

Decomposing WH-Questions: WH-Marking and WH-Scoping Movement*

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In this paper, based on data from Sinhala and Imbabura Quechua, I propose that WH-words can be decomposed into indefinite wh-variable and wh-op, which can be generated separately and “associated“ with each other syntactically. In this proposal, WH-questions, accordingly, are decomposed into two separate steps of building up a WH-P and moving it to Spec of C, each of which involves movement. Based on this proposal, I show how the problem posed by the different sensitivity of WH-in-situ to different types of islands in Korean can be explained. I also discuss how the proposal can be extended to WH-questions in languages like English, which seem to differ from those in the aforementioned languages, both morphologically and syntactically. I suggest that in principle WH-questions in English do not differ much from those in languages like Imbabura Quechua or Sinhala and that differences between the two groups of languages can be attributed to morphology and some language- specific syntactic properties.

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1. Introduction

A long-standing problem of WH-in-situ in languages like Korean (and Japanese) is that unlike WH-in-situ in English or Chinese, it is sensitive to certain types of islands such as the WH-island, but not to others like the Complex NP island and the Adjunct island, as shown in (1) below.¹

- (1) a. Ne-nun [nwu-ka o-myen] chwulpalha-l ke-ni?
 You-TOP who-NOM come-if leave-FUT-C[+WH]
 ‘*Who are you going to leave if (he) comes?’

1. Since there has been a controversy concerning the status of WH-clauses as a syntactic island, I have based the grammaticality judgment of island violation sentences in this paper on an informal survey I conducted at Myongji University. The subjects were about 50 undergraduate students with no linguistic background. I read the subjects sentences like (1c) which involve potential island violations with the falling intonation and asked them to mark the sentences with *, ??, ? or OK depending on how they judged the grammaticality of the sentences. In the survey, sentences like (1c) which involve potential WH-island violation scored below 2 out of 3 points for fully grammatical sentences. I take this score to indicate that there are WH-island effects in Korean for the following reasons. First, Subjacency violations in general do not induce severe ungrammaticality. Second, this score is contrasted with the almost perfect average score for sentences like (1a-b) which involve the Adjunct and island and the Complex NP island violation, respectively.

Furthermore, the following facts also suggest that there are WH-island effects in Korean. First, when given sentences like (1c), the first reaction of most subjects tended to be “Ney?” ‘What?,’ indicating that they cannot readily process the sentence. Secondly, when I asked the subjects who judged the sentence like (1c) to be grammatical to write down a possible answer to it, many of the subjects answered “Ney.” (Yes) or “Aniyo.” (No). This means that they interpreted the question as a Y/N-question despite the fact that the sentence clearly was read as a WH-question with the falling intonation. Similarly, when I asked the subjects who judged the sentence like (1c) to be grammatical to read the question aloud, they often read it with the rising intonation. This also suggests that they interpreted the sentence as a Y/N-question, not as a WH-question.

As for grammaticality marking for the example sentences in this paper, I will mark the sentences violating Subjacency with “*”, unless a finer distinction is necessary.

- b. Ne-nun [**nwu-ka** ssu-n chayk-ul] kacang coh-a ha-ni?
 you-TOP who-NOM write-PAST book-ACC most like -C[+WH]
 ‘*Who do you like the book (he) wrote most?’
- c. *Ne-nun [Yenghi-ka **mwues-ul** sa-ess-nun-ci]
 you-TOP Y-NOM what-ACC buy-PAST-ADN-C[+WH]
 al-ko siph-ni?
 want to know-C[+WH]
 ‘*What do you want to know whether Yenghi bought?’

Given that Subjacency (island effects) is a property characteristic of movement, this means that the WH-in-situ in Korean shows movement properties with respect to certain islands (WH-island) and non-movement properties to other islands (Adjunct island and Complex NP island).

Note that this state of affairs poses a problem to both of the two major approaches to WH-in-situ, namely, the classic LF-movement approach like Huang (1982), which parameterizes the level Subjacency holds at, and a binding approach like Cole & Hermon (1997), which assumes that the WH-in-situ does not move at all but is “unselectively bound.” In both analyses, the WH-in-situ is not supposed to show Subjacency effects regardless of island types, although for different reasons. This difficulty was one of the motivations for yet another type of analysis, i.e., the mixed approach to the problem, which employs both movement and binding (Nichigauchi 1991; Watanabe 1992; Aoun & Li 1993; Tsai 1994, etc.).

In this paper, based on insight from WH-questions in Sinhala and Imbabura Quechua, I will show that the problem in Korean noted above can be explained once we assume that WH-words can be decomposed into an indefinite wh-variable and a wh-operator and that the two can be generated separately and “associated” syntactically² (Kuroda 1965; Nichigauchi 1986, 1991; Tsai 1994;

Cole & Hermon 1997, among others). If this is the case, WH-questions can, accordingly, be decomposed into two separate steps, i.e., the steps which I will call “WH-marking” and “WH-scoping.” The former step corresponds to building up a WH-phrase syntactically, while the latter corresponds to what is known as “WH-movement,” which is the step that is motivated by feature checking between C and the WH-phrase and the need to mark an interrogative clause containing a WH-phrase with scope. I will further show that each of these two steps involves movement, either overt or covert, and that the movement obeys Subjacency.

Once WH-question formation is broken down into two separate steps of movement as proposed, the WH-in-situ in Korean obeys Subjacency regardless of island types, and thus the observed problem of the different sensitivity of WH-in-situ with respect to different types of islands in Korean will turn out to be only an apparent problem.

I will also discuss how the proposal to decompose WH-questions into two separate steps of movement can be extended to WH-questions in languages like English, which, on the surface, appear to differ from languages like Korean, Sinhala, or Imbabura Quechua, both morphologically and syntactically.

The organization of the paper is as follows: in section 2, I will discuss the properties of WH-expressions and WH-questions in Sinhala and Imbabura Quechua and show how they bear on proper analysis of the WH-in-situ in Korean. I will show that they provide direct evidence for decomposing WH-questions as two separate steps of movement. In section 3, I will show how the observed problem in Korean can be explained once we decompose WH-questions into two separate steps of movement. In section 4, I will further show how the analysis proposed

2. In order to avoid the confusion in terminology, from now on, I will use the small letter “wh” to indicate the indefinite wh and the wh-op and the capital “WH” for the phrases which are built syntactically from the indefinite wh and the wh-op and move to Spec of C.

in section 2-3 can provide explanations for “*totaychey* + WH-in-situ” and woy ‘why’ in Korean, which show properties distinct from those of other in-situ WH-phrases in Korean. In section 5, I will discuss how the proposal can be extended to languages like English. Finally, in section 6, I briefly summarize the proposal made in this paper.

2. Towards Decomposing WH-Questions

2.1. WH-in-situ in Sinhala³

WH-questions in Sinhala show various properties which will provide a crucial insight to explaining the problem observed in Korean. Like Korean, Sinhala is a WH-in-situ language and thus WH-elements do not overtly move but stay in-situ, as we see below.

(2) Siri **mokak d ə** keruwe?

Siri what Q did-E

‘What did Siri do?’

Sinhala is a SOV language and sentence (2) shows that WH-words do not move in Sinhala.

The scope of WH-words is marked by the suffix “E” marked on the verb as sentence (3), as well as (2) above, shows.

3. Sinhala is an Indo-Aryan language spoken in Sri Lanka and the basic word order is SOV. All the Sinhala data in this paper come from Hagstrom (1998). Although my analysis differs from him, I have benefited a great deal from his discussion on Sinhala.

- (3) mam ∂ [Ranjit [Chitra **mon ∂ wa d ∂** daekka kiy ∂ la] kiiwe kiy ∂ la]
 I Ranjit Chitra what Q saw that said-E that
 dann ∂ wa.
 know
 ‘I know what Ranjit said that Chitra saw.’

Given this, we can take the E-morpheme on V as the realization of the interrogative C.

Following are the properties of WH-in-situ in Sinhala which are of particular interest and importance for our discussion on the observed problem in Korean.

First of all, as we can see in (2)-(3) above, WH-expressions which correspond to a single WH-word like *what or who* in English are made up of two separate words in Sinhala. That WH-expressions are composed of two separate words is more clearly seen by the fact that the second part of WH-expressions, i.e., *d ∂* , can appear non-adjacent to the first part such as *kau*, as illustrated in (4) below.

- (4) a. Ranjit [**kauru** aawa **d ∂** kiy ∂ la] dann ∂ wa.
 Ranjit who came Q that know
 ‘Ranjit knows who came.’
 b. oyaa [kauru liy ∂ pu pot ∂] d ∂ kieuwe?
 you who wrote book Q read-E
 ‘*Who did you read the book that (he) wrote?’

Secondly, the quantificational force of a WH-expression can vary: when it appears with the verb marked with the E-morpheme, it is interpreted as an interrogative WH-word and when the verb is not marked with E-morpheme, it is interpreted as an indefinite pronoun meaning ‘some-’, as we see in (5) below.

- (5) a. **mokak d ∂** waetuna.
 what Q fell
 ‘Something fell.’
- b. **mokak d ∂** waetune.
 what Q fell-E
 ‘What fell?’

Thirdly and crucially, when *d ∂* is attached to an island like a complex NP or an adjunct clause, wide scope reading of WH-in-situ out of the island is possible ((6) below), while wide scope reading of WH-in-situ is not possible when *d ∂* is adjacent to the WH-in-situ inside the island ((7)).

- (6) a. oyaa [**kauru** liy ∂ pu pot ∂] **d ∂** kieuwe?
 you who wrote book Q read-E
 ‘*Who did you read the book that (he) wrote?’
- b. [**kauru** en ∂ kot∂] **d ∂** Ranjit paadam k ∂ ramin hitie?
 who came time Q Ranjit study doing was-E
 ‘*Who was Ranjit studying when (he) came?’
- (7) a. *oyaa [**kau** d ∂ liy ∂ pu pot ∂] kieuwe?
 you who Q wrote book read-E
 ‘*Who did you read the book that (he) wrote?’
- b. ***[kau d ∂** en ∂ kot ∂] Ranjit paadam k ∂ ramin hitie?
 who Q came time Ranjit study doing was-E
 ‘*Who was Ranjit studying when (he) came?’

The preceding facts can be given a coherent explanation if we adopt the idea that WH-expressions can be decomposed into an indefinite wh-variable and a wh-operator (Kuroda 1965; Nichigauchi 1986, 1991; Tsai 1994, etc.) and analyze

wh-words like *kau* or *mokak* in Sinhala as an indefinite wh-variable and *d ∂* as an overt realization of wh-op, which determines the quantificational force of the indefinite wh it comes to be associated with.⁴ What Sinhala data, in particular, sentences like (6), clearly demonstrate is that the indefinite wh and the wh-op can be generated separately and form a WH-phrase through some syntactic mechanism.

Once we assume that WH-expressions in Sinhala are composed of two separate words, i.e., the indefinite wh and the wh-op, and analyze *d ∂* as the overt realization of wh-op, the contrast in grammaticality between sentence (6) and (7) is readily explained. It is because what corresponds to a WH-word such as *who* or *what* in English and thus undergoes WH-movement to C in Sinhala is the whole constituent marked with the wh-op *d ∂*, not the indefinite wh like *kau*.⁵ Given this, sentence (6a) and (6b) do not violate Subjacency since *d ∂* is attached to the island and thus what undergoes (covert) WH-movement to C is the *d ∂*-marked island itself. Sentences (7a) and (7b), however, violate Subjacency since in this case *d ∂* is inside the island and thus movement of the *d ∂*-marked constituent, i.e., the WH-phrase, to the matrix C will cross the island boundary.

To summarize, the preceding discussion shows that in languages like Sinhala, an indefinite wh and an wh-op can form a WH-phrase through the process of

4. Wh-op's are often called Q(-marker) in the literature on this topic. For this reason, wh-op's like *d ∂* are glossed as Q in some of the examples in the paper. I will use the term "wh-op" and "Q" interchangeably throughout the paper.

5. As one reviewer pointed out, an alternative way to explain this is to assume that only the wh-op *d ∂* moves, not the whole phrase marked with *d ∂*. Although there appears to be no immediate empirical evidence from Sinhala alone pointing to the covert pied-piping movement over the wh-op movement, I opt for the former based on the following. First, as will be seen shortly, the parallel data involving overt pied-piping in Imbabura Quechua renders support to the covert pied-piping analysis. Secondly, note that if only the wh-op moves, the movement must be head-to-head movement, which is known to be strongly local. Given this, the fact that wh-op and C can be separated unboundedly far casts doubt on the latter analysis.

some syntactic association, and that in these languages, attachment of a *wh*-op to a constituent containing an indefinite *wh* makes the whole constituent to which it is attached act like a single WH-word in languages like English. This means that if we assume that what undergoes WH-movement in these languages is the whole constituent attached with the *wh*-op (i.e., the movement is pied-piping movement), not the indefinite *wh*, then the contrast can be explained. Crucially, the contrast between (6) and (7) shows that in these languages there is a way to question an element inside syntactic islands like adjunct clauses or complex NPs without violating Subjacency, namely to attach the *wh*-op to the edge of the island which contains the indefinite *wh*. As we will see shortly, this, in particular, will shed light on explaining the apparent absence of some island constraint effects in languages like Korean.

Of course, it remains to be explained how the indefinite *wh* and the *wh*-op are “associated” with each other syntactically when they appear non-adjacent. I will turn to this question shortly when I discuss Imbabura Quechua, which, being an overt WH-movement language, will provide us with direct evidence bearing on the nature of this “association.” As will be seen shortly, WH- questions in Imbabura Quechua show similarities to those in Sinhala in many ways and the overt nature of WH-movement in Imbabura Quechua will enable us to see more clearly that what undergoes WH-movement is the whole constituent marked with the overt *wh*-op, not just the indefinite *wh*.

2.2. WH-questions in Imbabura Quechua⁶

The properties of WH-words and Wh-questions in Imbabura Quechua which

6. Imbabura Quechua is the language spoken by the indigenous people of Imbabura Province in northern Ecuador. Typologically, it belongs to the Quechua language family, which is linguistically isolated. All the Imbabura Quechua data in this paper come from Cole (1982).

will be interesting and important for our discussion on Korean are as follows.

First, as in Sinhala, the WH-expressions in Imbabura Quechua are made up of two separate words, which we can analyze as an indefinite wh (*ima* ‘what’, *pi* ‘who’ etc) and an overt wh-op (*taj*).

- (8) a **ima-ta-taj_i** pro ya-ngui [Juan t_i randi-shka]-ta.
 what-ACC-Q (you) think-2 Juan buy-NML-ACC
 ‘What do you think that Juan bought?’

Secondly, the indefinite wh and the wh-op can appear non-adjacent, also as in Sinhala.

- (9) [**ima-ta_i** Juan t_i randi-shka]_j-ta-**taj** pro ya-ngui t_j?
 what-ACC Juan buy-NML-ACC-Q (you) think-2
 ‘What do you think that Juan bought?’
 (literally: [What John bought] do you think?)

Third, as in Sinhala, the indefinite wh attached with the wh-op *taj* as in (10) below cannot take scope out of Complex NP and Adjunct islands, while wide scope out of these islands is possible if *taj* is attached to the island containing the indefinite wh. ((11))

- (10) a. ***ima-ta-taj_i** Ilina wasi-manda llugshi-rka-∅
 what -ACC Elena house-from leave-PAST-3
 [Jusi t_i apamu-shka-manda]?
 Jose bring-NML-because
 ‘*What did Elena leave the house because Jose bought (it)?’

- b. ***ima-ta-taj**_k pro riku-rka-ngui [NP [CP t_i t_k randi-shka]]
 what-ACC-Q you see-PAST-2 buy-NML

runa_i]-ta.

man-ACC

‘*What did you see the man who bought (it)?’

- (11) a. [**ima-ta**_i Juzi t_i apamu-shka-manda]_j-**taj** t_j
 what -ACC Jose bring-NML-because-Q

Ilina wasi-manda llugshi-rka-∅?

Elena house-from leave-PAST-3

‘*What did Elena leave the house because Jose bought (it)?’

- b. [NP [CP t_i ima-ta randi-shka] runa_i]-ta-**taj**_k
 what-ACC buy-NML man-ACC-Q

pro riku-rka-ngui t_k?

(you) see-PAST-2

‘*What did you see the man who bought (it)?’

The preceding data clearly shows that what undergoes WH-movement to C is the constituent to which the wh-op *taj* is attached, not the indefinite wh *ima*. This is clearly seen in the Imbabura Quechua data thanks to the overtness of WH-movement: in sentence (11), the whole island marked with *taj* has moved to the beginning of the matrix clause. Since this movement does not cross any island boundary, sentence (11a) and (11b) are grammatical. Sentence (10a) and (10b), however, are ungrammatical since movement of the constituent marked with *taj* to the matrix C crosses an island boundary.

The overt nature of WH-movement in Imbabura Quechua also sheds light on how the indefinite wh and the wh-op are syntactically “associated” when they appear non-adjacent to each other. That movement is involved in this “association” is seen in (11a) above since it is not just the constituent marked with the wh-op

taj that has moved, but the indefinite *wh ima* has also moved to the initial position of the pied-piped constituent. That this movement is obligatory is clearly shown by the contrast in the following pair of sentences.

- (12) a. [**ima-ta_j** Juan t_j randi-shka]-ta-**ta_j**_i pro ya-ngui t_i.
 what-ACC Juan buy-NML-ACC-Q (you) think-2
 ‘What do you think that Juan bought?’
- b. *[Juan **ima-ta** rand_i-shka]-ta-**ta_j**_i pro ya-ngui t_i.
 Juan what-ACC buy-NML-ACC-Q (you) think-2
 ‘What do you think that Juan bought?’

In both (12a) and (12b), the constituent marked with *taj* has moved to the beginning of the matrix clause but sentence (12b), where the indefinite *wh ima-ta* was not fronted, is ungrammatical unlike (12a), where it was fronted.

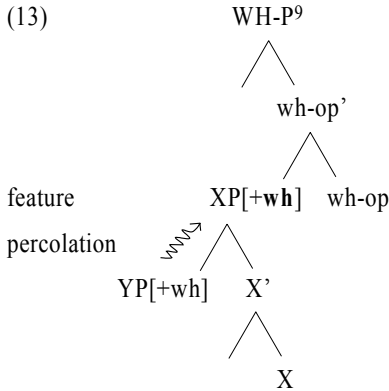
The preceding contrast clearly shows that the association between the indefinite *wh* and the *wh-op* involves “movement” of the indefinite *wh* to some constituent-initial position. Specifically, I propose the following as a mechanism underlying this movement and ultimately the “association” between the indefinite *wh* and the *wh-op*.

Let us assume that *wh-op* is a category-neutral head which selects a constituent with [*wh*]-feature. Let us also assume that feature percolation is possible only from the head and the Spec.⁷ This means that a constituent XP can have a [*wh*]-feature only in two ways. First, XP can have the [*wh*]-feature if its head has [*wh*]-feature. Cases where the indefinite *wh* and the *wh-op* are adjacent to each other as in **ima-ta-taj** in (8) belong to this.⁸

7. See Weibelhuth (1989) for a different feature percolation mechanism. He proposes that feature percolation is possible from complement as well as head and Spec.

8. I will ignore the presence of the case marker *ta* intervening between the indefinite *wh ima* and the *wh-op taj*.

Secondly, XP can have the [wh]-feature if its Spec has an element with [wh]-feature.



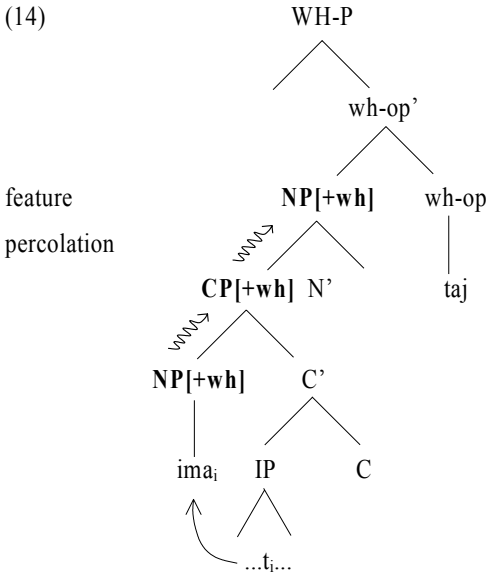
If this is the case, it follows that any wh-element which occupies the Spec of XP by base-generation or movement could percolate its [wh]-feature to the XP and thereby form a syntactic WH-phrase with the wh-op. Sentences like (12a) belong to this case. In (12a), the indefinite wh, *ima*, moves to the Spec of the constituent marked with the wh-op, i.e., to the Spec of CP, and percolates its [wh]-feature to the CP. By virtue of this movement and the subsequent percolation of the [wh]-feature, the CP combines with the wh-op and the WH-phrase thus formed undergoes “pied-piping” WH-movement to Spec of matrix C.¹⁰

Note that the preceding mechanism of “association” between the indefinite wh and the wh-op can also handle sentences like (11a) or (11b) where there is an island boundary between the indefinite wh and the wh-op. In (11a), which

9. For simplicity, I will use “WH-P” instead of “Wh-op Phrase.”

10. A similar proposal based on feature percolation was made by Ortiz de Urbina (1993) for overt clausal pied-piping movement in Basque and by Horvath (1997) for partial WH-movement in Hungarian. See also Nichigauchi (1991) for a similar analysis for covert pied-piping movement in Japanese.

involves an Adjunct island, the indefinite *wh ima* moves to the Spec of the adjunct clause and percolates its [wh]-feature to the CP. This CP with [wh]-feature, then, combines with the *wh-op*, thereby forming a WH-phrase. Complex NP island violation cases like (11b) also are not a problem, if we assume, following Nichigauchi (1991), that the relative clause is in the Spec of NP.¹¹ The indefinite *wh* will move up only to the Spec of the relative clause and its [wh]-feature will percolate first to the CP node and then to the NP node dominating the CP.



2.3. Summary and Proposal

To summarize, the discussion on WH-questions in Sinhala and Imbabura Quechua in

11. One reviewer pointed out that in order for this analysis to work, I have to assume that no operator movement is involved in relativization.

this section shows that WH-expressions can be built up syntactically from the indefinite *wh* and the *wh-op* generated separately and that WH-questions, accordingly, have to be broken down into two steps.

Following is the summary of a two-step model for WH-question formation based on the preceding discussion on Sinhala and Imbabura Quechua and the earlier analyses (Kuroda 1965; Kim 1989; Nichigauchi 1986, 1991; Aoun & Li 1993; Tsai 1994; Hagstrom 1998, etc.).

- (i) WH-expressions can be decomposed into indefinite *wh*-variable and *wh-op*. The two can be generated separately and form a WH-phrase syntactically.
- (ii) WH-question formation must be broken down into two steps. First, the indefinite *wh*-variable must be associated with the *wh-op* and secondly, the WH-phrase must be “associated” with the interrogative C. The former step (“WH-marking”) corresponds to building up a WH-phrase syntactically, while the latter (“WH-scoping” step) corresponds to what is known as “WH-movement,” which is the step motivated to check the WH-feature of C and mark the clause containing a WH-phrase with scope.
- (iii) Both WH-marking and WH-scoping involve movement. The movement can be either overt or covert and they both obey Subjacency.
- (iv) WH-marking involves feature percolation subsequent to the movement of the indefinite *wh*. *Wh-op* is a category-neutral head which selects a constituent with [wh]-feature. Feature percolation is possible only from the head and the Spec and thus, XP can have [wh]-feature only in two ways. First, XP can have [wh]-feature if its head has a [wh]-feature. Secondly, XP can have a [wh]-feature if its Spec has a *wh*-element. This means that in order for a WH-P to be formed, the indefinite *wh* which itself is not the head of XP that combines with the *wh-op* must move to

the Spec of XP. By virtue of this movement and the subsequent feature percolation, a WH-phrase will be formed and it will undergo pied-piping WH(-scoping)-movement to C.

In the next section, I will turn to Korean and show how the insight from Sinhala and Imbabura Quechua and the preceding proposal could provide an explanation for the problem noted at the beginning of the paper.

3. Decomposing WH-Questions in Korean and Explaining the Problem

3.1. Phonologically Null Wh-Op and Complex NP Island and Adjunct Island

In the previous section, we have seen that the WH-in-situ in Sinhala “appears” not to obey the Complex NP island and the Adjunct island constraint if we fail to recognize that WH-expressions in these languages are composed of two separate words, i.e., the indefinite wh and the wh-op, and assume that what undergoes WH-movement to C is the indefinite wh. The relevant examples are repeated below.

- (15) a. oyaa [**kauru** liy∂ pu pot ∂] **d∂** kieuwe?
 you who wrote book Q read-E
 ‘*Who did you read the book that (he) wrote?’
- b. [**kauru** en ∂ ko[†] ∂] **d∂** Ranjit paadam k ∂ ramin hītie?
 who came time Q Ranjit study doing was-E
 ‘*Who was Ranjit studying when (he) came?’

Now note that the lack of Adjunct island and Complex NP island effects for the WH-in-situ in Korean as in (1) can be explained in the same manner, as just an “apparent” problem, if as in Sinhala (and Imbabura Quechua), the *wh*-op can be generated at the edge of the island, separate from the indefinite *wh*, with another crucial assumption that the interrogative *wh*-op is phonologically null in Korean. If this is the case, (1a) and (1b) will have the following structures, respectively.

- (16) a. Ne-nun [CP(island) **nwu-ka** o-myen]-∅
 You-TOP who-NOM come-if-**wh-op**
 chwulpalha-l ke-**ni**?
 leave-FUT-C[+**WH**]
 ‘*Who are you going to leave if (he) comes?’
- b. Ne-nun [NP(island) [CP **nwu-ka** ssu-n]
 you-TOP who-NOM write-PAST
 chayk-ul]-∅ kacang coh-a ha-**ni**?
 book-ACC-**wh-op** most like-C[+**WH**]
 ‘*Who do you like the book which (he) wrote most?’

Given that what undergoes (covert) WH-movement to C is the whole constituent marked with the *wh*-op, not the indefinite *wh*, structure (16a) and (16b) above show that sentences like (1a-b) which appear to violate the Complex NP and Adjunct island constraints in Korean can be analyzed as obeying Subjacency.

Sentences (1a-b), of course, can also be analyzed as having structures in which the phonologically null *wh*-op is generated adjacent to the indefinite *wh* inside the island, as illustrated in (17) below.

- (17) a. Ne-nun [CP(island) **nwu-Ø-ka**¹² o-myen]
 You-TOP **who-wh-op**-NOM come-if
 chwulpalha-l ke-ni?
 leave-FUT-C[+WH]
- b. Ne-nun [NP(island) [CP **nwu-Ø-ka** ssu-n]
 you-TOP **who-wh-op**-NOM write-ADN
 chayk-ul] kacang coh-a ha-ni?
 book-ACC most like-C[+WH]

Since an island boundary intervenes between the *wh-op* and the matrix *C* in (17), structures in (17) will be ruled out as violating Subjacency, just as the sentences like (7) in Sinhala, repeated as (18) below, are ruled out.

- (18) a. *oyaa [kau d θ liy θ pu pot θ] kieuwe?
 you **who Q** wrote book read-E
 ‘*Who did you read the book that (he) wrote?’
- b. *[kau d θ en θ kot θ] Ranjit paadam k θ ramin h̃it̃ie?
who Q came time Ranjit study doing was-E
 ‘*Who was Ranjit studying when (he) came?’

What is important for us, however, is that sentences like (1a-b) in Korean can have structures which do not violate Subjacency, if the indefinite *wh* and the *wh-op* are generated separately and if the *wh-op* is phonologically null in Korean.

As for WH-marking, we can extend the same analysis as we have presented for Sinhala and Imbabura Quechua. As for the cases like (1a) which involve an Adjunct island, the indefinite *wh* covertly moves to the Spec of CP inside the

12. I will not commit myself to the relative ordering of the case marker and the *wh-op*.

adjunct clause and percolates its [wh]-feature up to the mother node. In cases which involve a Complex NP island like (1b), the indefinite wh moves to the Spec of the relative clause and then percolates its [wh]-feature first to the dominating CP node and then to NP node.

The preceding discussion shows that sentences which appear to violate the Adjunct island constraint and the Complex NP island constraint in Korean can be analyzed as not violating Subjacency if we assume, first, that WH-phrases can be built up syntactically out of the indefinite wh and the wh-op and, secondly, that the interrogative wh-op is phonologically null in Korean. In the following section, I will show how the two crucial assumptions necessary for this analysis to be maintained are independently justified in Korean.

3.2. Arguments for Syntactic WH-Marking in Korean

As discussed by many researchers (Kim 1989, etc.), WH-elements like *nwukwu* ‘who’ and *mwues* ‘what’ in Korean can have a non-interrogative as well as an interrogative meaning, as illustrated in (19) below.

- (19) a. **Nwu-ka** o-ess-ni?
 who-NOM come-PAST-C[+WH]
 ‘**Who** came?’
- b. **Nwukwu-to** an o-ess-ta.
 who-TO not come-PAST-DECL
 ‘**Nobody** came.’
- c. **Nwukwu-na** ku-lul mana-l swu iss-ta.
 who-NA he-ACC meet can-DECL
 ‘**Everybody** can meet him.’

Except for (19a), WH-words in (19) are followed by the so-called quantificational particles like *to* or (*i*)*na* and it is these particles which determine the quantificational force of the wh-words: in (19b), *nwukwu* attached with the particle *to* is interpreted as an NPI (Negative polarity item) ‘anybody’ and in (19c) *nwukwu* followed by the particle (*i*)*na* is interpreted as a universal pronoun ‘everybody’. Given this, we can analyze WH-words like *nwukwu* and *mwues* in Korean as indefinite wh-pronouns which lack their own quantificational force and particles like *to* and (*i*)*na* as wh-op's which provide the quantificational force to the indefinite wh-pronouns.

That wh-op's like *to* and (*i*)*na* in Korean behave the same way as wh-op's like *d ð* in Sinhala and *taj* in Imbabura Quechua is shown by the following facts in Korean. First of all, these wh-op's can be non-adjacent to the indefinite wh, as illustrated in (20).

- (20) a. Na-nun [CP Yenghi-ka **mwues**-ul sa-ess-tako]-**to**
 I-TOP Y-NOM what-ACC buy-PAST-DECL-wh-op
 sayngkak-ci anh-nun-ta.
 think-C not-PRES-DECL
 ‘I don’t think Yenghi bought anything.’
- b. Na-nun [_{NP} [_{CP} **nwu**-ka ssu-n] chayk]-**to**
 I-TOP who-NOM write-ADN book-wh-op
 ilk-ci anh-ess-ta.
 read-C not-PAST-DECL
 ‘*I didn’t read the book anyone wrote.’

Sentences (20a-b) clearly show that the indefinite wh and the wh-op *to* can be non-adjacent and build up a WH-phrase syntactically, as we have seen in Sinhala and Imbabura Quechua.

Secondly, the constituent attached with overt wh-op's such as *to* or *(i)na* in Korean show Subjacency effects parallel to those observed in Sinhala and Imbabura Quechua. For example, when *to* is attached to the edge of a complex NP as in (21a), the sentence is grammatical, whereas when *to* appears inside a complex NP ((21b)), the sentence is ungrammatical.

- (21) a. Na-nun [_{NP} [_{CP} **nwu-ka** ssu-n] chayk]-**to**
 I-TOP who-NOM write-ADN book-wh-op
 ilk-ci **anh-ess-ta**.
 read-C not-PAST-DECL
- b. *Na-nun [_{NP} [_{CP} **nwukwu-to** ssu-n] chayk]-ul
 I-TOP who-wh-op write-ADN book-ACC
 ilk-ci **anh-ess-ta**.
 read-C not-PAST-DECL

This can be explained if we assume that NPI moves to the Spec of NegP to check the operator feature of Neg. (21a) does not violate Subjacency since what undergoes movement to Neg is the negative wh-op phrase formed by the indefinite wh and the negative wh-op *to*, and since there is no island boundary between it and the Neg. (21b), in contrast, does violate Subjacency since there is an island boundary between the WH-phrase *nwukwu-to* and the Neg.¹³

13. Although we could simply attribute the ungrammaticality of (21b) to clausemate condition between Neg and NPI, it appears that (21b) is more degraded than sentences like (i) which involve a simple clausemate condition violation.

- (i) ?Na-nun [CP Yenghi-ka mwues-to sa-ess-tako] sayngkakha-ci
 I-TOP Y-NOM what-wh-op buy-PAST-DECL think-C
 anh-nun-ta.
 not-PRES-DECL
 'I don't think Yenghi bought anything.'

The same pattern is observed with the wh-op (*ina*, as we see below.¹⁴

- (22) a. [Nwu-ka ssu-n chayk]-ina ta chal pali-nun
 who-NOM write-ADN book-wh-op all well sell-ADN
 kes-un an-i-ta.
 C -TOP not-COP-DECL
 ‘It is not the case that books written by anyone all sell well.’
- b. *[Nwukwu-na ssu-n chayk]-i ta chal pali-nun
 who-wh-op write-ADN book-NOM all well sell-ADN
 kes-un an-i-ta.
 C-TOP not-COP-DECL
 ‘It is not the case that books written by anyone all sell well.’

The preceding discussion shows that WH-words like *nwukwu* and *mwues* in Korean are in fact indefinite pronouns whose quantificational force is determined by wh-op's like to and *na*, with which they come to be associated. This, in turn, leads us to analyze an interrogative WH-phrase like *nwu(kwu)* in (19a) as the indefinite wh *nwu(kwu)* followed by the null interrogative wh-op (i.e., *nwu (kwu)-∅*).¹⁵ As we have already seen in section 3.2., once we posit the presence of the null interrogative wh-op in Korean, the apparent violation of Adjunct island and Complex NP island constraints by WH-in-situ in Korean can be readily explained.

To summarize, the discussion in this section shows that WH-expressions in Korean can be formed syntactically out of the indefinite wh and the wh-op and that the interrogative wh-op in Korean is phonologically null, thus providing independent

14. In this case, it is not very clear what is the head which attracts and checks the wh-op feature of the phrase headed by *ina*. The most plausible candidate will be some functional head related to *ta* ‘all’. See Tsai (1994) for discussion on similar facts in Chinese.

15. My analysis differs from Nichigauchi (1991) in that I am taking elements like *kka* or *ni*, which is the equivalent of *ka* in Japanese, as the interrogative C, not as wh-op base-generated in C. See section 6 for more discussion on the difference between my analysis and Nichigauchi's.

evidence for the proposed explanation for the apparent absence of Complex NP island and Adjunct island effects in Korean.

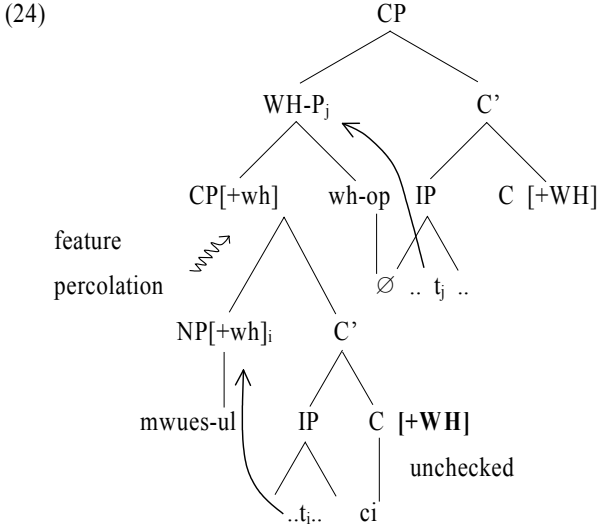
3.3. Complex NP and Adjunct Islands vs. WH-island

In the preceding sections, we have seen that the WH-in-situ in Korean, in fact, does not violate the Adjunct island constraint and the Complex NP island constraint and that the apparent lack of Complex NP and Adjunct island effects can be explained by breaking down WH-questions into two steps of movement. To complete the explanation, now let us turn to why WH-in-situ in WH-islands behaves differently from that in Adjunct islands or Complex NP islands, i.e., why the apparent violation of the WH-island constraint is not possible. Given the account I have presented in this paper for the apparent absence of Complex NP island and Adjunct island effects for the WH-in-situ in Korean, this question boils down to why sentences like (1c) do not allow syntactic building of WH-phrases, i.e., why they do not allow the structure like (23), where the null wh-op is generated at the edge of the WH-island.

- (23) *Ne-nun [CP Yenghi-ka **mwues-ul** sa-ess-nun-ci]-Ø
 you-TOP Y-NOM what-ACC buy-PAST-ADN-C-wh-op
 al-ko siph-ni?
 want to know-C[+WH]
 ‘??What do you want to know whether Yenghi bought?’

It is for the following reasons. Recall that in order for a WH-phrase to be built syntactically, wh-op must be associated with indefinite wh and this involves movement of the indefinite wh to the initial position of the phrase attached with the wh-op and the subsequent percolation of the [wh]-feature to

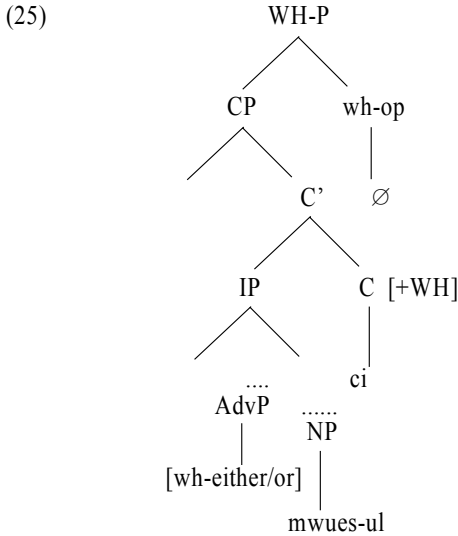
the mother node. This means that in order for the syntactic association between the indefinite wh and the wh-op to be possible, the indefinite wh in (23) should move (covertly) to the Spec of the embedded WH-clause and percolate its [wh]-feature to the dominating WH-clause. Once this WH-marking step is completed, the WH-clause would undergo WH-movement to the Spec of matrix C, yielding the following structure.



Structure (24), however, does not yield a grammatical output. It is because the [+WH]-feature of the embedded C in (24) cannot be checked: in order for it to be checked there must be a WH-P in its Spec but what occupies the Spec is an indefinite wh, not a WH-P.

Note that the structure (24) would not yield a grammatical output even if the embedded C is interpreted as Y/N-C. It is for the following reasons. Since the Y/N-clause is an island for extraction, let us assume, following Katz & Postal (1964), that Y/N-clauses involve some kind of an invisible WH-phrase like [_{adv}

WH-either/or], which is generated higher than any other WH-phrases and checks the WH-feature of Y/N-C (see also Hornstein (1994)). If this is the case, the following will be the structure of (23).



From this structure, in order for the lower wh *mwues* to have the matrix scope, it has to move to the Spec of the embedded CP and percolate its [wh]-feature to the CP. This movement, however, will not yield a grammatical output for the following reasons. In Korean, when two in-situ WH-phrases in multiple WH-questions take scopes in different clauses, the lower WH-phrase cannot take scope in the higher clause with the higher WH taking scope in the lower clause.

- (26) Ne-nun [nwu-ka mwues-ul sa-ess-nun-ci]
 you-TOP who-NOM what-ACC buy-PAST-ADN-C
 kwungkumha-ni?
 wonder-C[+WH]

- i) ‘Do you wonder who bought what?’
- ii) ‘??Who (x), what (y), you wonder x bought y.’
- iii) ‘??Who (x), you wonder what (y), x bought y.’
- iv) ‘*What (x), you wonder who (x), x bought y.’

Of the four possible interpretations that sentence (26) could have, only reading (i) is fully grammatical and the other three readings are degraded, due to Subjacency violations. Note, however, that there is a sharp contrast in grammaticality between reading (iii), which is mildly ungrammatical, and reading (iv), which is practically impossible. This constraint is known as “parallel movement constraint” (Muller 1997, Yoon 1998) or as “anti-PCC” (Richards 1997). Given this, it is predicted that the lower *wh mwaes* ‘what’ in (25) cannot move over the higher [wh-either/or]. This in turn means that WH-in-situ in the Y/N-clause cannot take the matrix scope even if the *wh-op* can be generated at the edge of the Y/N-clause.

This difference between the Complex NP island and the Adjunct island on the one and the WH-island on the other is also observed in Sinhala. In Sinhala, even if the *wh-op d d* appears at the edge of the WH-island, as we see in (27) below, the sentence still is not acceptable, unlike in sentences where *d d* is attached to the Adjunct or Complex NP island.

- (27) ?Ranjit [Chitra **mon dwa** kieuwa d d-naedd d kiy d la]
 Ranjit Chitra what read whether that
d d danne?
 Q know-E
 ‘*What does Ranjit know whether Chitra read it?’

To summarize, the preceding discussion shows that the WH-in-situ in the

WH-island will result in ungrammaticality even if a WH-phrase can be formed syntactically out of the non-adjacent indefinite *wh* and the *wh-op*. Ultimately, this difference can be traced to the nature of *C* involved in the Complex NP and the Adjunct clause on the one hand and the WH-clause on the other.¹⁶

3.4. Summary

To summarize, we have seen in this section that once we assume that the *wh-op* can be generated separately from the indefinite *wh* and form a WH-P syntactically and that the interrogative *wh-op* is phonologically null in Korean, the different sensitivity of WH-in-situ to different types of islands in Korean can be naturally accounted for. The conclusion we could draw is that the WH-in-situ in Korean obeys Subjacency regardless of island types.

4. More Evidence for Decomposing WH-Questions from Korean

In this section, I will examine two prominent cases of the WH-in-situ in Korean which behave differently from other in-situ WH-phrases in that they are

16. WH-in-situ in Chinese, which is known not to show WH-island effects as well as the Complex NP and the Adjunct island effects, remains a problem for this explanation. If the lack of Adjunct island and Complex NP island effects in Chinese is explained in the same manner as in Korean or Sinhala, WH-in-situ in Chinese is expected to show WH-island effects just as in Korean or Sinhala. Although I cannot provide a thorough explanation for this problem, a simple solution for this problem might be to assume that there does exist some sort of Subjacency parameter and that in languages like Chinese, the bounding nodes for movement are NP and CP, not NP and IP as in languages like Korean or Sinhala. If bounding nodes are NP and CP, not NP and IP, extraction of a WH-phrase out of WH-clauses will not violate Subjacency, and thus WH-phrases in such languages will be able to move out of WH-islands without recourse to the pied-piping strategy.

not allowed in Complex NP and Adjunct islands. They are the WH-in-situ preceded by the adverb *totaychey* '(WH) on earth' and *woy* 'why'. I will show how the proposed analysis of the WH-in-situ in Korean can provide explanations for the properties of these two WH-phrases.¹⁷

4.1. WH-in-situ Preceded by *Totaychey*

Unlike other in-situ WH-phrases, the WH-in-situ preceded by *totaychey* '(WH) on earth' is not allowed in Adjunct or Complex NP islands as well as WH-islands.

- (28) a. *Ne-nun [Yenghi-ka **totaychey mwues-ul** sa-se]
 You-TOP Y-NOM on earth what-ACC buy-because
 hwa-ka na-ess-ni?
 get angry-PAST-C[+WH]
 '*What on earth did you get angry because Yenghi bought (it)?'
- b. *[ku-ka **totaychey encey** sa-n catongcha]-ka tto
 he-NOM on earth when buy-ADN car-NOM again
 kochang-i na-ss-ni?
 break down-PAST-C[+WH]
 '*The car that he bought when on earth broke down again?'

The proposal in this paper provides an explanation. Recall that in the proposed analysis, an apparent violation of Adjunct or Complex NP island constraint by the WH-in-situ in Korean was made possible by the null *wh-op* generated separately from the indefinite *wh* at the edge of the island. That the indefinite *wh* and the *wh-op* can be generated separately, in turn, was evidenced by the fact

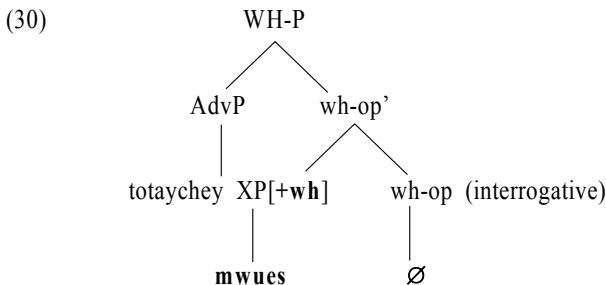
17. See Pesetsky (1987) and Hagstrom (1998) for similar data in Japanese.

that the quantificational force of the indefinite *wh* varied depending on the *wh*-op with which it is associated. Given this, the fact that WH-phrases preceded by *totaychey* do not cooccur with overt *wh*-op's like *to* or (*i*)*na* and can only have an interrogative meaning, as illustrated below, provides a clue for the explanation.

- (29) a. *Yenghi-ka totaychey mwues-ina ta sa-ess-ta.
 Y-NOM on earth what-wh-op all buy-PAST-DECL
 ‘Yenghi bought everything.’
- b. *Yenghi-ka totaychey mwues-to an sa-ess-ta.
 Y-NOM on earth what-wh-op not buy-PAST-DECL
 ‘Yenghi didn’t buy anything.’

We can interpret the preceding facts as showing that *totaychey* indicates the presence of the null interrogative *wh*-op. Specifically, if we assume that *totaychey* is generated in the Spec of the interrogative WH-P, the preceding facts can be explained in the following way.

First, that the WH-in-situ preceded by *totaychey* can only have the interrogative reading is expected since by Spec-head agreement, the presence of *totaychey* indicates presence of the interrogative *wh*-op. This means that the WH-in-situ preceded by *totaychey* is not an indefinite *wh* but always is a WH-P, i.e., the indefinite *wh* followed by the null interrogative *wh*-op, as in (30).



Given this, that WH-in-situ preceded by *totaychey* does not allow overt wh-op's such as *to* or *(i)na* is readily explained: it is because there already exists an interrogative wh-op, and thus attachment of another wh-op will violate the ban on vacuous quantification.

Secondly, the fact that the WH-in-situ preceded by *totaychey* cannot be inside an island is explained, since WH-in-situ preceded by *totaychey* is a WH-P, not an indefinite wh, and thus, movement of the WH-P to C over the island boundary will violate Subadjacency.

In addition, the proposal that *totaychey* is generated in the Spec of interrogative wh-op explains the following facts. First, as sentence (31a) below shows, *totaychey* must precede the WH-in-situ, although it need not be adjacent to or even in the same clause with the WH-in-situ ((31b)).

- (31) a. *Yenghi-ka **mwues-ul** **totaychey** sa-ess-ni?
 Y-NOM what-ACC on earth buy-PAST-C[+WH]
 'What on earth did Yenghi buy?'
- b. **Totaychey** Ne-nun [Yenghi-ka **mwues-ul** sa-ess-tako]
 on earth you-NOM Y-NOM what-ACC buy-PAST-C
 saynkakha-ni?
 think-C[+WH]
 'What on earth do you think Yenghi bought?'

In fact, as we see below, *totaychey* and the WH-phrase can be unboundedly separated ((32a)) as long as *totaychey* precedes the WH-phrase and *totaychey* itself is not inside an island ((32b) vs. (28a)).

- (32) a. **Totaychey** ne-nun [Tongswu-ka Swuni-eykey [Yenghi-ka
 on earth You-TOP T-NOM S-DAT Y-NOM

mwues-ul sa-ess-tako] malha-ess-tako] sayngkakha-ni?
 what-ACC buy-PAST-C tell-PAST-C think-C

‘What on earth do you think that Tongswu told Swuni that Yenghi bought?’

- b. **Totaychey** ne-nun [Tongswu-ka [Yenghi-ka **mwues-ul**
 on earth You-TOP T-NOM Y-NOM what-ACC
 sa-se] hwa-ka na-ess-tako] sayngkakha-ni?
 buy-because get angry-PAST-C think-C[+WH]
 ‘*What on earth are you angry because Yenghi bought (it)?’

If we assume that *totaychey* is generated as the Spec of interrogative wh-op, the preceding facts are readily explained. First, the fact that *totaychey* must precede the WH-phrase ((31a)) is explained since it is generated in the Spec and since downward movement in general is not allowed. Secondly, the fact that *totaychey* and the WH-phrase can be separated unboundedly is explained ((32a)), since *totaychey*, an AdvP, can move out successive cyclically, as long as there are no intervening islands. Finally, the grammaticality of (32b) in contrast to (28a) can be explained in the following way. If *totaychey* is generated at the Spec of the interrogative wh-op inside the island and moves out, sentence (32b) will have the following structure and will be ruled out due to a Subjacency violation.

- (33) **Totaychey**_i [ne-nun [Tongswu-ka [Yenghi-ka [_{WH-P} t_i
 [mwues]-∅]-ul sa-se]_{island} hwa-ka na-ess-tako] sayngkakha-ni?

Note, however, that sentence (32b) can have the following well-formed structure as well, given the proposal presented in this paper.

- (34) **Totaychey**_i [ne-nun [Tongswu-ka [_{WHP} t_i [Yenghi-ka
mwues-ul sa-se]_{island-∅}] hwa-ka na-ess-tako] sayngkakha-ni?

In (34) the *wh*-op is generated at the edge of the adjunct clause and forms a WH-phrase with it through the (covert) movement of the indefinite *wh* and the percolation of [*wh*]-feature to the adjunct clause. If (32b) has this structure, movement of *totaychey* to the matrix clause will not violate Subjacency since the launching site of *totaychey* is outside the island.

To summarize, the proposal in this paper provides explanations for various properties of WH-in-situ preceded by *totaychey* in Korean.

4.2. *Woy* ‘why’ vs. Other WH-words

Unlike other WH-expressions in Korean, *woy* ‘why’ is sensitive to the Complex island and Adjunct island constraint as well as the WH-island constraint, as we see below.

- (35) a. *Ne-nun [ku-ka woy sa-n chayk-ul]
 You-TOP he-NOM why buy-ADN book-ACC
 peli-ess-ni?
 throw away-PAST-C[+WH]
 ‘*Why did you throw away the book he bought (why)?’
- b. Ne-nun [ku-ka woy ttena-se] sulph-uni?
 You-TOP he-NOM why leave-because is sad-C[+WH]
 ‘*Why are you sad because he left (why)?’
- c. *Ne-nun [ku-ka woy ttena-ess-nun-ci]
 You-TOP he-NOM why leave-PAST-ADN-C
 kwungkumha-ni?

wonder-C[+WH]

‘*Why do you wonder whether he left (why)?’

The proposal in this paper can also provide an explanation. Note that unlike other WH-words in Korean, *woy* can be used only as an interrogative expression and that it cannot cooccur with overt wh-op's like *to* or *na*. We can interpret this as showing that *woy*, unlike other WH-words in Korean, is an interrogative WH-phrase by itself, and that it cannot be decomposed into the indefinite wh and the interrogative wh-op.¹⁸

Given that the apparent violation of the Adjunct island constraint and the Complex island constraint is the result of the null wh-op generated at the edge of an island containing the indefinite wh, the fact that *woy* cannot be decomposed into the indefinite wh and the wh-op predicts that *woy* in these islands will necessarily violate Subjacency. In short, sentences like (35) can only have structure (36a), not (36b), and thus movement of *woy* out of the island will violate various movement constraints such as Subjacency and ECP.¹⁹

18. The generalization that “why” can only have the interrogative meaning seems to hold cross-linguistically. For example, *naze* ‘why’ in Japanese cannot have quantificational meaning other than the interrogative interpretation. This is also true of languages like English. Although other wh-words like what or which can be bound by ‘-ever’ forming *whatever* or *whichever*, **whyever* is not possible. In order to explain this, Tsai (1994) claims that adverbs are intrinsic operators and thus do not enter into unselective binding as variables. A similar explanation is proposed by Reinhart (1995) in order to explain the strong locality of in-situ why in English. In my proposal, this amounts to saying that *why* cannot be decomposed into indefinite wh and wh-op and thus does not allow separate generation of indefinite wh and wh-op. See footnote 19 and section 5 for some supporting evidence for this.

19. The property of “why” distinct from other WH-words is also supported by the data from other languages which allow clausal pied-piping such as Basque and Cuzco Quechua. In these languages, the clause headed by ‘why’ cannot be pied-piped unlike the clauses headed by other WH-words. (See section 5 for similar data from Basque.)

(i) *Cuzco Quechua* (Ortiz de Urbina 1986: 316)

- (36) a. [CP [IP [... [WHP **woy**]...]_{island} ...] C]
 b. *[CP [IP [WHP [... **woy**]...]_{island-wh-op}]...] C]

5. Cross-Linguistic Implications: Decomposing WH-Questions in English

In the previous sections, I have proposed that WH-questions can be decomposed into two separate steps of movement. As evidence for this, I have shown that WH-words in languages like Sinhala, Imbabura Quechua or Korean are composed of two separate words, which could be analyzed as an indefinite wh-pronoun and a wh-op, and that in these languages there is a way to question an element in syntactic islands such as Complex NP islands or Adjunct islands. In this section, I will examine whether the same analysis can be extended to other languages like English, which apparently differ from the aforementioned languages, both morphologically and syntactically.

As discussed in Tsai (1994), that WH-words even in languages like English are not operators by themselves is evidenced by the existence of words like *whatever*, *whichever*, in which wh-words like *what*, which are bound by *-ever*, and words like *somewhat*, *somewhere*, in which *what*, *where* are bound by *some-*. Given this, WH-words like *who* or *what* in English should be analyzed as morphologically amalgamated forms of indefinite *who*, *what* and the phonologically null wh-op.²⁰ The absence of *whyever* also renders support to this analysis,

-
- a. [[Pe-q waso ruwa-squa-n-taq]] sumaq?
 who-gen house make-prf-3-q good
 ‘The house built by whom is beautiful?’
- b. *[[Ima-rayku wasi ruwa-squa-n-taq]] sumaq?
 what-cause house make-prf-3-q good
 ‘The house built why is beautiful?’

since as noted already (see footnote 19), it appears that ‘why’, cross-linguistically, cannot be decomposed into the indefinite *wh* and the *wh-op* and is a WH-P itself.

If WH-words in English are also decomposed into indefinite *wh* and *wh-op*, it is expected that WH-phrases in English could also be formed from the indefinite *wh* and the *wh-op* generated separately. Evidence for this comes from pied-piping phenomenon in English. In English, pied-piping of various phrasal-level categories is allowed, as illustrated below.

- (37) a. [_{DP} Whose book] did you buy?
 b. [_{PP} With whom] did you travel?
 c. [_{AP} How smart] is he?

Given that pied-piping movement in my analysis is the result of syntactic building of WH-phrases out of the indefinite *wh* and the *wh-op* by the WH-marking step, pied-piping as in (37) provides evidence that the same analysis as I have proposed for the pied-piping WH-movement in languages like Imbabura Quechua or Sinhala can also be extended to that in English.

If this is the case, however, a natural question that arises is why English differs from other languages, morphologically and syntactically. Morphologically, the indefinite *wh* and the *wh-op* in English are lexicalized always as a single word, while they are lexicalized as two separate words and can be non-adjacent to each other in languages like Imbabura Quechua, Sinhala or Korean. Syntactically, no clausal pied-piping is allowed in English and there is no way for WH-phrases in English to circumvent the Complex NP island or Adjunct island constraints, unlike in languages like Imbabura Quechua, Sinhala or Korean. I suggest the following as possible answers for these questions.

20. A similar analysis was proposed by Tsai (1994).

First, concerning the morphological difference between WH-words in English and those in Imbabura Quechua, Sinhala, or Korean, note that this is reminiscent of the difference in Infl-marking observed between English and Korean. In English, Infl is incorporated into V and the two are lexicalized as a single lexical item, although syntactically they each head their own projections. As discussed in Yoon & Yoon (1990) and Yoon (1991), Korean differs from English in that Infl is a phrasal affix which combines with VP, not with V.²¹ The conclusion we could draw from this is that there is a mismatch between morphology and syntax in languages like English, while morphology and syntax match each other more closely in languages like Korean.

That morphology is not a crucial factor in decomposing WH-words is also evidenced by Basque, another overt clausal pied-piping language discussed by Ortiz de Urbina (1986, 1993). WH-words in Basque are similar to those in English in that the indefinite *wh* and the *wh-op* are lexicalized as a single word such as *nor* 'who', *zer* 'what'. Basque, however, differs from English in that it allows overt clausal pied-piping and that there is a way to question an element in syntactic islands like a complex NP or an adjunct clause, i.e., to pied-pipe the island itself to the Spec of C.

- (38) a. [Nor etorriko d-ela bihar] esan diozu Mireni?
 who come aux-that tomorrow said aux Mary-D
 'That who will come tomorrow have you told Mary?' (Ortiz de Urbina
 1993:194)
- b. [[Nork barreiatu du-en] zurrumurrua] entzun duzu?
 who spread has-comp rumour heard have
 'The rumor that who spread have you heard?' (Ortiz de Urbina 1986:
 211)

21. See Yoon & Yoon (1990) and Yoon (1991) for arguments for this analysis.

- c. Zer esan ondoren joan zen?
 what say after go aux
 ‘After saying what did s/he leave?’ (Ortiz de Urbina 1993:212)

We can analyze sentences like (38) in Basque in the same way as we explained overt clausal pied-piping in Imbabura Quechua, i.e., by breaking the WH-question into two separate steps of movement, both of which involve overt movement in Basque. For example, in (38a), the indefinite *wh* moves to the Spec of CP by WH-marking movement²² and percolates its [*wh*]-feature to the CP and then the WH-phrase thus formed, i.e., the whole CP, will undergo WH-scoping movement to the Spec of matrix CP. In this analysis, sentence (38a) will have the following structure.

- (39) [_{CP} [_{WH-P} [_{CP}_[+wh] **Nor**_i [_{t_i} etorriko d-ela bihar]] ∅]_j [_c’ esan diozu Mireni _{t_j}]]?

The preceding analysis is also supported by the fact that *zergatik* ‘why’ in Basque cannot pied-pipe the clause containing it unlike other WH-words.

- (40) *[[zergatik egin-da-ko] lana gustantzen zaizu?
 why do-adv-of work like aux
 ‘The work done why do you like?’ (Ortiz de Urbina 1986: 315)

This can be explained if ‘why’, as we have claimed earlier, cannot be decomposed into the indefinite *wh* and the *wh-op*. Given that piedS-piping of a constituent is possible when the indefinite *wh* and the *wh-op* are generated separately and

22. According to Ortiz de Urbina (1993), clausal pied-piping WH-movement in Basque requires movement of WH-words to the Spec of the pied-piped phrase.

associated through the movement of the indefinite *wh*, it is expected that ‘why’ cannot pied-pipe a clause.²³

Turning to the syntactic differences between English and other languages discussed, the question boils down to why clausal pied-piping is not allowed in English, given that the apparent violation of the Complex NP island or Adjunct island constraints involves pied-piping movement of a complex NP or an adjunct clause and that this necessarily involves clausal pied-piping. An explanation for this question requires a comprehensive analysis of pied-piping phenomenon in English, since in my analysis, pied-piping in general is explained in terms of interaction between WH-marking and WH-scoping movement.

I propose the following explanation.²⁴

Note that according to the proposal presented in this paper, two separate steps of movement are involved in WH-questions and movement involved in each step can be either overt or covert. This means that there can be four different types of languages depending on whether the movement involved in each step is overt or covert. We have already seen that the movement involved in both WH-marking and WH-scoping is overt in Imbabura Quechua or Basque, while it is both covert in Sinhala or Korean.

23. The cross-linguistic impossibility of pied-piping by ‘why’ also renders support to the analysis of pied-piping based on decomposing WH-words and WH-questions into two steps as proposed in this paper over the one based on simple feature percolation proposed by Ortiz de Urbina (1993). If pied-piping is possible when the [WH]-feature of a WH-element in the Spec percolates up to the mother node, it is not explained why ‘why’, unlike other WH-words, cannot percolate its [WH]-feature to the mother node.

24. See Yoon (1999) for a more detailed discussion.

(41) *Four Types of Languages*

	WH-marking movement	WH-scoping movement
Imbabura Quechua, Basque	overt	overt
Sinhala, Korean	covert	covert
?	overt	covert
?	covert	overt

Of the remaining two types, I propose that partial WH-movement languages like German, Romani and Hungarian belong to the third type and that languages like English fit the last type.²⁵ If this is the case, various facts of pied-piping in English including the impossibility of clausal pied-piping can be explained in the following way under the “Cyclic Spell-Out model” of Chomsky (1998).

First, it is explained why specifiers in English are pied-pipers, as in examples like (42).

- (42) a. [Whose book] did you buy?
 b. [How smart] is he?
 c. [How soon] can you finish it?

Since feature percolation is possible from the Spec position, the indefinite wh element in the Spec can percolate its [wh]-feature to the mother node, thereby forming a WH-phrase with the wh-op. This WH-P will then undergo overt WH-scoping movement to the Spec of C.

Secondly, the fact that the complements of PPs are pied-pipers is explained since under the Cyclic Spell-Out model, WH-elements in the complement position should be able to pied-pipe the constituent containing it overtly. This is for the

25. See McDaniel (1989) and Horvath (1997) for discussion on partial WH-movement. Due to the limitations of this paper, I will not discuss these languages in this paper.

following reasons. Given that overt and covert movement are interspersed within narrow syntax, it is in principle possible for covert movement to precede overt movement, as long as the covert movement occurs in the cycle ('phase' in Chomsky (1998)) preceding the one where the overt movement takes place. This means that if PP constitutes a cycle, then the *wh*-element in the complement position of P can overtly pied-pipe the PP²⁶: in the PP cycle, the indefinite *wh* will "covertly" move from the complement to the Spec position of PP and the WH-phrase formed by this covert WH-marking movement will undergo overt WH-scoping movement (i.e., pied-piping movement) to the Spec of C.

Third, the fact that complements of phrases other than PPs cannot be pied-pipers, as in (43) below, are explained in the following way.

- (43) a. *[_{AP} Afraid of whom] are you?
 b. *[_{VP} Meet whom] will you?
 c. *[_{DP} The picture of whom] did you see?
 d. *[_{CP} That John bought what] do you think?

First, the ungrammaticality of sentences like (43a) and (43b) can be explained if we assume, following Chomsky (1998), that APs and VPs do not constitute a cycle.²⁷ If this is the case, there is only a single cycle, i.e., the whole CP, in sentences like (43a-b) and overt movement must precede covert movement in that cycle. Given that the WH-marking movement is covert and the WH-scoping movement is overt in English, the derivation of sentences like (43a-b) is predicted to be impossible in English.

Secondly, the ungrammaticality of (43c) can be explained in terms of Spec-

26. See Yoon (1999) for arguments for PP constituting a cycle (phase).

27. Chomsky (1998) suggests that cycle/phase is the closest syntactic counterpart to a proposition and that CP or vP is a phrase but not TP or a verbal phrase headed by H lacking \bar{A} -features and therefore not entering into Case/agreement checking.

head agreement. Following is the structure of the WH-P in (43c).

(44) *_[WH-P] [_{WH'} ∅ [_{DP} [_{D'} the [_{NP} picture [_{PP} of whom]]]]]

In order for this WH-P to be pied-piped (in the next cycle, i.e., CP), the indefinite *wh* *whom* must move, covertly, to the Spec of DP and percolate its [*wh*]-feature to the DP. This movement, however, produces an ill-formed structure since the head of this DP *the* is definite and thus movement of the indefinite *wh* *whom* to its Spec will violate the Spec-head agreement.²⁸

(45) *_[WH-P] [_{WH'} ∅ [_{DP} *whom*_i [_{D'} the [_{NP} picture [_{PP} of *t*_i]]]]]
[-definite] [+definite]

Turning, finally, to the impossibility of clausal pied-piping as in (43d), a similar explanation can be extended. Since the verb *think* selects a declarative clause, the C of the embedded clause in (43d) should be the declarative C *that*. Movement of the indefinite *what* to the Spec of CP headed by the declarative C *that* will also result in violation of the Spec-head agreement. To be precise, note that the feature which violates the Spec-head agreement in (43d) is the [+/-definite] feature, not the [+/-interrogative *wh*-operator] feature. That the declarative C *that* in English has the [+definite] feature is suggested by the fact that it has the same form as the demonstrative *that*.^{29 30}

28. In order to explain the ungrammaticality of sentences like (i) below, I will have to assume that there is null [+definite] D.

(i) *[Pictures of whom] do you like?

29. See Tsai (1994) for the idea that *th*- contrasts with *wh*- with respect to definiteness in English.

30. An alternative way to explain the ungrammaticality of (43d) might be to appeal to the Doubly Filled Comp Filter (DFCF). Although the nature of the DFCF in the current theory

- (46) *_{[WH-P wh-op [CP **what**_i [C: **that** [IP John bought t_i]]]]}
 [-definite] [+definite]

Other cases of clausal pied-piping, as in (47) below, are also ruled out.

- (47) a. *[e John bought what] do you think?
 b. *[What John bought] do you think ?

As for (47a), I propose that it is ruled out due to an ECP violation, assuming that a null C must be 'identified' and thus it must be governed by the verbal head selecting it (Stowell 1981)³¹. (47b) also is ruled out, since the WH-marking movement in English cannot be overt.

To summarize, the preceding discussion shows that various facts of pied-piping in English can be explained if we assume that the WH-marking movement is covert while the WH-scoping movement is overt in English. This, in turn, means that English does not differ from other languages discussed in the previous sections, i.e., WH-questions in English should also be broken down into two separate steps of movement. My analysis, thus, differs from Tsai (1994), who suggests that languages differ with respect to the level at which binding of the indefinite wh by the wh-op is done. According to Tsai, it is done at the X⁰-

is not very clear, the descriptive generalization expressed by it, that it is not possible for both the Spec and the head of CP to be occupied by lexical material seems to be valid. Although I do not pursue this line of explanation in this paper, it is worth noting that languages which allow clausal pied-piping, at least the languages that we have discussed in this paper, do not show the DFC effects. The same observation was also made by Ortiz de Urbina (1993). He suggests that the impossibility of clausal pied-piping in English and in Germanic languages in general might be related to Doubly Filled Comp Filter effects manifested by Germanic languages in general, but not by the languages such as Basque which allow clausal pied-piping.

31. The same suggestion was made by Ortiz de Urbina (1993).

level in languages like English, while it is done at the XP-level in languages like Chinese or Japanese. In contrast, what I have proposed is that syntactically, indefinite *wh* and *wh-op* can form a WH-phrase (i.e., binding at the XP-level according to Tsai) in all languages and that the difference between languages like English and others like Imbabura Quechua, Sinhala, Korean or Basque lies in some language-specific factors such as morphology and/or other language-specific syntactic properties.

6. Conclusion

In this paper, I have proposed that WH-words can be decomposed into an indefinite *wh*-variable and a *wh*-operator, which can be generated separately and associated with each other syntactically, and that WH-questions, accordingly, should be decomposed into two separate steps, i.e., the steps which I call “WH-marking” and “WH-scoping.” I have further claimed that each of these two steps involves movement, either overt or covert, and that the movement involved in each step obeys Subjacency. The most direct evidence for the proposal came from Imbabura Quechua, in which movement involved in both WH-marking and WH-scoping is overt, and Sinhala also provided us with morphological and syntactic evidence for the proposal.

As for the problem posed by the different sensitivity of WH-in-situ to different types of islands observed in Korean (and Japanese), I have shown that it can be explained once we apply the proposal drawn from Imbabura Quechua and Sinhala to Korean with an additional assumption that the interrogative *wh-op* is phonologically null in Korean. As we have seen, once WH-question formation is decomposed into two steps as proposed, all movements involved in WH-questions in Korean obey Subjacency regardless of island types.

I have also discussed how the proposal can be extended to WH-questions in languages like English, which differ from those in languages like Sinhala, Imbabura Quechua or Korean, both morphologically and syntactically. I have suggested that syntactically, WH-questions in English should also be broken down into two steps and that the differences between the two types of languages can be attributed to morphology and some language-specific syntactic properties.

Before I close the paper, note that the proposal in this paper claims that there is covert as well as overt pied-piping, contra Chomsky (1995) but confirming Nichigauchi (1986, 1991). Nichigauchi's analysis is similar to the proposal made in this paper in that he also assumes that the indefinite *wh* and the *wh*-op in languages like Japanese are generated separately and that movement is involved in the association of the two. Nichigauchi's analysis, however, differs from mine in several important respects. First, he takes *-ka* in Japanese (*-kka* in Korean), which in my analysis is interrogative C, as the *wh*-op, which is base-generated in C and "binds" the indefinite *wh*. Secondly, the reason that the indefinite *wh* moves to the Spec of C in his analysis is because he makes a further stipulation that the *wh*-op binds the indefinite *wh* under the condition of "government", an unnatural condition given that "binding" in general does not require a strong locality condition like "government".

My analysis does not have a problem like this, since in my analysis, neither of the movements involved in WH-marking and WH-scoping is motivated by binding. As for WH-scoping, movement of WH-P to Spec of C is for feature checking, since in my analysis, elements like *-ka* in Japanese or *-kka* in Korean are not *wh*-op but interrogative C, which checks the *wh*-op feature of the WH-P. The movement involved in WH-marking also is not for binding. In this case, it is motivated by the need to meet the "selectional requirement" (*wh*-op selects XP with [*wh*]-feature). Given that selection requires a strong locality

condition (sisterhood in general), it is expected that the indefinite wh should move to the Spec of the constituent which undergoes pied-piping WH-movement to C.

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