

**More Arguments for the Pied-Piping Analysis
of Wh-Questions in Japanese***

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0. Introduction

Wh-Questions in Japanese do not involve syntactic movement. A wh-word can occur in any A(rgument)-position, no matter how deeply embedded it may appear inside "Islands" (e.g., relative clauses and adverbial clauses). Hence, along with simple questions such as (1a), we obtain sentences such as (1b), (1c), and (1d).

(1) a. Mary-wa dare-ni ai-masita ka.
 -top who-dat meet-polite Q
 'Who did Mary meet?'

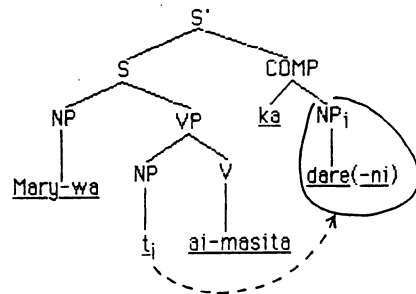
b. Mary-wa [nani-o kaita hito-ni itta no.
 what-acc wrote person-dat met Q
 '(lit.) Mary met the person who wrote what ?'

c. John-wa [Mary-ga nani-o kaku mae-ni] Tokyo-e itta no.
 -nom what-acc write before -to went Q
 '(lit.) John went to Tokyo before Mary wrote what ?'

- d. Mary-wa [John-ga [nani-o kaita] hito-ni au mae-ni]
 what-acc wrote person-dat meet before
 Tokyo-e itta no
 -to went Q
 '(lit.) Mary went to Tokyo before John met the person who wrote
what?'

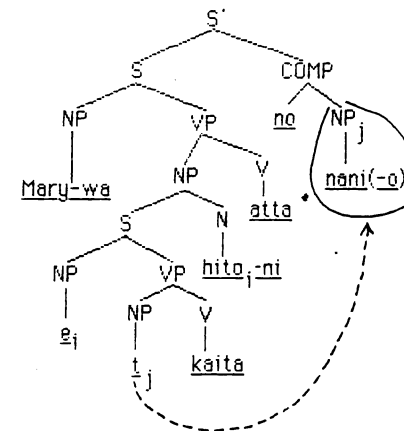
Within the framework of Government-Binding Theory, it is relatively uncontroversial that wh-words in A-positions are subject to LF wh-movement, which moves wh-words to A'-positions, COMP, just as other quantifiers are raised to S-adjoined positions by Quantifier Raising (QR) (cf. May (1977), Huang (1982)). Under this assumption, (1a), for example, is represented as something like (2) in LF.¹

- (2) [_{S'} [_S Mary-wa _{t_i} ai-masita] [_{COMP} ka [_{NP_i} dare(-ni)]]]



It is, however, not straightforward to extend this analysis to wh-questions in which a wh-phrase occurs inside an island, such as (1b), (1c), and (1d). There have been at least two types of analyses proposed in past literature. One is represented by Huang (1982) (also Lasnik and Saito (1984)) where a wh-word alone moves to COMP. In this analysis, the LF representation of (1b), for example, is something like (3).

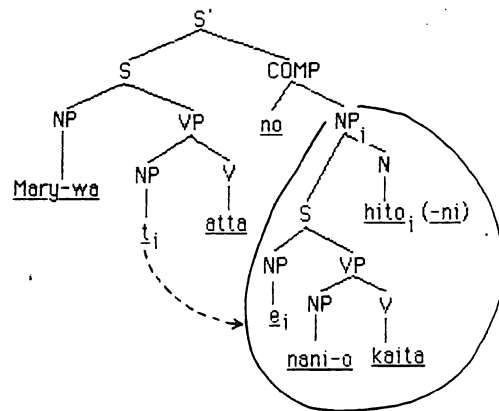
- (3) [_{S'} [_S Mary-wa [_{NP} [_S e_j _{t_i} kaita] hito_j]-ni atta] [_{COMP} no [_{NP_i} nani_i-(o)]]]



The movement of the wh-word which is indicated by a dotted line in (3) apparently disregards island conditions such as Subjacency, for it is out of a complex NP.

The other approach is recently suggested independently by Choe (1984), Nishigauchi (1984), and Pesetsky (1984), where a wh-word inside an island pied-pipes the whole island to COMP. In effect, the movement itself observes Subjacency. Under this analysis, the LF representation of (1b) is something like (4), which is identical to (2), as far as the structural relation between the NP in COMP and its trace, _{t_i}, is concerned.

- (4) [_S [_S Mary-wa _{t_i} atta] [_{COMP} no [_{NP_i} [_S nani-o kaita] hito]-(ni)]]



At least two arguments have been presented in the past to support this pied-piping (PPP) analysis of wh-questions in Japanese. The first argument has to do with the short answer formation of wh-questions and the other with weak crossover (WCO) effects. In the following I will first go over these arguments, showing that neither is quite convincing. Then, I will present other arguments for the PPP analysis which seem to me to be more convincing, by examining the interaction of wh-questions and other quantifiers, WCO effects, and null-pronouns in Japanese.²

1. Previous Arguments for the PPP analysis

1.1. the Short Answer Formation

Choe, Nishigauchi, and Pesetsky note the existence of peculiar restrictions placed on the short answer formation for a wh-question that involves an island. In general, a wh-question, for instance (5a), can be answered in two ways, a long answer in (5b) or a short answer in (5c).

- (5) a. John-wa nani-o tabeta no
 -top what-acc ate Q
 'What did John eat?'
 b. Susi-o tabeta. '(He) ate sushi.'
 c. Susi da.
 copula '(It) was sushi.'

As seen in (5c), the short answer specifies the value of the wh-word of the question and it employs a copula as its predicate. The long answer, on the other hand, not only provides the value of the wh-word but also repeats the verb (see Kuno (1978) for further discussion).

When a wh-word occurs in an island, a short answer that simply supplies the value of the wh-word in the question counterpart is often not acceptable. A preferred answer is either a long answer or a short answer that repeats the entire island. This is illustrated in (6). (6a) can be answered either by (6b) or (6c), but not by (6d).

- (6) a. John-wa [nani-o kaita hito]-ni aimasita ka.
 -top what-acc wrote person-dat meet Q
 '(lit.) What did John meet the person who wrote t?'
 b. Sono hon-o kaita hito-ni aimasita.
 that book
 '(He) met the person who wrote that book.'
 c. Sono hon-o kaita hito desu.
 '(It) was the person who wrote that book.'
 d. ?*Sono hon desu.
 '(It) was that book.'

Choe, Nishigauchi, and Pesetsky argue that this peculiar condition on the short answer formation can be captured if it is assumed that a short answer corresponds to what actually moves into the COMP of its question-counterpart. This means that, in order for (6c) to be a legitimate short answer, the entire island, nani-o kaita hito(-ni) 'the person who wrote what' has to move to COMP in (6a).

Furthermore, the ungrammaticality of (6d) suggests that the movement of the wh-word *nani* alone to COMP is illicit. This leads them to claim that Subjacency is at work for wh-movement in LF.

Questioning an item inside an adverbial adjunct (AD) observes the same restriction, as expected; a much preferred short answer for (1c) is (7a), rather than (7b).

- (7) a. Ryoosin-e-no tegami-o kaku mae desu.
 parents-to-gen letter-acc wrote before copula
 '(It) was before (she) wrote a letter to her parents.'

- b. ??Ryoosin-e-no tegami desu.
 '(It) was a letter to her parents.'

This argument concerning the short answer formation; however, becomes somewhat weakened by the existence of cases where short answers of the form (6d) or (7b) appear to be possible answers to wh-questions that involve islands. Incidentally, Kuno and Masunaga (1986), who argue for a functional analysis for the short answer formation, present many examples such as (8), which show that a short answer is possible. The existence of this kind of example may suggest that the short answer formation may be independent of whether a wh-item pied-pipes the island in which it occurs when wh-movement applies in LF.³

- (8) a. [Nani-o tukutte iru] kaisya-de hataraitte iru n desu ka.
 what-acc make company-at work copula Q
 '(lit.) You work in a company that produces what?'
 b. [Konpyuutaa o tukutte iru] kaisya desu.
 '(It) is a company that produces computers.'
 c. Konpyuutaa desu.
 '(It) is computers.'

(Kuno and Masunaga's (37))

1.2. Weak Crossover Effects

The second argument for the PPP analysis is presented by Choe and Pesetsky, which is concerned with WCO effects. Typical WCO effects are illustrated with the following English examples:

- (9) a. *Who_i does his_i mother love t_i?
 b. *His_i mother loves everyone_i.
 b'. [_S everyone_i [_S his_i mother loves t_i]]

In (9a) and (9b'), which is the LF representation of (9b) after the application of QR, an operator (*who* in (9a), *everyone* in (9b')) binds both its trace *t* and the pronoun *his*. Typical WCO effects are found exactly in this configuration; that is, as schematically shown in (10), a sentence is unacceptable if one operator binds two items, neither of which c-commands the other.

- (10) [Operator_i [... pronoun_i ... t_i ...]]
 where neither the pronoun nor the variable (=trace of the operator) c-commands the other.

Hoji (1985, in press) and Saito (1985), by presenting the sentences of the type in (11) and (12), convincingly argue that LF operations in Japanese invoke WCO effects. In (11) and (12), *e* stands for a null-pronoun.⁴

- (11) a. [_{NP} [_S Hitome e_i mita] hito]-ga John_i-o sukininatta.
 one glance saw person-nom -acc fell-in-love
 'The person who took a glance at (him_i) fell in love with John_i.'
 b. *_{NP} [_S Hitome e_i mita] hito]-ga dare_i-o sukininatta no.
 who Q
 'Who_j is the person who took a glance at (him_i) fell in love with t_i?'

word dare further moves out of the complex NP [... honi]_i to COMP.⁸

It seems, therefore, that neither of the arguments presented in Choe, Nishigauchi, and Pesetsky for the PPP analysis of *wh*-questions is convincing enough. Now, let us turn to other arguments for the PPP analysis.

2. Other Arguments for the PPP Analysis

2.1. Scope Relations

In constructing new arguments for the PPP analysis, let us first go back to the WCO case we just discussed. It seems that the argument advanced by Choe and Pesetsky holds valid, if a *wh*-word that is contained in an indefinite NP cannot move out from it, even if the indefinite NP moves to *S*-adjoined position by QR prior to LF *wh*-movement. Then, LF representation (19) is impossible for (14b). (14b) must be represented at LF as (17) (or (17) with an extra trace in an *S*-adjoined position that is left behind by LF-movement).

I will argue here that with or without the prior application of QR the entire complex NP in (14b) must end up being in COMP. The relevant data are given in (20).⁹

(20) a. Daremo_i-o [nani-o yonda hito]_{-ga} t_i syootai sita no.
 everyone-acc what-acc read person-nom invited Q
 '(lit.) a person who read what invited everyone?'

b. Daremo_i-o [LGB-o yonda hito]_{-ga} t_i syootai sita.
 'A person who read LGB invited everyone.'

In (20), the object NP must be taken as an indefinite NP. This is the only reading available in (20a), since it contains a *wh*-word. Given a quantifier, daremo 'everyone' and an indefinite NP (in the 'scrambled' order), we expect these sentences to be ambiguous. In fact, the declarative (20b) is ambiguous between the following two readings given in (21).

(21) a. [∀y: y = a person] [∃x: x = a person who read LGB] (x invited y)

b. [∃x: x = a person who read LGB] [∀y: y = a person] (x invited y)

Now, let us consider the case of (20a). (20a) is basically the same as (20b), except that it is a question containing a *wh*-word in the indefinite complex NP. If the same QR operation is at work in (20a) as well, and if the *wh*-word alone can move out from the indefinite NP to COMP, we expect there exists scope ambiguity similar to (21) between the quantifier daremo and the indefinite NP [... hito]_i, while the *wh*-word taking the widest scope in each interpretation. In other words, if we allow a *wh*-item to move out from a complex NP irrespective of the prior application of QR, the readings we must obtain in (20a) are those in (22)

(22) a. for which z [∀y: y = a person] [∃x: x = a person who read z] (x invited y)

b. for which z [∃x: x = a person who read z] [∀y: y = a person] (x invited y)

However, this prediction is not borne out from the example (20a). (20a) does not have the 'distributive' reading given in (22a), where the number of people who were invited may correspond to the number of people who invited them. (20a) has only the 'non-distributive' reading given in (22b) where there is only one person who invited everyone. (20a), thus, is a question that seeks, in terms of the book he read, the identity of the person who invited everyone. This reading is exactly what the PPP analysis predicts. If the entire island of nani-o yonda hito(-ga) moves up to COMP, there is no way for daremo to take wider scope than what is in COMP, because COMP always c-commands *S*-adjoined positions.

If the above analysis of the sentences in (20) is correct, questions of the type (20a) must display the relevant ambiguity in languages that exhibit syntactic *wh*-movement.¹⁰ That is, if a language allows a *wh*-item to move to COMP out of an indefinite or quantificational NP in syntax, then two quantificational NPs, one of which contains a trace of the *wh*-item, should exhibit scope ambiguity with respect to each other after the operation of QR. Examples that bear the point are found in English. Observe (23) and (24).

(23) a. Everyone has seen some picture.

b. Everyone has seen some picture of John.

c. Who_i has everyone seen some picture of t_i?

terms of the c-command relation between a null pronoun and a wh-word; i.e., the configuration (13a). This means that if a wh-word alone moves to the matrix COMP, we obtain a WCO configuration (13b) and the (b) examples are wrongly predicted to be ungrammatical. The acceptable status of (26b) and (27b) strongly suggests that they be represented differently from the WCO examples, (11b) and (12b). If we assume the PPP analysis, since wh-words in these examples are in syntactic islands (a complex NP in (26) and an adverbial adjunct in (27)) the (b) sentences of (26) and (27) would be represented as in (28), which obviously is different from the WCO configuration (13b) and cannot be ruled out by WCO.

- (28) [_S [_S ... _{t_i} ... _{e_j} ...] [_{COMP} Q [... wh_j ...]_i]]
 (where _{t_i} c-commands _{e_j})

Thus, the PPP analysis can adequately express the difference in grammaticality between the real WCO cases (e.g., (11) and (12)) on the one hand and the examples given in (26) and (27) on the other. What is to be noted in (26) and (27), however, is not limited to the observation that (28) does not exhibit WCO effects.

In Hasegawa (1984), I noted that there is a peculiar condition placed on the relationship between a null pronoun in a matrix clause and an NP that serves as its antecedent. Given the structure such as (26) and (27), where a null pronoun and its potential antecedent NP are not in a c-commanding relation, the null pronoun cannot refer to the NP in question, if it is an indefinite NP. Hence, though the (a) examples in (26) and (27) are allowed, because the null pronouns refer to definite NPs, *sono ronbun* 'that article' in (26a) and *sono hon* 'that book' in (27a), the examples in (29) and (30) are all not acceptable.

- (29) a. *John-wa [_{AD} Mary-ga hon_i-o yomu mae-ni] yoku _{e_i}
 -top -nom book-acc read before often
 sutete-simau.
 discarded
 'Before Mary reads a book, John often throws (one) away.'
 b. *John-wa [_{AD} usagi_i-ga hatake-o arasita kara] _{e_i} kirai-da
 -top rabbit-nom field-acc damage because hate
 '(lit.) Because rabbits did harm to the field, John hates (them).'

- (30) a. * [_{NP} Nanika_i-o kaita hito]-ga _{e_i} syuppan si-tagatteiru.
 something-acc wrote person-nom publish want
 'The person who wrote something wants to publish (it).'
- b. *John-wa [Mary-ga nanika_i-o yomu mae-ni] _{e_i}
 -top -nom something-acc read before
 sutete-simatta
 discarded
 'Before Mary read something, John had thrown (it) away.'
- c. *John-wa [nanika_i-ga hatake-o arasita kara] _{e_i} kiraida.
 -top something-nom field-acc damage because hate
 'Because something did harm to the field, John hates (it).'

In these examples, a null pronominal in the matrix clause refers to an indefinite NP such as *books* and *rabbits* in (29), and a real quantificational NP such as *someone* and *something* in (30). Whatever the reason for this discrepancy may be between the (a) examples of (26) and (27) and the examples in (29) and (30), the descriptive generalization observed here is that a null pronoun cannot take an indefinite or quantificational NP as its antecedent unless the latter c-commands the former.¹²

Then, an obvious question to ask is why the (b) examples of (26) and (27) are grammatical. We have already seen that they would not be ruled out by WCO, if we assume the PPP analysis. However, we still have to answer why this descriptive condition, that is, a null pronominal cannot be coindexed with an indefinite NP unless the latter c-commands the former, does not hold in these examples. It is not the case that wh-words can escape this condition, since the example in (31), which contains an indirect question inside an adjunct, is as ungrammatical as those in (29) and (30). Nor is it the case that a quantificational NP in general is subject to this condition, since the examples in (32) are grammatical sentences, as noted in Nishigauchi (1986). Here, the contrast that is crucial to our discussion is ungrammatical (31) vs. grammatical (26b) and (27b), and ungrammatical (30) vs. grammatical (32).

- (31) *John-wa [Mary-ga [nani_i-ga omosiroi ka] siraberu mae-ni]
 -top -nom what-nom interesting Q investigate before
 e_i sutete-simatta.

discarded

'Before May investigated what_i would be interesting, John had thrown (it_i) away.'

- (32) a. [t_j Dono ronbun_i-o kaita] hito_j-mo e_i syuppan si-
 which paper-acc wrote person-also publish-
 tagatteiru.
 want

'(lit.) A person who wrote whichever paper_i wants to publish (it_i).'

'For any x, y, x a person, y a paper that x wrote, x wants to publish y.'

- b. John-wa [Mary-ga dono hon_i-o katte-mo] e_i yomi-
 which book-acc buy-also read-
 tagaru
 want

'Whichever book_i May may buy, John wants to read (it_i).'

It is originally noted in Kuroda (1965) that mo is a scope marker for quantificational expressions just like ka is for wh-expressions. More precisely, the same quantificational expression acts as a (universal) quantifier if it is bound by mo and as a wh-word if it is bound by a question morpheme ka. Ohno (1983) and Nishigauchi (1986) note that even when mo and its corresponding quantificational expression are separated as in (32), the entire NP or adjunct that is headed by mo behaves as a quantifier. Then, the entire NP, dono ronbun-o kaita hito-mo, in (32a) and the adjunct, Mary-ga dono hon-o katte-mo, in (32b) are raised to S-adjoined position by QR, which gives rise to a structure something like (33).

- (33) [S [... Q_i ...]_j [S ... t_j ... e_i ...]] (where t_j c-commands e_i.)

Nishigauchi, in an attempt to account for the contrast that is essentially the same as the one between ungrammatical (30) and grammatical (32), notes that a null-pronoun can take a quantificational expression as its antecedent, if the latter 'indirectly' binds the former. The notion of 'indirect binding' is basically the

same as what is presented in Haik (1984) and I roughly approximate it as (34b).¹³

- (34) a. A null-pronoun can referentially dependent on a quantificational expression, if the latter indirectly binds the former at LF. (Cf. Nishigauchi (1986))

- b. X indirectly binds Y, if the trace of Z c-commands Y and X is contained in Z.

This account of the contrast between (30) and (32) automatically applies to the contrast observed between grammatical (26b) and (27b) and ungrammatical (31), if we assume the PPP analysis. Note that the structure given in (28), that is derived through the application of LF wh-movement in the pied-piping fashion, is essentially the same as (33), and the condition in (34) rules it in. In the example (31), on the other hand, LF wh-movement moves the wh-word to the lowest COMP, where ka is, and the trace of that wh-word does not c-command the null-pronominal; hence, coreference is not allowed.

In this section so far, two arguments have been presented for the PPP analysis based on the grammatical status of the (b) examples in (26) and (27). That is, the PPP analysis can provide explanations for (i) why these sentences are not subject to WCO and (ii) why these examples are not subject to the 'indirect binding' condition in (34).

The condition (34), furthermore, can provide an account for the ungrammaticality of the (b) sentences of the following pairs, which may otherwise be considered as counter-examples to the PPP analysis of wh-questions.

- (35) a. ?Mary-wa [konsaato-de e_i mita ato de] [John_i-no rekoodo]-o
 -top concert-at saw after 's record-acc
 katta
 bought
 'Mary bought John_i's record, after she saw (him_i) at the concert.'

- b. *Mary-wa [konsaato-de e_i mita ato de] dare_i-no rekoodo-o
 who
 katta no.
 '(lit.) Mary bought whose_i record, after she saw (him_i) at the concert?'

interesting issues raised by Huang (1982) and Lasnik & Saito (1984) in which the non-PPP analysis is adopted (e.g., asymmetries between adjuncts and complements). See Pesetsky (1984) and Nishigauchi (1984, 1986) for relevant discussion.

³ Nishigauchi (p.c.) pointed out that the existence of the grammatical (8c) does not necessarily constitute counter-evidence to the PPP analysis, if short answers such as (8c) can be derived from longer short answers such as (8b) under certain conditions. Under this view, the contrast between (6d) and (8d) is explained as follows. (6d) is not allowed because, as discussed above, *nani* cannot move to COMP by itself in its question counterpart (6a) due to Subjacency and also because (6c), for some reason, cannot be truncated into (6d). As for (8c), Subjacency prohibits *nani* from moving into COMP in (8a), just like the case of (6c); however, it can be derived from (8d) for reasons that are not clear (but may very well be relevant to what Kuno and Masunaga argue for). Then, the types of examples that are truly against the PPP analysis (with a truncation rule) are those in which longer short answers such as (6c) and (8b) are ungrammatical but shorter short answers such as (6d) and (8c) are grammatical. Kuno and Masunaga present examples that come close to such a case; however, the longer short answer (ib) is not ungrammatical though the shorter one (ic) seems more preferred.

(i) a. [Nan-nin atumeta] hito-ga tadade ryokoo dekiru no desu ka.
how-many gathered person-nom free travel can copula Q
'(It.) A person who has recruited how many members can travel free of charge?'

b. ?20-nin atumeta hito desu.
'(It) is those who have recruited 20 members.'

c. 20-nin desu.
'(It) is 20 members.' (Kuno and Masunaga's (41))

Regardless of whether examples such as (8) and (i) are counter-examples to the PPP analysis, if the truncation process is needed to maintain it, we have to say that there does not seem to be direct correspondence between the availability of short answers and the pied-piping operation in question counterparts.

⁴ In Hasegawa (1984), I argue that a null pronoun in A-position is not a pure pronominal, *pro*, but either PRO (in a subject position) or a variable bound by a null-operator (in a subject or object position). The examples that follow which contain such null NPs can be analyzed in terms of this proposal; however, to do so is not the immediate concern of this paper. For the sake of simplicity, I will represent them as *e* and adopt the term 'null-pronominal'. The reader is referred to Hasegawa (1984, 1986) for the analysis of WCO sentences with such 'null pronominals' within the framework of Hasegawa (1984).

⁵ This does not mean that the non-PPP analysis cannot rule out (14b) and (15b). Whether the (b) examples of (11), (12), (14), and (15) can be uniformly ruled out is dependent on how the phenomena of WCO are analyzed and/or what is considered to be subsumed under "WCO". In this paper, I simply identify "WCO" with the configuration (10), (13b), or (13c), which is an 'unmarked' case of WCO. See Koopman & Sportiche (1982/83), Higginbotham (1983), Safir (1984), Saito & Hoji (1983) and references cited there for further discussion on WCO effects and analyses for them.

⁶ This restriction is considered to be derived from the Specificity Condition that proscribes a definite NP from containing a free variable (cf. Fiengo and Higginbotham (1981), Huang (1982)). Thus, in order for this condition to rule out (18b), the wh-word *dare* must be allowed to move out from the definite NP so as to create a variable inside the NP. Note that under the PPP analysis where Subjacency is assumed to be at work does not allow such movement of *dare* either in (18b) or in (18a). That is, the Specificity Condition in its original form cannot be employed to explain the contrast between (18a) and (18b). See Nishigauchi (1984) for relevant discussion.

⁷ The assumption here is that indefinite NPs are subject to QR, just like quantifier expressions are. This assumption can be substantiated by the fact that indefinite NPs create WCO effects similar to quantifier expressions, as seen below.

- (i) a. *Its owner saw every picture.
b. *?Its owner saw a picture.

⁸ It seems that Nishigauchi's argument here is not quite complete. It is not clear whether the NP that contains a wh-item is an indefinite

NP or a non-specific NP and how relevant differences in types of NPs are to LF operations such as QR. More concretely, his point does not seem able to stand if the complex NP in (14a) and (15a), Mishima-ga kaita hon, can mean not only 'the book that Mishima wrote' but also 'a book that Mishima wrote' or 'books that Mishima wrote'. My intuition fails to make a clear judgment; however, it seems that these 'indefinite' readings are possible. If so, the factor that differentiates the (b) examples from the (a) examples in (14) and (15) is the presence or absence of a wh-item in a relative clause. If we assume that 'indefinite' NPs do not have to move in LF or they are not subject to LF operations unless they are in the scope of real quantifiers (cf. Heim (1982)), then Choe's and Pesetsky's argument may hold.

An interesting fact pointed out to me by Hajime Hoji (p.c.) is that (14a) and (15a) become far less acceptable (or rather, ungrammatical) if the tense is present and the adverb itumo 'always' is added, which forces the indefinite non-specific interpretation on the matrix NP [Mishima-ga kaita hon]. This fact seems to suggest the following. The NP that contains a wh-phrase is obligatorily subject to LF operation; wh-movement (or both QR and wh-movement). The NP that does not contain a wh-item may be definite (in this case, LF operations are irrelevant), or indefinite. When it is indefinite, it may not undergo QR unless it acquires true quantifier status; i.e., it is in the context of a quantifier such as itumo. See Heim (1982) and Nishigauchi (1986) on relevant discussion on indefinites.

⁹ The reader may wonder why a scrambled sentence (rather than the one with the basic subject-object order) is presented here to illustrate the point. As noted in Kuroda (1969, 1970), and recently discussed in Hoji (1985) and Nishigauchi (1986), scope ambiguity does not obtain in sentences with the basic word order. Ambiguity does exist in 'scrambled' sentences, however. As will be seen shortly, it is crucial that (20b) is ambiguous with respect to scope relations between the subject NP and the object NP. Hence, we need a scrambled sentence. Furthermore, as Hoji (1985) observes, if a quantificational expression such as daremo 'everyone' c-commands a wh-question word such as nani 'what', an ungrammatical sentence results, if it is of the basic word order. In a 'scrambled' sentence, however, no such restriction is required. Hence, unless we use 'scrambled' sentences in (20), the point I will make may not hold.

¹⁰ This was pointed out to me by Mamoru Saito (p.c.). The example (23c) is due to him.

¹¹ As discussed in May (1985), (i) displays an ambiguity with respect to which operator, either what or everyone, takes scope over the other.

(i) What did everyone buy?

In one reading, (i) asks for the identity of the object such that everyone bought it; and in the other, it asks of each individual what it is that that person bought. On the former reading, (i) is answered by (ii) and on the latter, (iii) is appropriate.

(ii) Everyone bought a car.

(iii) John bought a car, Mary a computer, and Bill a TV.

If a quantifier is in the object position, it does not exhibit this kind of ambiguity with respect to the scope of the wh-item in COMP. This is exemplified by the non-ambiguous (iv).

(iv) Who bought everything?

What did John buy for everyone?

Thus, if my analysis of the Japanese examples (20) and (21) is on the right track, (23c) is expected to have the following three readings.

- (v)a. for which z [$\forall y: y = \text{a person}$] [$\exists x: x = \text{a picture}$] (y has seen x of z)
- b. for which z [$\exists x: x = \text{a picture}$] [$\forall y: y = \text{a person}$] (y has seen x of z)
- c. [$\forall y: y = \text{a person}$] for which z [$\exists x: x = \text{a picture}$] (y has seen x of z)

In (va) and (vb), the relative scope of everyone and some picture is at issue, while the wh-phrase takes the widest scope. These two readings are the ones that are relevant to our discussion. The third reading, (vc), contrasts with (va); the relative scope in question is between who and everyone, while some picture takes the narrowest scope. There are people who report that (23c) is in fact ambiguous in these three ways.

¹² In Hasegawa (1984), where a null NP in object position is claimed to be a variable bound by an null operator, I attempt to derive this restriction from the condition that a pronominal (which a null operator may be) cannot refer to an NP that it c-commands. See Hasegawa (1984, 1986) for more details.

¹³ As stated in (34), I consider that the notion of 'indirect binding' and relevant conditions hold at LF, though Haik (1984), by elaborating scope indexing algorithm, states the relevant definitions and conditions in terms of S-structure.

As Mamoru Saito (p.c.) pointed out to me, (34b) is not adequate, since it wrongly allows the following ungrammatical sentences where *nani* 'what' in an indirect question and a null pronominal are coindexed.

(i) a. *Dare-ga [Mary-ga nani-o katta *ka*] sirabete *mo*, *e*_i
 who-nom -nom what-acc bought Q investigate-also
 mitukaranai
 be-found-not
 '(lit.) No matter who investigates what_i Mary bought, (it_i) won't
 be found.'

b. *[Dare-ni [Mary-ga nani-o katta *ka*] kiita]hito-ga *e*_i
 who-dat. -nom what-acc Q asked person-nom
 te-ni ire-tagatteiru no.
 hand-det enter-want Q
 '(lit.) The person that asked whom what_i Mary bought wants to
 obtain (it_i)?'

Obviously, what is wrong with these examples is that a scope indicator for *nani* (*ka* in the COMP of the indirect question) does not c-command a null-pronoun at S-structure, though the entire adjunct (in (ia)) and the relative clause (in (ib)) will be raised by QR and LF wh-movement, respectively. The definition of "indirect binding" in (34b) must be changed into something like (ii).

(ii) X indirectly binds Y, if the trace of Z c-commands Y and X is contained in Z, where Z is headed by a scope indicator for X; a scope indicator being *mo* (for universal quantification), *ka* (for existential quantification), or [+wh] feature.

Exact details of relations between scope indicators and quantificational expressions need to be more carefully discussed. Furthermore, (ii) is dependent on how the pied-piping operation is formulated. See Hasegawa (1986) and Nishigauchi (1984, 1986) for relevant discussion.

¹⁴ The sentences of the type (35) and (36) are discussed in Hasegawa (1986) and a different account is suggested there. That is, the representation (37) can fall under the WCO case if the WCO condition incorporates the following condition as suggested in Saito and Hoji (1983) and Saito (1985).

- (i) A pronoun cannot have a quantifier NP in A'-position as its direct antecedent.

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