9 Quantification and *wh*-Constructions

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0 Introduction

This chapter attempts to provide an overview of linguistic phenomena in Japanese involving quantification and *wh*-constructions, and various theoretical approaches to these phenomena. Since *wh*-phrases and constructions involving them play major roles in this and related areas, this chapter will focus on the behavior of *wh*-phrases and *wh*-constructions and a variety of theoretical attempts to characterize them.

The first half of this chapter, viz. sections 1–4, will be focused on such syntactic notions as locality restrictions, especially Subjacency and two major effects which are supposed to be subsumed under it, and as we go along, our focus will be on such semantic areas as quantificational variability (section 5), the functional interpretation (sections 6–7), and so on. As the discussion proceeds, however, we will see that some notions which are apparently motivated in syntax play vital roles in what we consider to be semantic phenomena. We will further observe that some notions which have hitherto been considered to be semantic in nature prove to be crucially important in phenomena which have been thought to be purely syntactic. This is a large-scale shift of focus rapidly gaining force in the principles-and-parameters approach in the areas related to Logical Form (LF). What follows is a case study from Japanese.

1 A *wh*-In-Situ Language

Japanese is said to be a "*wh*-in-situ language," that is, a language in which *wh*-phrases appear in any position within a sentence or a clause that may be occupied by regular NPs in the syntactic form or representation relevant to pronunciation ("s-structure" or "pre-Spell-out" structure). In this respect

Japanese differs from many European languages including English in which some or all *wh*-phrases must occupy certain designated positions within a clause containing them. To see this, compare the following sentences with their respective English translations.

(1) a. John-ga dare-o ture-te kuru no?
John-Nom who-Acc bring come Q
"Who will John bring?"
b. John-ga dare-to ki-ta no?
John-Nom who-with came Q
"Who did John come with, With whom did John come?"

In (1a), the *wh*-phrase *dare* "who" appears in the position of a direct object, and in (1b), the same phrase appears as part of a postpositional phrase (PP).

It is possible to have these *wh*-phrases in a clause-initial position, as in:

(2) Dare-o John-ga ture-te kuru no?
who-Acc John-Nom bring come Q

but the point is that there is virtually no difference in meaning between (1a) and (2), and that (2) is a result of the relative freedom of constituents within a clause that is allowed in this language. Thus, it was the commonly held view in the generative tradition until the early 1980s that no syntactic movement was involved directly in the derivation of *wh* constructions in Japanese and other *wh*-in-situ languages, such as Chinese, Korean, Hindi, and many others.[1]

In the mid-1980s, influenced by the important work of May (1977, 1985) and Huang (1982), the trend of inquiry started gaining force in which the behavior of *wh*-in-situ is analyzed in terms of covert movement that takes place in the process of mapping s-structure to Logical Form (LF). Lasnik and Saito (1984), Nishigauchi (1986, 1990), and Hoji (1985) were among the works that shed new light on various aspects of quantification and *wh*-constructions in Japanese in this theoretical format.

One of the important motivations for treating *wh*-constructions in Japanese this way was the so-called locality effects exhibited by this type of construction. We will look at the relevant phenomena in the next section.

2 Locality

One of the key notions in discussing the behavior of *wh*-constructions is *scope*. In English, scope of a *wh*-phrase is determined by (i) the position that was occupied by a *wh*-phrase in d-structure, and (ii) the position to which the *wh*-phrase has moved at s-structure, which is widely assumed as Spec of CP, since N. Chomsky (1986a). If the *wh*-phrase has the entire sentence as its scope, the

sentence is interpreted as a *wh*-question, while if the scope of the *wh*-phrase is limited to an embedded clause, the whole sentence does not necessarily function as a question.

(3) a. *Who*$_i$ does John think that Mary likes t_i?
b. John wants to know *who*$_i$ Mary likes t_i.

In Japanese, scope of the *wh*-phrase is determined by (i) the position of the *wh*-phrase and (ii) the position of the interrogative marker *ka*, whose syntactic category is assumed to be C(omplementizer).

(4) a. John-wa [Mary-ga *dare*-o ture-te kuru to] ii masi-ta *ka*?
John-Top Mary-Nom who-Acc bring come that say Hon-Past Q
"Who did John say Mary will bring?"
b. John-wa [Mary-ga *dare*-o ture-te kuru *ka*] ii masi-ta ka?
John-Top Mary-Nom who-Acc bring come Q say Hon-Past Q
"Did John say who Mary will bring?"

In (4a), the *wh*-phrase is in the embedded clause while the interrogative *ka* is at the end of the sentence, so that scope of the *wh*-phrase extends over the whole sentence. Hence the whole sentence is interpreted as a *wh*-question. Sentence (4b) is minimally different from (4a) in that while its *wh*-phrase is in the same position, there is an interrogative marker at the end of the complement clause. Here, scope of the *wh*-phrase is limited to the embedded clause. The interrogative marker *ka* at the end of the sentence does not play any role in determining the scope of the *wh*-phrase, making the entire sentence a yes–no question.[2]

The fact that we have just seen from the contrast in (4a–b) tells us two things of immediate concern: one is that the "construal" of the *wh*-phrase with the interrogative marker *ka* plays a major role in determining the scope of the *wh*-phrase. The second point, which is more specific, is that this construal process is subject to a locality restriction: the *wh*-phrase has to be construed with the closest interrogative marker *ka*, so in the case of (4b) the *wh*-phrase can only be construed with the interrogative marker at the end of the complement clause, so its scope is limited to the embedded clause.

In the next subsection, we will discuss this last aspect of the matter from a different theoretical viewpoint.

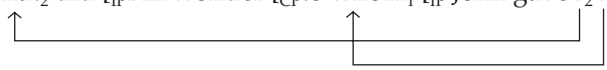
2.1 wh-*Island Condition*

The property of the *wh*-construction in Japanese that we have just observed can be considered a case of the *wh*-Island Condition, whose effect is exemplified by the following ungrammatical sentence from English.

(5) *What did Bill wonder to whom John gave?

The ungrammaticality of this sentence is attributed to the fact that the *wh*-phrase *what* has been fronted over a domain (CP) where *wh*-movement of *to whom* has already applied.

(6) *[$_{CP}$what$_2$ did [$_{IP}$Bill wonder [$_{CP}$to whom$_1$ [$_{IP}$ John gave t_2 t_1]]]]?



Now let us consider the following sentence.

(7) Bill-wa [John-ga dare-ni nani-o age-ta ka] oboe-te i-masu ka?
Bill-Top John-Nom who-Dat who-Acc gave Q remember be-Hon Q
a. "Does Bill remember what John gave to whom?"
not b. "*What does Bill remember to whom John gave?"

While this sentence is acceptable, its interpretation can only be (7a), where the scope of the two *wh*-phrases is limited to the embedded clause, so that the whole sentence is interpreted as a yes–no question. It cannot be interpreted as (7b), in which one of the *wh*-phrases, *nani* "what," is taken to have the whole sentence as its scope.

The parallelism between (7) and (5) becomes clearer if we hypothesize, along the lines of Huang (1982), that *wh*-in-situ languages have *wh*-movement in the process of mapping s-structure to LF. In the case of Japanese, Nishigauchi (1990) hypothesizes that the interrogative marker *ka* is of category C with the feature [+*wh*]. Movement of *wh* to Spec CP, then, is performed to meet the agreement requirement with respect to the [+*wh*] feature at LF.

(8) [$_{CP}$ wh_i [$_{IP}$ . . . t_i . . .] *ka*]
↑ [+*wh*]

Along this line, suppose *wh*-movement of *nani*(*-o*) "what" takes place in the embedded clause of (7). We will obtain the following intermediate structure.

(9) . . . [$_{CP}$ *nani*(*-o*)$_i$ [$_{IP}$ John-ga dare-ni t_i age-ta] ka] . . .
↑ John-Nom who-Dat gave Q

Since Spec CP is occupied by a *wh*-phrase, subsequent movement of the remaining *wh* out of this clause is in violation of the *wh*-Island Condition. This accounts for the absence of reading (b) of (7). The only way the remaining *wh*-phrase *dare*(*-ni*) "who-Dat" can move to satisfy the agreement requirement would be to move within the complement clause, adjoining to the previously-moved *wh*:

(10) . . . [$_{CP}$ *nani*(*-o*)$_i$ *dare-ni*$_j$ [$_{IP}$ John-ga t_j t_i age-ta] ka] . . .
↑ John-Nom gave Q

This accounts for the fact that (7) has only the (a) interpretation, in which both *wh*s have the complement scope.

These observations have led the theorists to suppose that the properties of *wh*-constructions in Japanese are identical with those of the English counterpart, and that they involve "covert" *wh*-movement at LF.

On the other hand, it has been observed in the literature that *wh*-in-situ in English has a lot of freedom with respect to the *wh*-Island Condition. It has been acknowledged since C. L. Baker (1970) that the following sentence, with a *wh*-in-situ within a *wh*-island, can be ambiguous with respect to scope.

(11) Who remembers where John bought *what*?

On one interpretation, the *wh*-in-situ *what* has the same scope as *where*. This interpretation can be elucidated by means of the following answer.

(11) a. Mary does. Or
Mary remembers where he bought what.

The other interpretation is that on which the *wh*-in-situ has the matrix scope and is paired with the *wh*-phrase in the main clause.

(11) b. Mary remembers where he bought this, and Jane remembers where he bought that.

This fact has been taken to indicate that covert movement of *wh* in English is free from the *wh*-Island Condition effects.

Let us consider whether the same applies in Japanese. Dayal (1996) considers the following Japanese example, which is parallel to (11) in English and differs from (7) in that there is an additional *wh*-phrase in the matrix clause.

(12) Dare-ga [Mary-ga doko-de nani-o kat-ta ka] sitte
who-Nom Mary-Nom where-at what-Acc bought Q know
imasu ka?
be-Hon Q
"Who knows where Mary bought what?"

Dayal's observation is that the Japanese speakers that she had consulted had no problem in accepting a pair-list answer to (12), analogous to (11b) (Dayal 1996: 93, fn. 3.) While I find the judgment reported by Dayal reasonable, it is necessary to acknowledge that a list interpretation is not so readily available for (12), if the sentence is pronounced normally. If two *wh*s, *dare* "who" and *nani* "what," are stressed, that makes it easier to obtain the list answer parallel with (11b).

There is one aspect of the matter, not noted by Dayal (1996), that critically distinguishes the *wh*-construction in Japanese from the English counterpart. In English, the *wh*-phrase that has been moved overtly to the initial position of the

embedded clause, *where* in the case of (11), is incapable of taking the matrix scope, so that the value filling in *where* cannot be paired with the value filling in the matrix subject *wh*.[3] Therefore, the following list answer is impossible.

(11) c. Mary remembers what he bought at Macy's, and Jane remembers what he bought at Bloomingdale's.

The point about Japanese (12) is that it allows the list interpretation which is elucidated by this answer, if it is read with *dare* "who" and *doko-de* "where" stressed to emphasize the pairing. Such an interpretation is marginal, but it is to the same extent as a list interpretation analogous to (11b) is marginal.

This point is related to the "Superiority" effect observed in English, which basically limits the overt movement to a "higher" or c-commanding *wh* when there are multiple occurrences of *wh* within a single clause.[4] This underlies the ungrammaticality of the following.

(13) *Who remembers [what John bought where]?

What, which originates as the direct object of the V, is selected here as an element to be moved overtly to the initial position of the embedded clause, over and above *where*, which is underlyingly outside VP and hence "higher" than *what*.

The fact that (11c) is available, even marginally, as an answer to (12) can be traced to the absence of the Superiority effect in Japanese. The Superiority effect is quite likely a defining characteristic of languages with overt *wh*-movement and has no force in *wh*-in-situ languages like Japanese.[5] We will see, however, in section 7, some cases in Japanese where a similar effect is at stake.

2.2 *Complex NP constraint*

One of the important features of *wh*-constructions in Japanese is that sentences like the following are perfectly grammatical.

(14) Kimi-wa [dare-o egai-ta hon]-o yomi masi-ta ka?
you-Top who-Acc described book-Acc read Hon-Past Q
"You read a book such that it described who?" Or
lit. "*Who did you read a book that described?"

As the ungrammaticality of the (literal) English translation indicates, overt *wh*-movement out of a complex NP, such as a relative clause as in this case, is generally prohibited in English. This constraint, first discussed in detail by Ross (1967), has been called the Complex NP Constraint (CNPC). Later, N. Chomsky (1973) proposed that both the CNPC and the *wh*-Island Condition are to be reformulated under a unified notion of Subjacency, defined on the notion of "bounding nodes," or "barriers" (N. Chomsky 1986a).

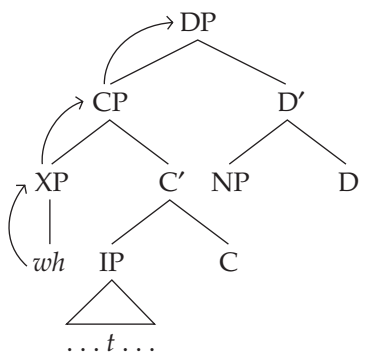
Thus, the *wh*-construction in Japanese exhibits a sharp contrast, if it is supposed that it involves covert movement of *wh*-phrases in the derivation of LF, with overt *wh*-movement in English, in that it appears to allow movement of a *wh*-phrase out of a complex NP, in violation of Subjacency.

3 The Pied-Piping Analysis

The behavior of *wh*-constructions in relation with the CNPC effect that we observed in the previous section poses a serious asymmetry with respect to the relevance of Subjacency in viewing the phenomena in terms of covert movement at LF. On the one hand, we saw in section 2.2 that covert *wh*-movement in Japanese shows obedience to the *wh*-Island effect of Subjacency. On the other hand, the total grammaticality of examples like (14) appears to suggest that the behavior of *wh*-constructions in Japanese is free from the CNPC effect of Subjacency. This poses a problem to the widely accepted idea that the *wh*-Island Condition and the CNPC are subsumed under the general principle of Subjacency.

The analysis of the relevant phenomena proposed by Nishigauchi (1990) provides a solution to this apparent asymmetry with respect to Subjacency. Nishigauchi proposed that sentences involving apparent violations of the CNPC effect of Subjacency should be analyzed in such a way that they do not involve a movement of *wh*-phrases out of complex NPs. How is such an analysis possible? Nishigauchi's suggestion is that movement of the *wh*-phrase occurs only inside the relative clause, and that this movement has the effect of making the entire complex NP identified as a *wh*-phrase. The device which makes this possible is *feature percolation*: the *wh*-feature is percolated through the Spec positions.

(15)



Since the entire DP is now identified as a *wh*-phrase, it can now move to Spec CP of the matrix clause. Its LF-representation is something like the following in essentials.

(16) [[that described who] book]$_i$[you are reading t_i]

This analysis makes it possible to say that the LF-derivation of sentences like (14) does not (necessarily) mean that it involves real violations of Subjacency.

This analysis claims that the entire complex NP containing the *wh*-phrase is moved together with the *wh*-phrase itself. Such a phenomenon is found in English sentences like the following.

(17) a. *In which book* did you find the answer?
b. This is the man, *several pictures of whom* you just saw at the post office.

In both these examples, a larger unit containing the *wh*-phrase has undergone overt movement. This phenomenon has been referred to as Pied-Piping since it was first discussed by Ross (1967). On this analogy, the theory of LF-syntax which posits representations like (16) for sentences involving apparent violations of CNPC is referred to as the (large-scale) Pied-Piping analysis.

One of the well-known arguments for the Pied-Piping analysis comes from short answers to *wh*-questions. In general, it is possible to answer a *wh*-question by means of an expression filling in the value for the *wh*, followed by a copula.

(18) Q. Dare-ga ki masu ka?
who-Nom come Hon Q
"Who is coming?"
A. John desu.
John Cop
"(It's) John."

Now the point about (14) is that it can be answered by either of the following.

(19) a. Gates desu.
Gates Cop
b. Gates-o egaita hon desu.
Gates-Acc described book Cop
"(It's) the book that describes Gates."

Answer (19b) matches the portion which occupies the Operator position as a result of large-scale Pied-Piping in the LF-representation (16), and hence its acceptability can be accounted for straightforwardly. If, on the other hand, the *wh*-phrase were to move directly out of the complex NP in violation of Subjacency, its acceptability requires an explanation, which, to my knowledge, has never been undertaken. The fact that (19a) is also a possible answer to (14) can be accounted for if we suppose that it is a further truncated form of (19b) by means of a discourse deletion rule.

Although Nishigauchi (1990) did not attempt to make precise the nature of the discourse deletion rule, it is clear that the formulation of this process requires reference to a number of factors, which may be semantic, contextual, etc. One aspect of the matter discussed by Nishigauchi is that if the *wh* and the containing complex NP are of the same kind, say, a person, the truncated answer is much less acceptable than the longer answer.

(20) Dare-ga suisen-sita hito-ga saiyoo sare soo desu ka?
who-Nom recommended person-Nom appoint Pass likely Cop Q
lit. "The person such that who recommended him/her will be appointed?"

(21) a. Suzuki kyoozyu ga suisen-sita hito desu.
Suzuki Prof. Nom recommended person Cop
"(It's) the person who Prof. Suzuki recommended."
b. #Suzuki kyoozyu desu.
Suzuki Prof. Cop
"(It's) Prof. Suzuki."

In this example, both the *wh*-phrase and the complex NP containing it refer to persons. There seems to be a constraint on shortening of a description, to the effect that deletion is not recoverable where the entire description and a part of it to be left behind by deletion are sufficiently similar in kind. Thus, in (20), if the expression meaning "who" is replaced by "which professor" and the head nominal meaning "person" is replaced by "student," short answer (21b) is expected to be improved in acceptability. And this prediction appears to be borne out.

Kuno and Masunaga (1986), in their attempt to refute the Pied-Piping analysis, present the following contrast.

(22) Kare-wa [nani-o tuku-ru kaisya]-ni tutome-te i-masu ka?
he-Top what-Acc make company-Dat work-for Cop Q
lit. "He works for a company such that it produces what?"

(23) Kare-wa [nani-o tuku-ru kaisya]-kara kane-o kari-masita ka?
he-Top what-Acc make company-from money-Acc borrowed Q
lit. "He loaned from a company such that it produces what?"

(24) a. Pasokon desu.
PC Cop
"(It's) PC."
b. Pasokon-o tukuru kaisya desu.
PC-Acc make company Cop.
"(It's) a company that produces PC."

Kuno and Masunaga's observation is that while (22) allows either of the answers (24), (24b) is preferred as an answer to (23), answer (24a) being rated

"??" in this context. Kuno and Masunaga's explanation for this difference is that while the speaker of (22) is interested in the identity of the referent of the subject, the speaker of (23) is interested in the identity of the company. While it is not clear why this consideration constitutes an argument against the Pied-Piping analysis, I do find some difference between the two examples (though not unanimously supported by the Japanese speakers that I have consulted), and I submit that this type of consideration must be incorporated into the formulation of the discourse deletion rule.

There are many aspects of the Pied-Piping analysis that I have been unable to discuss in this section. Nishigauchi presents other arguments for the Pied-Piping analysis, among which is the one based on quantifier scope. J.-W. Choe (1987) and N. Hasegawa (1986) develop an argument for this analysis based on Weak Crossover effects. Pesetsky (1987) discusses the implications of this hypothesis in the wide context of the derivation of LF. As we will see shortly, A. Watanabe (1992) adopts this analysis in a different format. von Stechow (1996) points out some problems of the Pied-Piping analysis from semantic points of view. Also see Lasnik and Saito (1992) for arguments against it.

4 Debate

The motivation for the Pied-Piping analysis lies in the fact that it eliminates the apparent asymmetry of Subjacency: while covert *wh*-movement in Japanese shows obedience to the *wh*-Island effect of Subjacency, to the same degree that overt *wh*-movement of English is sensitive to it, it appears to show outright violations of the CNPC effect. With the Pied-Piping analysis, it is possible to say that the relevant data do not (necessarily) show that the CNPC is ignored.

On the other hand, it has long been acknowledged that covert *wh*-movement in English is immune from either the *wh*-Island effect or the CNPC effect of Subjacency.

(25) a. Who remembers where John bought *what*? (= (11))
b. Who read a book that criticizes whom?

As we saw in section 2.1, (25a) allows the reading on which the *wh*-phrase within the *wh*-island takes the matrix scope and is paired with the subject *wh*-phrase. The grammaticality of (25b) indicates that covert *wh*-movement in English is immune from the CNPC effect of Subjacency.

This consideration poses a threat to the idea underlying the Pied-Piping analysis. If covert *wh*-movement in English is immune from any effect of Subjacency, the absence of Subjacency effects may quite likely be a property of covert *wh*-movement in general. If covert *wh*-movement is generally free from Subjacency effects, why do we need the Pied-Piping analysis to show that it is not free from the CNPC effect of Subjacency?

In straightening out this discussion, it helps to take a look at A. Watanabe's (1992) theory of *wh*-movement. Watanabe starts out with the generally held view that only overt *wh*-movement is obedient to Subjacency. Then, Watanabe argues that *wh*-movement takes place both at s-structure and at LF in languages like Japanese as well. Overt *wh*-movement at s-structure involves movement of an empty Operator to Spec CP. This line of analysis is empirically motivated by the contrast between the following.

(26) *?John-wa [Mary-ga nani-o kat-ta ka-dooka] Tom-ni osie
John-Top Mary-Nom what-Acc bought whether Tom-Dat tell
masi-ta ka?
Hon Past Q
"For what *x*, John told Tom whether Mary bought *x*?" Or
lit. "What did John tell Tom whether Mary bought?"

(27) John-wa [Mary-ga nani-o kat-ta ka-dooka] dare-ni osie
John-Top-Nom Mary what-Acc bought whether who-Dat tell
masi-ta ka?
Hon Past Q
"Who did John tell whether Mary bought what?"

In (26), the only way the Operator of *wh*-phrase in the complement clause to take matrix scope at s-structure is to move directly out of the *wh*-island headed by *ka-dooka* "whether or not," and this is in violation of Subjacency, which accounts for its ungrammaticality. In (27), in contrast, it is possible to apply overt movement of the Operator out of *dare-ni* "who-Dat," a *wh* in the matrix clause, and this is in no violation of Subjacency.[6]

(28) $[_{CP}$ Op_i $[_{IP}$ John-wa $[_{CP}$ . . . *nani* . . . *ka-dooka*] [t_i dare] . . .] *ka*]

Subsequently at LF, the *wh*-phrase in the complement clause may be moved to the matrix Spec CP. This is all right, since covert *wh*-movement is not affected by Subjacency. This accounts for the acceptability of (27), and a similar analysis holds for the marginal acceptability of the wide-scope interpretation of (12), discussed in section 2.1.

Looked at this way, there is a crucial difference between the *wh*-Island effect and the CNPC effect. While the *wh*-Island effect is eliminated by the presence of an additional *wh*-phrase in a position from which *wh*-movement is not constrained by Subjacency, in the cases related to the CNPC effect, the relevant construction in Japanese is totally independent of the presence or absence of an additional *wh*-phrase: the grammaticality of (14), for example, is not affected whether, say, its matrix clause subject is a *wh*-phrase or not. Yet, in A. Watanabe's (1992) theory, the Operator of the *wh*-phrase in (14) must move at s-structure out of the complex NP in violation of Subjacency, despite the supposition that *wh*-movement at s-structure is universally constrained by Subjacency.

Then, how can we account for the grammaticality of (14)? The answer lies with the Pied-Piping analysis. A. Watanabe (1992) claims that it is possible to have a [+*wh*] Operator originating in the Spec position of the complex NP containing the *wh*-phrase, and it is this Operator that moves to CP Spec at s-structure.

(29) $[_{CP}\ Op_i [_{IP}$ you are reading $[_{DP}\ t_i$ [that describes who] book]]]

This has virtually the same effect as the large-scale Pied-Piping of the whole complex NP, saving the s-structure movement of *wh* from violating Subjacency. Although A. Watanabe (1992) does not discuss it in detail, the licensing of the Operator originating in Spec DP of the complex NP should be backed by the feature-percolation mechanism sketched by (15).

In this connection, it is instructive to look at a relevant example from Hindi, another *wh*-in-situ language. Dayal (1996) observes that the following example, parallel in meaning to (14) in Japanese, is ungrammatical.

(30) *[kitaabeN jo kis-ne likhiiN] mez par rakhii haiN
books that who-Nom wrote table on kept is
"Who is such that the books s/he wrote are on the table?"

On the basis of this consideration, Dayal (1996: 226) concludes that "Hindi . . . provides clear evidence of Subjacency effects at LF." Dayal further notes that the ungrammaticality of (30) should be attributed to the inapplicability of the Pied-Piping mechanism here, which can be "explained in terms of connectedness in the sense of Kayne (1983), interacting with the feature percolation crucially required for pied-piping to take effect" (1996: 227). And this derives from the structure of relative clause constructions in this language, which Dayal discusses at length in chapter 5 of her book.[7]

In this section, we have seen, drawing much on the analysis of A. Watanabe (1992), that the Pied-Piping analysis at LF is motivated even on the widely held view about the distinction between overt and covert *wh*-movement, only the former of which is supposed to be subject to Subjacency.

5 Quantificational Variability

The focus of this section is on the quantificational nature of *wh*-phrases. It has been recognized, since Kuroda (1965a) and in the traditional studies in Japanese grammar, that the *wh*-phrase in Japanese shows quantificational variability – it can be used as having various quantificational meanings other than as an interrogative pronominal.

This idea has been revived by Nishigauchi (1990), Berman (1991), Lahiri (1991), and Y.-H. Audrey Li (1992), among others, leading to new insights to the nature of *wh*-phrases and constructions.

5.1 The indeterminate pronominal

Wh-phrases in Japanese can be used as parts of various quantificational expressions in combination with particles. It is because of this property that the *wh*-phrase in Japanese is termed *hutei-go* "the indeterminate (pronominal)," for the meaning of the *wh* itself cannot be determined without looking at its environment or something else that occurs with it (see Kuroda 1965a). The following, not intended as an exhaustive list, gives a glimpse of this phenomenon.

(31) *"Indeterminates" in Japanese*

dare "who"	dare-ka "someone"	dare-mo "everyone" "(not) anyone"	dare-demo "anyone"
nani "what"	nani-ka "something"	nani-mo "(not) anything"	nan(i)-demo "anything"

As this paradigm suggests, the particle *ka* yields indefinites with the existential force, *demo* yields "free choice" indefinites, in combination with a *wh*. The particle *mo* yields two outputs combining with *dare* "who": *dāre-mo*, with accent on the first mora, is a universal quantifier, while *dare-mo* with no accent is a negative polarity indefinite.

(32) a. Dāre-mo-ga ki-ta.
-Nom came
"Everyone came."
b. Dare-mo ko na-ka-ta.
come not-Past
"Nobody came."

For discussion of this phenomenon, see Nishigauchi (1990), N. Hasegawa (1991a), and references cited there.

Nishigauchi (1990: chapter 4), inspired by the work of Kuroda (1965a), discusses the "discontinuous" construction involving the *wh*-phrase and the "quantificational particle" (QPt) *mo*.

(33) Dare-ga ki-te mo, hookoku si-te kudasai.
who-Nom come QPt report do please
"For all *x*, if *x* comes in, please report that to me."

The speaker of this sentence is requesting that every visitor should be reported. The *wh*-phrase here, thus, is inducing universal quantification in collaboration with the QPt *mo*.

Nishigauchi (1990) claims that this property of the "indeterminate" should be captured by covert *wh*-movement at LF. On this analysis, the *wh*-phrase undergoes movement to Spec CP headed by *mo*, whose category is C with feature [+*qf*] (from "quantificational force").

(34) $[_{CP}\ wh_i\ [_{IP} \ldots t_i \ldots]\ mo]$
$\qquad$ ↑_____| $\qquad$ [+*qf*]

The idea underlying this approach is that a *wh*-phrase, which otherwise is devoid of any semantic content, picks up its meaning by being moved to Spec CP and being in Spec-head agreement with [+*qf*] C.

A piece of evidence for this *wh*-movement analysis comes from the *wh*-Island effect. The construal of *wh* with *mo* is blocked if it occurs within a *wh*-island headed by the interrogative C *ka*.

(35) ??[Mary-ga nani-o kat-ta ka] wakat-te mo hookoku
Mary-Nom what-Acc bought Q found QPt report
si-te kudasai.
do please
"Even if you find out what Mary bought, please report that to me."
not "For all *x*, if you find out whether Mary bought *x*, please report that to me."

In this sentence, the *wh*-phrase has to be associated with the interrogative C *ka* of the embedded clause, and its association with *mo* at the end of the adjunct clause is impossible: this is a *wh*-Island effect. The only way *mo* can act here is as an adjunct head, meaning "even if (though)."

Nishigauchi (1990) further argues that the Pied-Piping analysis is relevant in this construction as well. Consider the following example, in which a *wh*-phrase occurs inside a complex NP.

(36) [Dare-ga kai-ta hon]-o yon-de mo, hitotu hihyoo-o
who-Nom wrote book-Acc read QPt one review-Acc
kai-te kudasai.
write please
"For all *x*, *y*, *x* a person, *y* a book that *x* wrote, please write a review of *y*."

Nishigauchi's analysis claims that the entire complex NP, identified as a *wh*-phrase due to the local *wh*-movement inside the relative clause and the feature-percolation mechanism, gets moved to Spec CP headed by *mo*. What happens then is that the complex NP, as well as the *wh*-phrase inside, picks up

its quantificational force as a universal quantifier. Thus, notice that in (36) there is a scope interaction not just between a review and an author, but also between a review and a book written by that author.

This is reminiscent of the *unselective binding* phenomenon, discussed by Heim (1982), as seen in the behavior of indefinite NPs.

(37) If a man owns a donkey, he loves it.

Heim observes that this sentence can be interpreted as:

(38) For all *x*, *y*, if *x* is a man, *y* a donkey, *x* owns *y*, then *x* loves *y*.

In Heim's theory, indefinite NPs are restricted free variables and are assigned their quantificational force by a quantificational element in their environment which serves as an unselective binder: in the case of (37), the indefinite NPs *a man* and *a donkey* are both assigned the force of universal quantification by *if*, or the necessity operator associated with it.

Nishigauchi's analysis of sentences like (36) claims that the effect of unselective binding is realized by the Pied-Piping of the complex NP containing *wh*: the quantificational force of this complex NP, as well as the *wh*-phrase inside, is determined as universal by means of the Spec-head agreement with *mo*.

Before closing this section, it is worthwhile to point out that the idea of viewing *wh*-phrases as "indeterminates" has significant implications from universal perspectives. Nishigauchi (1990: chapter 5) shows that the *wh*-phrase in English exhibits this property in sentences like the following.

(39) No matter what he wrote, he sent it to *Linguistic Inquiry*.

This sentence involves universal quantification, and this is effected by the unselective binding of the *wh*-phrase by *no matter*. Thus, Japanese and English show a curious similarity with respect to the quantificational nature of *wh*-phrases: their quantificational force is determined by some external element which serves as unselective binder. Chinese behaves in a different way in this respect. The following example is from Y.-H. Audrey Li (1992).

(40) Chī diǎn shénme zài zǒu ba!
eat (a) bit what then go Prt
"Please eat a little something before you leave."

In Chinese, a *wh*-phrase can serve as an indefinite pronoun on its own, without being construed with some other element in the sentence or clause. In addition, Chinese differs from Japanese and English in that the interpretation of *wh*s as indefinite pronouns is subject to rather severe restrictions in terms of the environments in which they occur: this process favors contexts of uncertainty and inference, while contexts involving factivity generally disallow this

use of *wh*s. Thus, this phenomenon is subject to different restrictions in different languages.

Furthermore, quantificational variability with *wh*s does not seem to hold in all languages. Ouhalla (1996) points out that *wh*s in Hindi and Iraqi Arabic can only be used as interrogative pronouns, not allowing quantificational variability. For an extensive cross-linguistic survey of indefinite pronouns, see Haspelmath (1997).

5.2 Complement types

There is another way in which *wh*-phrases can show quantificational variability (QV). This has to do with the types of complement clauses in which *wh*-phrases occur. Berman (1991) and Lahiri (1991), among others, discuss the issues involving embedded questions as complement to Vs such as *know, remember*, etc., which semantically define the relation between the subject and the *answer* of the embedded question (as opposed to Vs like *wonder*, which define the relation with the question itself). What has been observed along this thread is that the felicitous utterance of sentences like *John remembers who came to the party* is normally taken as meaning that John remembers *all* the people who came to the party. Use of an adverb of quantification modifying the main V affects the quantificational force of the *wh*-phrase, so that *John mostly remembers who came to the party* means John remembers most of the participants.

The following Japanese example exhibits this property.

(41) John-wa [dare-ga paatii-ni kuru ka] (daitai) sit-te iru.
John-Top who-Nom party-to come Q mostly know is
"John (mostly) knows who will come to the party."

Without the Q-adverb *daitai* "mostly," this sentence means John knows every participant of the party, while with the adverb, it means John knows most of them.

In Japanese, *wonder*-type Vs show a peculiar property with respect to the form of the complementizer. *Wonder*-type Vs, but not *know*-type Vs, allow their interrogative complements to be headed by *ka-to*, viz. the interrogative C followed by another C which has hitherto been assumed to correspond to *that* in English.

(42) [Dare-ga kuru ka-to] omot-ta / tazune-ta / utagat-ta / ibukat-ta /
who-Nom come wondered asked doubted wondered
*sit-ta / *osie-ta / *oboe-te-iru, etc.
knew told remembers

One of the Vs, *omow*, is peculiar in that it requires the complement to be headed by *ka-to* in order to behave as an interrogative-taking V. Otherwise, it

selects a non-interrogative complement headed by *to* "that," and behaves in ways parallel with *think* or *believe*. Other *wonder*-type Vs allow their complements to be headed by either *ka* or *ka-to*.[8]

Now, this distinction poses a new research topic in the context of the *wh*-Island effect of Subjacency: complements to *wonder*-type Vs show much stronger resistance to covert *wh*-movement out of them. To see this, consider the following.

(43) *John-wa [Mary-ga nani-o kat-ta ka-dooka-to] dare-ni tazune
John-Top Mary-Nom what-Acc bought whether who-Dat ask
masi-ta ka?
Hon Past Q
"Who did John ask whether Mary bought what?"

This sentence, which differs from Watanabe's example (27) in the choice of the matrix V and the complementizer form, is much less acceptable.[9]

In English as well, the *wh*-Island effect turns out to be stringent with the choice of *wonder*-type V in (11), which allowed the *wh*-in-situ within the *wh*-island to take matrix scope.

(44) Who wonders where John bought *what*?

Unlike (11), this sentence does not have the interpretation elucidated by (11b). The same point is observed in the following, which differs from (12) in terms of the matrix V and the complementizer form.

(45) Dare-ga [Mary-ga doko-de nani-o kat-ta ka-to] omotte
who-Nom Mary-Nom where-at what-Acc bought Q wonder
imasu ka?
be-Hon Q
"Who wonders where Mary bought what?"

Thus, there is a significant generalization: the *wh*-Island effect is stringent with *wonder*-type Vs, and this effect is alleviated only in the complement to *know*-type Vs. Then, where does this difference come from?

In the first place, the fact that the LF-movement of *wh* out of a *wh*-island that is a complement to a *wonder*-type V is impossible suggests that Subjacency effects at LF exist, contrary to the view popular in the current literature. On this assumption, burden of explanation lies rather with the behavior of *know*-type Vs.

Dayal (1996) takes just this approach. Dayal argues that the QV phenomenon with *know*-type Vs should be accounted for in such a way that the complement CP to this type of V is subject to QR (Quantifier Raising) at LF, along the lines of Berman (1991) and Lahiri (1991). Unlike Berman and Lahiri, Dayal claims that only multiple *wh*-complement, which can semantically be considered a set of questions, can trigger QR.[10]

(46) a. Who remembers where John bought what? ⇒
b. $[_{CP}$ where John bought what$]_i$ who remembers t_i

The *wh*-in-situ *what* can be further moved and adjoined to CP.

(46) c. $[_{CP}$ *what*$_j$ $[_{CP}$ where John bought $t_j]]_i$ who remembers t_i

In this position, Dayal claims that *what* can have scope interaction with the *wh* of the matrix clause. In Dayal's analysis, it is this scope interaction with a matrix *wh*, effected by QR, that enables a *wh*-in-situ in a *wh*-island to take matrix scope, in apparent violation of the *wh*-Island effect.

This analysis accounts for the grammaticality of A. Watanabe's (1992) example (27) and its contrast with (43), assuming that the *wh*-Island effects of Subjacency exist uniformly both at s-structure and LF.

6 The Functional Interpretation

One of the central notions in the current study of *wh*-constructions is the *functional* nature of *wh*-phrases, first studied extensively by Engdahl (1986, 1988) and Chierchia (1991, 1992–3). The functional nature of *wh*-phrases is illustrated by examples like the following.

(47) Which book did every author recommend?

Engdahl and Chierchia observe that the answers to (47) can be classified into the three types exemplified in the following.

(48) a. **Individual answer:** *War and Peace.*
b. **Pair-list answer:** Bellow recommended *Herzog*, Heller *Catch-22* . . .
c. **Functional (relational) answer:** *His* most recent book.

The *individual* answer provides the title of the book that every author mentioned. Of particular relevance to the present discussion are the *pair-list* answer and the *functional (relational)* answer. The pair-list answer often takes the form of a list of pairs related by the predicate of the sentence, as in (48b). The functional (relational) answer supplies the value of *wh* as a *function* with the value of the other quantifier as its argument. Thus, the answer *his most recent book* is thought of as a function mapping from an individual (an author) to an individual (his book).[11]

On the syntactic side, Chierchia (1991, 1992–3) considers a *wh*-phrase (or its trace) as consisting of a function and an argument, where the value of the argument may be determined by a quantifier that c-commands it. Cast in the framework of N. Chomsky (1993), elements which have undergone movement are "reconstructed" in their original positions at LF. Coupled with the idea

examined in the previous section that *wh*-phrases are "indeterminate" expressions, serving essentially as restricted variables, this idea can be illustrated by the following representation, which I suggest as an LF for (47).

(47) Which book did every author recommend?

(49) [Which book]$_1$ did [every author]$_2$ recommend [e_2 N]$_1$

This is essentially the position of Hornstein (1995). Here, the "trace" of the moved *wh*-phrase contains an empty NP *e* which is bound by the quantifier in the subject position, together with the nominal content, which I assume is empty. Chierchia (1991, 1992–3) refers to the index assigned to the inner empty category as the "a-index," distinguishing it from the "f-index" assigned to the entire element, now viewed as a function.

On the semantics side, Chierchia views sentences like (47) as questions asking for the function making a certain proposition true. Applied to (47), its semantics is paraphrased as:

(50) Which function *f* is such that every author *x* recommended *f*(*x*)?

Chierchia's (1991) account for his observation that the pair-list interpretation is only possible with a universal quantifier is that, since a pair-list is essentially the extension of the function *f*, the extension can be obtainable only when the generator set is identified. Such a situation is possible only when universal quantification is involved.

Hornstein (1995) extends this line of analysis to multiple *wh*-questions, exemplified by the following.

(51) Who bought what?
John bought a bicycle, Mary a motorcycle, . . .

As this example indicates, a multiple *wh*-question normally expects a list of pairs related by the predicate as its answer, a pair-list answer, which, according to Engdahl (1986, 1988) and Chierchia (1991, 1992–3), is a special case of functional answers. Pursuing this idea, Hornstein (1995) proposes to treat the *wh*-in-situ as a functional *wh*-element, the *wh* in Spec CP being a quantifier generating the set of pairs (the generator). Thus, the LF that Hornstein proposes for (51) is the following.

(52) [*Who*$_1$ [t_1 bought [e_1 N]]]

Hornstein (1995) attributes the fact that multiple *wh*-questions expect pair-list answers to his observation that multiple *wh*-questions require exhaustiveness: a full list of pairs must be provided in a felicitous answer to a multiple *wh*-question. Hornstein claims that this exhaustiveness requirement underlies the pair-list interpretation of multiple *wh*-questions, which normally is available only when universal quantification is involved.

A pair-list interpretation is typically obtained in simple multiple questions like the following.

(53) a. Dare-ga nani-o mot-te kuru no?
who-Nom what-Acc bring come Q
"Who is bringing in what?"
b. Taroo-ga hana-o, Hanako-ga okane-o, . . .
Taro-Nom flower-Acc Hanako-Nom money-Acc
"Taro, flowers, Hanako, money, . . ."

These questions can be naturally answered by listing pairs of individuals related by the predicate of the question sentences.

Nishigauchi (1998) discusses the locality requirement on the binding of the a-index in the functional *wh*: the binding of the a-index takes place most congenially within a local domain.[12] I must use this rather unscientific wording because it appears to be wrong to define the empty category with the a-index as simply anaphoric.

Sentences like the following constitute a case in point.

(54) John-wa dare-ni [Bill-ga nani-o tabe-ta to] it-ta no?
John-Top who-Dat Bill-Nom what-Acc eat-past that said Q
"Who did John tell that Bill had eaten what?"

Although this is a fine sentence of Japanese, most of the speakers of the language that I check it with find it very hard to answer (54) pair-wise.[13]

The "near-anaphoric" nature of the empty category inside the functional *wh* accounts for the fact that a pair-list interpretation of a multiple *wh*-question is most easily available when the multiple *wh*s occur as clausemates. Further, this analysis gives the following prediction. Even if multiple *wh*s are separated by a clause boundary, a pair-list interpretation should be possible if there is an element, anaphoric or pronominal, that serves to link the binding between them. That this prediction is borne out is shown by the following examples.

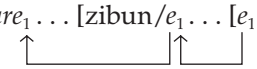
(55) a. Who said Mary would bring in what?
b. *Who*$_1$ said *she*$_1$ would bring in what?

Speakers of English find it easier to answer (55b) pair-wise than (55a). The reason we claim is that the presence of the bound pronoun mediates the binding of the a-index associated with *what*. The following sentence from Japanese shows the same point.

(56) Dare$_1$-ga [zibun$_1$-ga/e_1 nani-o mot-te kuru to] it-ta no?
who-Nom self-Nom what-Acc bring come that said Q
"Who said self would bring in what?"

Here, the presence of the reflexive *zibun* "self" or an empty pronominal serves to link the two *wh*s. To use the notation of linking (Higginbotham 1983, etc.), the following linking pattern results.

(57) *Dare*$_1$ . . . [zibun/e_1 . . . [e_1 N] . . .



However, there is evidence that the binding of the functional *wh* is pronominal in nature, not anaphoric. First, as has been observed by Chierchia (1991, 1992–3) and Hornstein (1995), among others, a functional interpretation involving a quantifier is restricted to sentences in which the quantifier c-commands the trace of *wh*. Thus the following sentence, where the quantifier is c-commanded by *wh* (and its trace), does not have the functional interpretation.

(58) Who recommended every book?

(59) a. Scott Peck.
b. *Its author.

This has led the authors to the analysis of relevant phenomena in terms of Weak Crossover (WCO), arguing for the relevance of the a-index, as in the following representation.

(60) Who$_1$ [e_2 N]$_1$ recommended [every book]$_2$?

On the other hand, notice that the functional interpretation is possible when a definite NP is involved which does not c-command a *wh*-phrase (or its trace).

(61) a. Who recommended *Sophie's World*?
b. I don't know, maybe *its author*.

Here, the speaker who gives the answer need not know that the author is Jostein Garder, or, for that matter, what the book is all about. (S)he is only supplying the relation that involves the book as the answer – a typical functional answer. This is possible, because WCO does not prevent coindexing involving a definite antecedent.[14]

The following is the LF representation that I suggest for the question sentence.

(62) *Who*$_1$ [e_2 N]$_1$ recommended *Sophie's World*$_2$

This coindexing pattern suggests that the nature of the empty category is pronominal, for it is parallel with the following, which involves a pronoun.

(63) *Its*$_1$ author recommended *Sophie's World*$_1$

Coindexing involving an anaphor, such as the reciprocal, in the corresponding position is generally judged as ungrammatical.

(64) **Each other*$_1$'s teachers recommended [John and Mary]$_1$.

Furthermore, the binding of functional *wh*s is highly dependent on contextual information, and it is possible to think of a context which allows a sentence in which pair-list interpretations are possible despite the fact that two *wh*s are separated by a clause-boundary. Such a context may be something like this: imagine Mary has been trying to spread a bad rumor about Bill, her ex-boyfriend, that he is a habitual shoplifter, so she tells a number of people that he has been stealing various things, a different item per addressee. With that context in mind, consider the following multiple *wh*-question.

(65) Mary-wa dare-ni [Bill-ga nani-o nusun-da to] it-ta no?
Mary-Top who-Dat Bill-Nom what-Acc steal-past that said Q
"Who did Mary tell that Bill had stolen what?"

This question, in which the *wh*s are clearly not clausemates, can be readily answered pairwise: she told Jane that he had stolen a video game machine, and Sally that he had stolen a Walkman.

Thus, the "near-anaphoric" nature of functional *wh*s is probably an illusion – while the binding relation is most easily obtainable within a local domain, it can hold across a clause-boundary, provided with appropriate contextual information enabling that binding.[15]

The functional nature of *wh*-phrases has a number of theoretical consequences, broadening the scope of the research in the field. A recent example is Nishigauchi (1998), which examines various aspects of "Multiple Sluicing," first discussed by D. Takahashi (1994), and later by Nishiyama et al. (1996).

(66) a. John-ga [dareka-ga nanika-o katta to] it-ta.
John-Nom someone-Nom something-Acc bought that said
"John said someone bought something."
b. Mary-wa [dare-ga nani-o ka] siri-tagat-te iru.
Mary-Top who-Nom what-Acc Q know-want is
lit. "Mary wants to know who what."

Sluicing is a kind of ellipsis which derives (67b) from (67a), where a clausal unit (IP) is elided, with a *wh*-phrase left behind.

(67) a. John remembers who Mary went out with.
b. John remembers who (with).

While in English only one *wh*-phrase can be left behind by this elliptical process, in the Japanese example (66b), two *wh*-phrases are seen to be left behind.[16] This phenomenon is referred to as "Multiple Sluicing." Nishigauchi's analysis is built on the framework of Chung et al. (1995), in which an LF-Copying

approach to Sluicing is developed. Nishigauchi claims that the functional interpretation is an essential property of the LF-representation related with sentences like (66b), and shows that a number of theoretical consequences follow from this analysis, which bear not only on this particular ellipsis phenomenon but on *wh*-constructions in general.

7 Approaches to *Naze*

One of the long-standing puzzles in the study of syntax and its relation to the logical structure of Japanese is the contrast seen in the following.

(68) a. Dare-ga naze soko-e itta no?
who-Nom why there-to went Q
"Who went there why?"
b. *Naze dare-ga soko-e itta no?
why who-Nom there-to went Q
"(no interpretation)"

The relative ordering of the two *wh*-phrases, one corresponding to *why* in English and the other corresponding to *who*, results in a fairly sharp contrast in grammaticality. Following A. Watanabe (1992), we consider this as a case of "anti-superiority," since *why* in Japanese appears to resist a position "superior" to other *wh*-phrases in the sentence.

Several analyses have been proposed in the literature. A. Watanabe (1992) and Saito (1994a) present analyses based on the ECP applying at the level of LF.

S. Watanabe (1995) is an attempt to account for the contrast in question from a very different angle. He views the ungrammaticality of (68b) as being a case of Weak Crossover (WCO) violations. In so doing, he draws on the theoretical apparatus of Hornstein (1995), whose ideas have been influenced by Chierchia (1991, 1992–3), and makes crucial reference to the notion of the *functional* interpretation of *wh*-phrases. The key notion there is that a *wh*-phrase can be used as a *functional* element, being itself a function mapping an individual to another individual. The main thrust of S. Watanabe's (1995) analysis is that *why* is an inherently functional operator which needs to be c-commanded by another operator at the relevant level of representation. The ungrammaticality of (68b) is explained in terms of the following LF-representation.

(69) [(naze =) *e* N] dare-ga . . .

where the a-index of the functional element *naze* is not c-commanded by the putative generator *dare*, and hence a WCO violation results.

S. Watanabe's analysis accounts for the improvement of the following example, which differs from (68b) minimally in that there is a third *wh*-phrase *doko*.[17]

(70) Naze dare-ga doko-e itta no?
why who-Nom there-to went Q
"Why who went where?"

S. Watanabe's analysis suggests the following LF-representation for this example.

(71) [(naze =) *e* N] dare-ga [(doko e) = *e* N] . . .

Here, the addition of the third *wh*, which serves as another functional element, makes it possible to have this linking (Higginbotham 1983, etc.) pattern: this addition makes it possible for *dare* to serve as generator linked to the third *wh*, a functional element. On the assumption that the empty element in the functional *wh* is pronominal in nature, there is no problem in linking the empty element in *doko* to the empty element within *naze*. Since this representation has two licit linking relations, the grammaticality of (70) is successfully accounted for.

Although S. Watanabe's (1995) analysis suggests a promising line of research towards the understanding of *wh*-constructions, there is one conceptual problem with it. It involves, on the empirical level, the semantic interpretation of (68a): although (68a) is a fine sentence, it does not allow a pair-list interpretation. In other words, it is impossible to answer (68a) by providing pairs each consisting of a person and a reason that that person went there. In contrast, the following sentence, which contains a superficially synonymous expression corresponding to "for what reason" instead of "why," allows for a pair-list interpretation.

(72) Dare-ga donna riyuu-de kita no?
who-Nom what-like reason-for came Q
"Who came for what reason?"

This suggests that *naze* is not a functional element whose a-index can be bound by an individual-level generator, while such a binding is possible with *donna riyuu-de* "for what reason."

This issue is related, I believe, to the analysis of the following English sentence, which lacks a multiple question reading, explored by Williams (1994).

(73) Why did every boy leave?

Williams (1994) suggests that *why*, being an expression of a higher order than the individual-level expressions, cannot be "dependent" on the universal quantifier, an individual level expression, while such dependence is crucially necessary for a multiple question reading to be available. *(For) what reason*, on the other hand, is an individual-level expression and hence the dependence is possible.

Nishigauchi (1997) discusses the problems involving dependency with various *wh*-phrases of higher order, and suggests difficulties, as well as merits, in this line of analysis. The idea of treating *wh*s as functions is likely on the right track, but what needs to be considered is the nature of the function: in the case of *why*, the function involved here is not one mapping individuals to individuals, as with regular individual-level *wh*s, but one mapping an entity of higher order, such as a proposition, to reason, another entity of higher order.

8 Conclusion

This chapter has been an overview of various aspects of quantification and *wh*-constructions in Japanese and theoretical approaches to these and related phenomena. The first half of this chapter has been a survey of syntactic properties of *wh*-constructions in Japanese, where the emphasis has been on various topics centering on the locality restrictions imposed on these constructions, especially Subjacency, which is supposed to subsume the *wh*-Island Condition effects and the CNPC effects. In the latter half of this chapter we directed our attention to ways in which *wh*-constructions behave and contribute to various semantic phenomena related with quantification.

What we have seen in this short trip is the ways in which aspects of *wh*-constructions which at first sight appear to be best characterized as syntactic in nature show up over again when we look at semantic aspects of constructions involving *wh*-phrases. Recall that the Pied-Piping analysis, which was motivated on the syntactic considerations on locality requirements, was relevant when we discussed the quantificational variability (QV) phenomena involving *wh*-phrases as "indeterminates," or that the QV phenomena involving complement types (*know*-vs. *wonder*-type Vs) were crucially relevant in our discussion of the *wh*-Island effects of Subjacency. The functional nature of *wh*-phrases, whose original motivation had been mostly semantic, has proven to be relevant in various areas where key notions have hitherto been such syntactic machinery as the ECP.

This shift of focus, where semantic notions are seen to play more important roles in broader areas than were recognized in the researches of the 1980s, is a relatively new trend in the principles-and-parameters approach. My hope is that this chapter has shown, even partly, how quantification and *wh*-constructions in Japanese contribute to our growing insights into the nature of human language in the new light.

NOTES

1 Takahashi (1993) claims that some cases of fronting of *wh*-phrases in Japanese must be considered as having the properties of *wh*-movement at s-structure.

2 Some speakers of Japanese find it possible to interpret the *wh*-phrase of (4b) as having wide scope. Such an interpretation may be paraphrased by the following English sentence:

(i) Who did John say whether Mary will bring?

We will consider this matter in greater detail below.

3 This matter is discussed extensively by Lasnik and Saito (1984, 1992).

4 N. Chomsky (1973) first discussed the Superiority Condition. See Hornstein (1995) and Comorovski (1996) for recent approaches to this issue.

5 See Lasnik and Saito (1984), among others, for the relevance of this constraint to a variety of languages.

6 Example (27) is a little modified from Watanabe's original example. We will turn to this in n. 9.

7 The discussion is not quite complete until we discuss the apparent absence of the CNPC effect in LF, displayed by the grammaticality of sentences like the following.

(i) Who read a book that criticizes whom?

In these cases, the referential property of the complex NP containing the *wh*-phrase is relevant. If the larger complex NP is definite and referential, the acceptability of this type of example is degraded.

(ii) *?Who read this book that criticizes whom?

If the complex NP is definite and referential, it cannot be raised by QR at LF, which accounts for the ungrammaticality of (ii), for here the only way the *wh*-phrase can move to Spec of the matrix CP is to move out of the complex NP. On the other hand, in (i), the complex NP containing the *wh*-phrase has a chance of being raised by QR at LF, since it is indefinite. The fact that the *wh*-phrase in the complex NP may take the matrix clause is quite likely dependent on the position accorded to the complex NP at LF, which is an adjunct position of the matrix IP. Fiengo et al. (1987), who argue against the Pied-Piping hypothesis, explore an analysis along this line.

8 In Spanish, it has been observed that the complementizer *que* "that" may sometimes precede a *wh*-phrase just in case the governing V involved is a *wonder*-type V, and that this is not possible with *know*-type Vs. Consider the following examples from Rivero (1980).

(i) a. Te preguntan que para
you ask(3p) that for
qué quieres el préstamo.
what want(2s) the loan
"They ask you what you want the loan for."

b. El detective sabe
the detective know(3s)
(*que) quién la mató.
that who her killed(3s)
"The detective knows who killed her."

It has also been noted that, in Spanish, direct questions can be embedded under *wonder*-type Vs while this is impossible with

know-type Vs. This property can also be observed in parallel fashion in Japanese *ka-to*. For discussion along this thread in Spanish, see Lahiri (1991) and references cited there.

9 It should be noted that this is not directly due to the complementizer form: *ka-dooka-to* is possible in:

(i) [Mary-ga kuru ka-dooka-to]
Mary-Nom come whether
tazune-ta / ibukat-ta.
asked wondered

One other thing which should be noted here is that A. Watanabe's own (1992) example was actually the following, which minimally differs from (43) in that the interrogative complementizer involved is *ka-dooka*.

(ii) John-wa [Mary-ga nani-o
John-Top Mary-Nom what-Acc
kat-ta ka-dooka] dare-ni
bought whether who-Dat
tazune masi-ta ka?
ask Hon Past Q
"Who did John ask whether
Mary bought what?"

And this one differs from (27) in the choice of the V: in (27), the V used was *osie* "tell," while here it is *tazune* "ask." Personally, I find (27) more acceptable than (ii), though I do acknowledge that (ii) is high in acceptability.

Thus, what should be observed here is that *tazune* "ask" is a *wonder*-type V just in case the complement to it is headed by *ka-to*; otherwise it can be a *know*-type V. In fact, the following sentence allows a QV interpretation.

(iii) [Dare-ga kuru ka] daitai
who-Nom come Q mostly
tazune-ta.
asked
"(I) mostly asked who will
come."
It is possible to interpret this sentence as: "for most people *x*, I asked whether *x* would come." So the acceptability of (ii) is by no means contradictory to the generalization discussed in the text.

10 This is based on the fact that multiple *wh*-questions such as *Who bought what?* can be answered by a set of propositions: *John bought this, Bill bought that*, etc. We will turn to this issue in the next section.

11 Engdahl (1986, 1988) uses the term "relational" because the function in this sense serves to specify the relation between individuals.

12 The idea that multiple *wh*-questions involve a clausemate condition is expressed in Kuno and Robinson (1972). Also see Sloan (1990) for a similar idea.

13 It is a nontrivial question what it means to have a multiple *wh*-question when you cannot provide a pair-list answer to it. In fact, in my class discussions on this type of topic, I have noticed that some students reject multiple *wh*-questions in Japanese to which they find pair-list answers unavailable. In the case of (54), however, it is possible to obtain a pair-list interpretation depending on contextual information. We will return to this topic later on.

14 This line of analysis may be further extended to cases such as the following, noted by Srivastav (1992), who has a different approach.

(i) a. Who is looking after these children?
b. Their (respective) mothers.

15 Cf. Bolinger (1978), who provides counterexamples to Kuno and Robinson's (1972) clausemate condition.

16 Nishigauchi (1998) discusses some English examples where multiple *wh*-phrases are apparently involved in what appears to be Sluicing.

17 This fact is pointed out in Saito (1994a), where in an appendix he proposes to account for it by the operator-movement analysis of A. Watanabe (1992).