with the remaining elements being mapped to LF. It is then reasonable to claim that formal features, which are not relevant to PF, do not enter into the phonological component. Then, "overt" formal feature movement has nothing to do with PF. Hence, "overt" formal feature

movement does not lead a derivation to crash at PF, contrary to Chomsky's claim.<sup>22</sup>

A question now arises what forces a feature to carry along an "extra baggage" in the case of category movement like English overt wh-movement. I propose that category movement is forced not by the PF-requirement but by the following LF requirement:

- (62) The interpretable features of a lexical item should be within the lexical item at LF.

According to (62), if an interpretable feature moves out of the lexical item by feature movement and thus does not stay within the lexical item at LF, the derivation crashes. According to the "no extra baggage" condition, movement of an interpretable feature always carries an "extra baggage" for LF-convergence; the whole category, not just a feature, moves. There is considerable validity to LF-requirement (62) on interpretable features, since it is reasonable to claim that if an interpretable feature of a lexical item does not stay within the lexical item at LF, the lexical item may not be properly interpreted at that level.<sup>23</sup>

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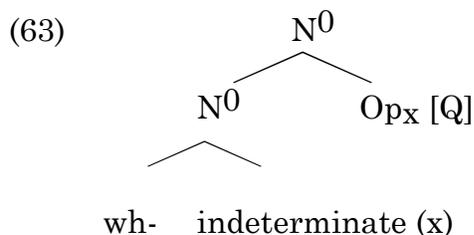
<sup>22</sup>As discussed in chapter 1, Chomsky (1996) proposes the different view that feature chains cannot be interpreted at PF, which forces category movement in the overt component. This view, however, is untenable. Since formal features do not enter into the PF-component, feature chains never appear at PF.

<sup>23</sup>One might claim that this analysis is conceptually problematic, since it induces a problem of globality. This analysis makes use of the "extra baggage" condition and LF-requirement (62). Note that the "extra baggage" condition, being an economy condition, needs global considerations. Note also that LF-requirement (62) is a global interface condition. It follows that this analysis, which makes use of these global conditions, necessarily induces computational intractability. I argue, however, that this computationally intractable optimization problem can be solved by assuming the following local "heuristic algorithm" ("computational trick"):

- (i) Category movement takes place only if an interpretable formal feature is required to undergo Attract/Move.

Hence, a problem of globality does not arise in this analysis.

Let us consider how LF-requirement (62) coupled with the "no extra baggage" condition forces overt *wh*-movement in English-type languages. Let us first explicate the make-up process of *wh*-elements in English-type languages. Recall that Tsai (1994) and Watanabe (1992a, 1992b) pursue the parallelisms between *wh*-elements in Japanese-type languages and those in English-type languages, arguing that the latter is made up essentially in the same way as the former. We essentially follow Tsai and Watanabe in assuming that *wh*-elements in English-type languages consist of indeterminate elements and their unselective binders, as represented by (40) (repeated here as (63)):<sup>24</sup>



Their idea can be reinterpreted under our analysis in the following way. Exactly like indeterminate elements in Japanese-type languages, those in English-type languages are also assigned uninterpretable Q-features which are to be checked by the Q-features of their unselective binders. Unlike in Japanese-type languages, the checking operation between these Q-features takes place under N<sup>0</sup>-level in English-type languages. The Q-feature of an indeterminate element raises to that of its unselective binder under N<sup>0</sup>-level in order to be checked off. After the checking operation takes place, the Q-feature of the indeterminate element, being uninterpretable, is erased while that of its unselective binder, being

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<sup>24</sup>This idea dates back to earlier generative works like Chomsky (1964) and Katz and Postal (1964).

interpretable, remains intact. English *wh*-elements therefore only have interpretable Q-features, with the uninterpretable Q-features of their indeterminate parts having been "checked off within a lexicon" (or at the level of "microsyntax" in the sense of Hale and Keyser (1993)). Since the Q-features of English *wh*-elements are interpretable, LF-requirement (62) coupled with the "no extra baggage" condition requires that their movement should carry along "extra baggages." This yields category movement.

Turning to Japanese-type languages, recall that the Q-features of indeterminate elements in Japanese-type languages are uninterpretable. They are therefore not subject to LF-requirement (62). Hence, the "no extra baggage" condition requires that feature movement, but not category movement, should take place. Only Q-features undergo movement.

Recall that our analysis claims that the Q-feature of an interrogative C is strong and thus uninterpretable in both English-type and Japanese-type languages (possibly universally as argued by Watanabe (1992a, 1992b)). There is therefore no difference between these types of languages concerning the property of an interrogative C. This is in contrast with Chomsky's (1993, 1995) analysis, where the language variation concerning the existence of overt *wh*-movement is attributed to the difference in the property of an interrogative C.

According to our analysis, the language variation resides in the way how the uninterpretable Q-feature of an interrogative C is checked off. In English-type languages, the uninterpretable Q-feature of an interrogative C can only be checked off by the Q-feature of a *wh*-element. Since the Q-feature of a *wh*-element in English-type languages is

interpretable, LF-requirement (62) together with the "no extra baggage" condition requires that it should carry along an "extra baggage" for LF-convergence; the *wh*-element as a whole, but not just its Q-feature, undergoes movement. In Japanese-type languages where indeterminate elements and Q-morphemes are two independent lexical items, on the other hand, the uninterpretable Q-feature of an interrogative C is checked off by merger of the Q-morpheme *ka/no*, which has an interpretable Q-feature. After this checking operation takes place, the uninterpretable Q-feature of an indeterminate element raises to the Q-morpheme in order to be checked off. LF-requirement (62) together with "no extra baggage" condition requires that Q-feature movement should not carry any "extra baggage." This is because the Q-feature of an indeterminate element in Japanese-type languages is uninterpretable. Hence, only Q-feature rather than a *wh*-element as a whole moves. One may safely say that our analysis is a minimalist reinterpretation of Cheng's (1991) typological theory, where languages without Q-morphemes like English employ overt *wh*-movement while those with Q-morphemes like Chinese and Japanese do not.<sup>25</sup>

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<sup>25</sup>There are other areas in which the difference in the property of a functional head has been used to explain variations among languages: the difference between French and English regarding overt verb movement (see, among others, Bobaljik (1995), Chomsky (1991a), Emonds (1976, 1978), Jackendoff (1972), and Pollock (1989)) and the difference among languages regarding overt object shift (see, among others, Chomsky (1993, 1995), Collins (1997), Collins and Thráinsson (1993), Holmberg (1986), Holmberg and Platzack (1995), Johnson (1991), Jonas and Bobaljik (1993), Koizumi (1993), Travis (1992), Ura (1996), Vikner (1995), and Zwart (1993)). I claim that these differences should be explained by the existence of a strong categorial feature under a functional head. Let us consider the existence/nonexistence of overt verb movement. We assume following Chomsky (1993) that while French has a strong V-feature under a functional head, English does not. In French, the strong V-feature should be checked by the V-feature of a verb. Since the latter is interpretable, LF-requirement (62) together with the "no extra baggage" condition requires that the whole category rather than just the feature

### 5.3.4 The Locality Effects with *Wh*-elements In-situ

With the discussion in the last subsection in mind, this subsection considers the locality restrictions on *wh*-elements in-situ in Japanese-type languages. It is shown that the Q-feature movement analysis coupled with our theory of phrase structure can account for the above-mentioned hitherto unexplained asymmetries concerning *wh*-elements in-situ in Japanese-type languages.

#### 5.3.4.1 Argument *Wh*-movement and a *Wh*-argument In-situ

As extensively argued in chapter 3, the "domain barrier" effects with overt *wh*-movement straightforwardly follow from our theory of the composition of phrase structure. Let us look at the CNPC effects, taking (64) as an example:

(64) *?\*who* do you like [books that criticize *t*]

It was shown that since the relative clause *that criticize who* is an adjunct, it is required to be merged with the main structure postcyclically.

Crucially, when we come to the stage of the derivation where the strong Q-feature of C is to be checked, the relative clause has not been merged with the main structure yet. Hence, there is no way to check the strong Q-feature of C at this stage. This violates the ICP; the derivation is canceled. The deviancy of examples like (64) follows.

Unlike overt *wh*-movement, however, *wh*-arguments in-situ in Japanese-type languages do not exhibit any "domain barrier" effects. Let

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should move. Hence, a verb moves overtly in French but not in English. The existence/nonexistence of overt object shift can be explained in a similar fashion.

us consider the relative clause case of the CNPC (19) (repeated here as (65)) as an example:

- (65) John-wa [nani-o katta hito]-o sagasite iru no  
 -Top what-Acc bought person-Acc looking-for Q  
 Lit. 'John is looking for the person who bought what'

Let us first look at how to construct the relative clause. The indeterminate element *nani* 'what' is an argument and thus required to be merged cyclically in order to check the selectional restriction feature of the verb *katta* 'bought':

- (66) [nani-o katta]  
 what-Acc bought

Recall that the Q-feature of *nani* 'what', though uninterpretable, is optional. It is therefore not introduced into the derivation at this stage but rather added later in the derivation. Given that empty operator movement is involved in Japanese relative clauses, we assign the following structure to the relative clause (though the present argument holds regardless of whether the empty operator movement analysis of Japanese relative clauses is correct or not):<sup>26</sup>

- (67) [*Op* [*t* nani-o katta]]  
 what-Acc bought

Let us turn to the main structure. The verb *sagasite iru* 'looking for' has selectional restriction features to be checked off. Those features, being uninterpretable, are checked by first combining the verb *sagasite iru* 'looking for' with *hito* 'person' and then combining *John* with *hito-o sagasite iru* 'looking for the person'. It should be noted that since merger

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<sup>26</sup>Murasugi (1991), for example, argues that Japanese relative clauses are identified as IPs, involving base-generated empty pronouns.



(71) [[John-wa [[Op [t nani<sub>[Q]</sub>-o katta]] hito]-o sagasite iru no<sub>[Q]</sub>]  
 | \_\_\_\_\_↑

After the checking operation takes place, the Q-feature of *nani* 'what', being uninterpretable, is erased while that of the Q-morpheme *no*, being interpretable, remains:

(72) [[John-wa [[Op [t nani-o katta]] hito]-o sagasite iru] no<sub>[Q]</sub>]

Hence, our analysis can correctly predict that (65), a case of the CNPC, is acceptable. The immunity of *wh*-arguments in-situ from the other "domain barriers" can be accounted for in the same way.

It is important to note that this asymmetry between overt *wh*-movement and a *wh*-argument in-situ counts as empirical evidence in support of our derivational account of the "domain barriers" and against the traditional approaches to the "domain barriers." Under our analysis of the "domain barriers," the "domain barrier" effects are observed with operations which take place before "domain barriers" are merged with main structures but not with those which take place after "domain barriers" are merged with main structures. In the case of overt *wh*-movement, "domain barriers" have not been merged with main structures when it takes place. Hence, the "domain barrier" effects are observed with overt *wh*-movement. In the case of *wh*-arguments in-situ, on the other hand, Q-feature movement may take place after "domain barriers" are merged with main structures. Hence, *wh*-arguments in-situ do not exhibit any "domain barrier" effects. The asymmetry between the two therefore follows from the difference in the ordering between the checking of Q-features and merger of "domain barriers" with main structures in the course of a derivation. Such an account is not available under the traditional approaches to the "domain barriers," which claim that

extraction out of certain domains is prohibited. This is because those approaches claim that certain domains always count as barriers throughout derivations.

#### 5.3.4.2 Argument and Adjunct *Wh*-elements In-situ

Unlike *wh*-arguments in-situ, *wh*-adjuncts in-situ exhibit the "domain barrier" effects. Let us consider how our analysis can account for this asymmetry, taking the relative clause case of the CNPC (22) (repeated here as (73)) as an example:

(73) \*John-wa [Bill-ga **naze** Mary-ni watasita tegami]-o  
           -Top    -Nom why           -Dat gave    letter-Acc

sagasite iru no

looking-for Q

Lit. 'John is looking for the letter which Bill gave to Mary  
 why'

Let us first consider how to construct the relative clause. We construct structure (74) by checking the UFFs of the selected items in accordance with the ICP and the EP. Note that although we are assuming the empty operator movement analysis of Japanese relative clauses, the validity of the present argument holds regardless whether it is correct or not:

(74) [*Op* [Bill-ga [Mary-ni [*t* watasita]]]]  
           -Nom       -Dat       gave

It should be note that *naze* 'why', whose merger has not been required by any UFF, has not been selected from the N at this stage of the derivation.

Turning to the main structure, we construct structure (75) through checking the UFFs of the selected items:

(75) [[John-wa [tegami-o sagasite iru]] no<sub>[Q]</sub>]

-Top letter-Acc looking-for Q

Recall that the Q-feature of the Q-morpheme *no* is interpretable and thus not subject to the ICP.

At this stage, we have two possible continuations. We either merge the relative clause with the main structure or introduce *naze* 'why' into the derivation. Since neither of these is not triggered by any UFF, we can apply either of these only on the ground of the ICP. Recall, however, that the EP requires that lexical items should be selected from an N as early as possible. According to the EP, therefore, the insertion of *naze* 'why' rather than merger of the relative clause with the main structure should be chosen at this stage. The resultant structures are as follows:

(76) a. [[John-wa [tegami-o sagasite iru]] no<sub>[Q]</sub>]

-Top letter-Acc looking-for Q

b. [*Op* [Bill-ga [**naze**<sub>[Q]</sub> [Mary-ni [*t* watasita]]]]]

-Nom why -Dat gave

Recall that the Q-feature of *naze* 'why' counts as intrinsic and thus becomes accessible to the computation when *naze* 'why' is selected from the N. Since the Q-feature of *naze* 'why' is uninterpretable, the ICP requires that it should be checked off immediately. Since the relative clause and the main structure each constitute an independent syntactic object at this stage, however, the Q-feature of *naze* 'why' may not raise to the Q-morpheme *no* to be checked off. There is no way to check the Q-feature. This violates the ICP and the derivation is canceled. Hence, we can correctly predict that (73) is deviant. The other "domain barrier" effects with *naze* 'why' can be accounted for in the same fashion.

It should be pointed out that the argument/adjunct asymmetry of *wh*-elements in-situ with the "domain barriers" also constitutes empirical evidence in support of our derivational notion of the "domain barriers." The asymmetry follows from the fact that while the Q-feature of a *wh*-argument in-situ may be introduced after merger of a "domain barrier" with a main structure, that of a *wh*-adjunct in-situ must be introduced before their merger. Such an account is not available under the traditional approaches where movement is never allowed to take place from within the "domain barriers" throughout derivations.<sup>27</sup>

#### 5.3.4.3 The "Domain Barriers" and the Wh-island Constraint

Unlike the "domain barrier" effects, the relativized minimality effects are observed with *wh*-arguments in-situ as well as *wh*-adjuncts in-situ, as exemplified below:

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<sup>27</sup>Our analysis can correctly predict that neither *itu* 'when' nor *doko* 'where' exhibits any "domain barrier" effects, as exemplified below:

- (i) John-wa [Bill-ga **itu** Mary-ni watasita tegami]-o sagasite iru no  
 -Top -Nom when -Dat gave letter-Acc looking-for Q  
 Lit. 'John is looking for the letter which Bill gave to Mary when'
- (ii) John-wa [Bill-ga **dokode** Mary-ni watasita tegami]-o sagasite iru no  
 -Top -Nom where -Dat gave letter-Acc looking-for Q  
 Lit. 'John is looking for the letter Bill gave to Mary where'

Recall that although these *wh*-elements are adverbials, their Q-features are optional. Hence, their Q-features may undergo movement after we merge the "domain barriers" with the main structures. The immunity of these *wh*-elements in-situ from the "domain barriers" follows.

- (77) ?John-wa [Mary-ga **nani-o** katta ka dooka]  
 -Top -Nom what-Acc bought whether or not  
 siritagatte iru no  
 want to know Q  
 Lit. 'what does John want to know [whether or not Mary  
 bought *t*']
- (78) \*John-wa [Mary-ga **naze** sono hon-o katta  
 -Top -Nom why that book-Acc bought  
 ka dooka] siritagatte iru no  
 whether or not want-to-know Q  
 Lit. 'why does John want to know whether or not Mary  
 bought that book *t*'

As argued in the previous section, under the non-movement analysis advocated by, among others, Aoun and Li (1993) and Reinhart (1992, 1993), the *wh*-island effects with *wh*-arguments in-situ cannot be accounted for. Since our analysis is assuming Q-feature movement, however, the *wh*-island effects with *wh*-elements in-situ straightforwardly follow.

Let us consider (77) as an example. We construct structure (79) through checking the UFFs of the selected items:

- (79) John-wa [Mary-ga nani-o katta ka dooka<sub>[Q]</sub>] siritagatte iru  
 no<sub>[Q]</sub>

Recall that the Q-feature of *nani* 'what' is optional. Hence, its Q-feature is not introduced into the derivation when *nani* 'what' is selected from the N but rather added in the course of the derivation. At this stage, we add a Q-feature to *nani* 'what', yielding the following structure:

- (80) John-wa [Mary-ga nani<sub>[Q]</sub>-o katta ka dooka<sub>[Q]</sub>] siritagatte  
 iru no<sub>[Q]</sub>

Since the Q-feature of *nani* 'what' is uninterpretable, the ICP requires that it should be checked immediately by Q-feature movement. There are, however, two possible landing sites for movement of that Q-feature; the embedded Q-morpheme *ka dooka* and the matrix Q-morpheme *no*. Among these two options, we should choose the former, excluding the latter. In order to ensure this, the MLC plays a role.

Following Chomsky (1993, 1995), let us assume that Attract/Move is subject to the MLC:

- (81) The Minimal Link Condition (MLC)

Raising of  $\alpha$  to  $\beta$  is not allowed if there is  $\gamma$  which can enter into a checking relation with either  $\alpha$  or  $\beta$ , where  $\gamma$  is closer to  $\alpha$  than  $\beta$ .

Note that our definition of the MLC (81) differs from Chomsky's (1995) in the following respect. Recall that Chomsky (1995) totally eliminates the notion of Move, arguing that the traditional notion of movement should be reinterpreted as Attract-F. Under this view, the locus of the notion is completely shifted from the moved element to the target. Accordingly, Chomsky's definition of the MLC is asymmetric. A closer candidate for raising blocks the raising of  $\alpha$  to  $\beta$ , but the raising of  $\alpha$  to  $\beta$  over  $\gamma$  that contains a feature that could check  $\alpha$  is allowed. We are assuming, on the other hand, that the notion of Move is still needed. The traditional operation of movement is reinterpreted as Attract/Move-F. Accordingly, our definition of the MLC (81) is symmetric. It prevents  $\alpha$  from raising to  $\beta$  if there is  $\gamma$  that is a closer candidate for raising. It also blocks  $\alpha$  from raising to  $\beta$  if there is  $\gamma$  that contains a feature that could check  $\alpha$ .

The notion of closeness is defined as follows. We first define the notion of the smallest maximal projection:

- (82) Max ( $\alpha$ ) is the smallest maximal projection including  $\alpha$   
(where  $\alpha$  is a feature or an  $X^0$  category).

(Chomsky 1995:299)

Based on the notion of smallest maximal projection, we define the notion of domain:

- (83) The domain  $\delta(\alpha)$  is the set of categories included in Max ( $\alpha$ ) that are distinct from and do not contain  $\alpha$ .

(Chomsky 1995:299)

Based on the notion of the domain, we define the notion of minimal domain:

- (84) The minimal domain Min ( $\delta(\alpha)$ ) of  $\alpha$  is the smallest subset K of  $\delta(\alpha)$  such that for any  $\gamma \in \delta(\alpha)$ , some  $\beta \in K$  reflexively dominates  $\gamma$ .

(Chomsky 1995:299)

Based on the notion of minimal domain, we finally define the notion of closeness:

- (85) If  $\beta$  c-commands  $\gamma$  and  $\gamma$  c-commands  $\alpha$ , then  $\gamma$  is closer to  $\alpha$  than  $\beta$  unless  $\gamma$  is in the same minimal domain as (a)  $\alpha$  or (b)  $\beta$ .

(adapted from Chomsky 1995)

Let us consider structure (80) again. In (80), the Q-feature of *nani* 'what' can enter into a checking relation with that of the embedded or matrix Q-morpheme. The matrix Q-morpheme c-commands the embedded Q-morpheme and the embedded Q-morpheme c-commands *nani* 'what'. Furthermore, the embedded Q-morpheme is not in the same

minimal domain with either the matrix Q-morpheme or *nani* 'what'.

Hence, the embedded Q-morpheme is closer to *nani* 'what' than the matrix Q-morpheme. According to the MLC (81), the Q-feature of *nani* 'what' can only raise to the embedded Q-morpheme but not to the matrix Q-morpheme. We can therefore correctly predict that the indeterminate *nani* 'what' may not be associated with the matrix Q-morpheme in (77). Although the Q-feature of *nani* 'what' may raise to the embedded Q-morpheme to be checked off, the resultant LF-representation gets an anomalous interpretation. This is because the Q-morpheme *ka dooka* 'whether or not' can only introduce a yes/no question but not a *wh*-interrogative. Hence, (77) is deviant under any interpretation. The deviancy of (88) can be accounted for in essentially the same fashion.<sup>28</sup>

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<sup>28</sup>As pointed out in note 4, there are some speakers who find that (i) is more severely deviant on reading (ic) than on readings (ib) and (id), though (i) is not perfect on any of these readings:

- (i) Tanaka-kun-wa [**dare-ga nani-o** tabeta ka] oboete imasu ka  
 Tanaka-Top who-Nom what-Acc ate Q remember Q  
 a. 'does Tanaka know who ate what'  
 b. NOT 'who is the person *x* such that Tanaka knows what *x* ate'  
 c. NOT 'what is the thing *x* such that Tanaka knows who ate *x*'  
 d. NOT 'who is the person *x*, what is the thing *y* such that Tanaka knows whether *x* ate *y*'

Under our Q-feature movement analysis, this might be accounted for in terms of the linear crossing constraint proposed by Fodor (1978). Given that the Q-feature of an indeterminate element is associated with a Q-morpheme, (i) on reading (ib) or (id) has a nesting dependency, as represented below:

- (ii) a. Tanaka-kun-wa [**dare-ga nani-o** tabeta **ka**] oboete imasu **ka** (=ib))  
 | | \_\_\_\_\_ |  
 | \_\_\_\_\_ |  
 b. Tanaka-kun-wa [**dare-ga nani-o** tabeta **ka**] oboete imasu **ka** (=id))  
 | | \_\_\_\_\_ |  
 | \_\_\_\_\_ |

(i) on reading (ic), on the other hand, has a crossing dependency, as represented below:

- (iii) Tanaka-kun-wa [**dare-ga nani-o** tabeta **ka**] oboete imasu **ka**  
 | | \_\_\_\_\_ |  
 | \_\_\_\_\_ |

Hence, (ib-d) only violate the Wh-island Constraint. (ic), on the other hand, violates both the Wh-island Constraint and the crossing constraint. Given that cumulative

Note in passing that our analysis can correctly predict that examples like (86) are deviant due to the MLC:

- (86) ?John-wa [[Mary-ga **nani**-o katta **ka dooka**]  
           -Top      -Nom what-Acc bought whether or not  
           siritagatte iru hito]-      sagaside iru **no**  
           want to know person-Acc looking-for Q  
           Lit. 'John is looking for the person who wants to know  
           whether or not Mary bought what'

Recall that under Tsai (1994) and Watanabe (1992a, 1992b) where a null operator may be base-generated outside the complex NP, examples like (86) could not be ruled out. Under our analysis, on the other hand, the Q-feature of *nani* 'what' moves to be checked off. This feature movement cannot cross over the embedded Q-morpheme due to the MLC. Hence, *nani* 'what' may not be associated with the matrix Q-morpheme. Note that the most deeply embedded clause headed by the Q-morpheme *ka dooka* 'whether or not' may not be properly interpreted as a *wh*-interrogative, though the Q-feature of *nani* 'what' may raise to the Q-morpheme *ka dooka* 'whether or not' to be checked off.

Under our analysis, the asymmetry between the "domain barriers" and the Wh-island Constraint resides in the fact that unlike the former, the latter regulates movement operations whenever they may take place during derivations. For this reason, unlike the "domain barrier" effects, the *wh*-island effects are observed with *wh*-arguments in-situ as well as *wh*-adjuncts in-situ. This presents strong empirical support of our

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violations of conditions induce a greater degree of deviance, the difference in acceptability between (ib-d) and (ic) follows. See Saito (1987) for a similar analysis.



situ in English-type languages. I will argue that their immunity from the "domain barriers" as well as the Wh-island Constraint straightforwardly follows from our analysis.

#### 5.4 *Wh*-elements In-situ in English-type Languages

Unlike *wh*-elements in-situ in Japanese-type languages, those in English-type languages are not constrained by the "domain barriers" or the Wh-island Constraint. I will argue that this contrast straightforwardly follows from the fact that "overt" Q-feature movement takes place in Japanese-type languages but not in English-type languages.

Let us first consider the immunity of *wh*-elements in-situ from the "domain barrier" effects in English-type languages. Let us consider the relative clause case of the CNPC, taking (4a) (repeated here as (87)) as an example:

(87) who likes [books that criticize **who**]

Recall that the Q-feature of a *wh*-element in English-type languages counts as interpretable and thus need not enter into a checking relation unless required by some other formal feature. Although the matrix interrogative C has a strong Q-feature to be checked off, it enters into a checking relation with the matrix subject *who*. There is nothing else which can trigger movement of the Q-feature of the *wh*-element in-situ *who*. Hence, the Q-feature of the *wh*-element in-situ never undergoes movement, being exempt from the CNPC. Their immunity from the other "domain barrier" effects can be accounted for in the same way.

Let us turn to the immunity of *wh*-elements in-situ from the Wh-island Constraint in English-type languages. As mentioned above, unlike *wh*-elements in-situ in Japanese-type languages, those in English

do not exhibit any *wh*-island effects, as exemplified by (11) (repeated here as (88)):

(88) who remembers [why John bought **what**]

In (88), the *wh*-element in-situ *what* may take either matrix or embedded scope. Recall that unlike in Japanese-type languages, the Q-feature of a *wh*-element is interpretable in English-type languages. The Q-feature of a *wh*-element therefore does not have to move to be checked off in English-type languages. In (88), since the Q-feature of the *wh*-element in-situ *what* does not undergo movement, no *wh*-island effects emerge.

To summarize this section, I have argued that the immunity of *wh*-elements in-situ from both the "domain barriers" and the Wh-island Constraint in English-type languages straightforwardly follows from our analysis. The asymmetry between English-type and Japanese-type languages concerning the *wh*-island effects with *wh*-elements in-situ is attributed to the difference in the make-up processes of *wh*-elements in these two types of languages. In both of these two types of languages, a *wh*-element is made up of an indeterminate element and a Q-morpheme. These two types of languages differ as to the level where this make-up process takes place. As mentioned above, in Japanese-type languages, an indeterminate element and a Q-morpheme are two independent lexical items. The make-up process of a *wh*-element therefore takes place in the syntactic component through movement of the uninterpretable Q-feature of a *wh*-element in-situ to a Q-morpheme. This Q-feature movement induces the *wh*-island effects with *wh*-elements in-situ in this type of languages. In English-type languages, on the other hand, the make-up process of a *wh*-element takes place within the lexicon through movement of the Q-feature of an indeterminate element to its unselective binder. In

the syntactic component, no Q-feature movement takes place. Hence, no *wh*-island effects are observed with *wh*-elements in-situ in this type of languages.

### 5.5 Concluding Remarks

In this chapter, I have presented the asymmetries regarding the distribution of *wh*-elements in-situ which have not been given any principled account under the MP. It was shown that due to the difference in the make-up processes of *wh*-elements between English-type and Japanese-type languages, "overt" Q-feature movement takes place in the latter but not in the former. I have argued that "overt" Q-feature movement together with our theory of phrase structure accounts for the locality restrictions on *wh*-elements in-situ in Japanese-type languages. I have also argued that the immunity of *wh*-elements in-situ from all the locality conditions in English-type languages follows from the lack of "overt" Q-feature movement in those languages. The distribution of *wh*-elements in-situ therefore constitutes another empirical support in favor of our theory of the composition of phrase structure.