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 (argument)-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 atta no.
   what-acc wrote person-dat met Q
   "(lit.) Mary met the person who wrote what?"

   -nom what-acc write before -to went Q
   "(lit.) John went to Tokyo before Mary wrote what?"

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   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) [5 Mary-wa 1 ai-masita] [COMP ka [COMP dare(-ni)]]

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, 1, is concerned.
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.

1. Previous Arguments for the PPP Analysis

1.1. the Short Answer Formation

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. Ryoozin-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. ??Ryoozin-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

   what-acc make company-at work copula Q
   '(it) You work in a company that produces what?'

   '(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 does his mother love t1?

    b. *His mother loves everyone,

b'. [everyone t2 his mother loves t1]

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 t1 and the pronoun hi. 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[... pronoun1 ... t1 ... t2]...]

where neither the pronoun nor the variable (=trace of the operator) c-commands the other.

Haji (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), a stands for a null-pronoun.4

   one glance saw person-nom -acc fell-in-love
   'The person who took a glance at him fell in love with John.'

   who Q
   'Who is the person who took a glance at him with?'
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(14) a. John-wa [Mary-ga, post Mary read before the book-x acc discarded
     read
     ‘John read the book that Misima wrote before Mary bought (it).’
     color]
     color
     color

b. *John-wa [Mary-ga, post Mary read before the book-x acc discarded
     read
     ‘John read the book that who wrote before Mary bought (it).’
     color]
     color
     color

(15) a. John-wa [Mary-ga, post Mary read-want person-dat acc sent
     book-
     ‘John sent the book that Misima wrote to the person who
     color]
     color
     color

b. *John-wa [Mary-ga, post Mary read-want person-dat acc sent
     book-
     ‘John sent the book that who wrote before Mary bought (it).’
     color]
     color
     color

Since the contrast between the (a) examples and the (b) examples are
similar to what we have observed in (11) and (12), it seems reasonable to
attribute the ungrammaticality of the (b) examples to
WCO. Then, we expect the LF representations of the (b) examples are
of the WCO configuration in (13b). If a question word alone moved to
the COMP of the matrix S, however, the resulting LF representation
would be something like (16), which is distinct from (13b).

(16) [[...[[...]]...]]

Therefore, it seems that the non-PPP analysis would not be able to
provide a unified explanation for the ungrammatical status of (11b),

Assuming that the wh-words (dare in (11b) and nanji (12b)) are raised to
COMP by LF wh-movement and the quantifier expressions (dare-ga in
(11c) and nanji (12c)) by QR, we obtain the LF representations (13b)
and (13c), which are basically the same as (10), abstracting away
from the linear order of the relevant items.

(13) a. At S-Structure

b. At LF (after wh-movement)

c. At LF (after QR)

Let us now consider the types of examples that are provided by
Choe and Pesetsky to motivate the PPP analysis. Observe (14) and
(15). The (a) examples, which do not involve wh-words, are
grammatical whereas the (b) examples, which are with wh-words, are
ungrammatical.

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(12b), (14b), and (15b). On the other hand, as Chae and Pesetsky argue, if a wh-word pied-pipes the entire island; *dare-ga kaita hon ‘the book that who wrote’ in (14b) and (15b) to COMP, the LF representations of the (b) examples of (14) and (15) will in fact be of the WCO configuration (13b). Thus we can rule (14b) and (15b) ungrammatical on a par with other WCO cases. Under this analysis, (14b), for example, is represented as (17) in LF.

(17) [if John-wa [AD Mary-ga [NP kau mae-ni]] yonda] [comp no [NP [dare-ga kaita hon]]]
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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], 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 [\(\forall y: y = \text{a person}\) [\(\exists x: x = \text{a person who read z}\)] \((x \text{ invited y})\)]

b. for which z [\(\exists x: x = \text{a person who read z}\) [\(\forall y: y = \text{a person}\)] \((x \text{ invited y})\)]

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 PP analysis predicts. If the entire island of \(\text{nani-o yonda hito(-ga)}\) moves up to COMP, there is no way for \(\text{daremo}\) to take wider scope than what is in COMP, because COMP always c-commands S-joined 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. 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 has everyone seen some picture of?
can pied-pipe the entire complex NP into COMP by LF wh-movement (i.e., the LF representation (19) is not allowed for (14b)). Thus, the complex NP that contains a wh-word ends up always taking scope over the other quantifier in the sentence. Therefore, (20a) is not ambiguous.

2.2. Indirect Binding

The argument that will be presented in this section is concerned with the configurational relationship between an empty pronominal and a wh-word. As we have already observed in (11) and (12), if a wh-word (or a quantifier) and a pronominal to be construed as its variable occur in mutually non-c-commanding positions, the WCO configuration obtains and the sentence must be ruled ungrammatical. Along with the WCO examples in (11) and (12), we can construct the following examples by reversing the S-structure positions of a null-pronoun and the NP that serves as an antecedent for it, which may or may not be a wh-word.

(26) a. [Sono ronbun-o kita] hito-ga si syuppan si tagatteiru. 
   that-paper-acc wrote person-nom publish-want
   "The person who wrote that paper wants to publish (it)."

b. [Nani-o kita] hito-ga syuppan si tagatteiru no. 
   what Q
   "(lit.) The person who wrote what wants to publish (it)?"

(27) a. John-wa [Mary-ga sono honi-o yomu mae-ni] 
   -top -nom that book-acc read before 
   surtete-simatta. 
   discarded
   "Before Mary read that book, John had thrown (it) away."

   what Q
   "(lit.) Before Mary read what, John had thrown (it) away?"

What is interesting in these examples is that they do not exhibit WCO effects. Note that the S-structure representations of the (b) examples in (26) and (27) are the same as those in (11) and (12) in
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 adversarial 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.

\[ [s \ldots [\ldots \ldots \ldots ]]_{\text{COMP}} \{ \ldots \text{wh}, \ldots \ldots \} \]  

where \( \text{wh}_j \) 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 (26) does not exhibit WCO effects.

In Hasegawa (1984a), 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, sōnō rōbun ‘that article’ in (26a) and sōnō hon ‘that book’ in (27a), the examples in (29) and (30) are all not acceptable.

(29) a. *John-wa [\( \text{Ao} \) Mary-ga hon-y-o yomu mae-ni] yoku  \( e_1 \)  
\[-nom book-acc read before often \]
sute-te-simattat

‘Before Mary reads a book, John often throws (one) away.’

b. *John-wa [\( \text{Ao} \) usagi]-ga hatake-o arasita kara  \( e_1 \) kiraida  
\[-top rabbit-nom field-acc damage because hate \]
(lit.) Because rabbits did harm to the field, John hates (them).’

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.\(^2\)

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

(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 [konsaito-de ga] mita ato de [Johny-no rekoodo]-o
top concert-at saw after 's record-acc
katta
bought
'Mary bought Johny's record, after she saw (him) at the concert.'

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
against the non-PPP analysis. As I have mentioned in fn. 2, this paper is not concerned with the context where the non-PPP analysis is advanced; namely, asymmetries between complements and adjuncts, with respect to wh-questions. Further investigation on this issue is called for to determine whether the PPP analysis can in fact be regarded as an optimal analysis for wh-questions in Japanese.

FOOTNOTES

1. I would like to thank Hajime Hofl, Tatsuke Nishigauchi, and Mamoru Saito for valuable comments on earlier versions of this paper.

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1. Tree diagrams are provided for clarification purposes. I do not make structural distinctions in trees between the subject GA marked NP and the topic WA phrase whose grammatical function is subject. I am not concerned with such issues as the following: whether relative clauses in Japanese involve S or S'; whether Move Φ (movement of a null operator) is responsible in deriving relative clauses; whether the head noun of a relative clause is NP or N; etc. Furthermore, this paper does not address the issue of exactly how the pied-piping operation to be discussed shortly is formally achieved. See Hasegawa (1984, 1986), Nishigauchi (1984, 1986) for relevant discussion.

2. It is not a purpose of this paper to compare the two types of analyses for wh-questions in Japanese; namely, the PPP analysis and the non-PPP analysis, and choose one analysis over another. But, rather, I would like to examine some phenomena that involve wh-words and show that the PPP analysis provide simple explanations for them. It is beyond the scope of this paper to go into various
interesting issues raised by Huang (1982) and Lasnik & Saito (1984)
in which the non-PPP analysis is adopted (e.g., asymmetries between
adverbs and complements). See Pesetsky (1984) and Nishigauchi
(1984, 1986) for relevant discussion.

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 (6a), 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 (6b) 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 (1b) is not ungrammatical though
the shorter one (1c) seems more preferred.

(1) a. [Nan-nin atumeta hito-ga tadade ryoko dekiru no desu ka how-many gathered person-nom free travel can copula Q
't(1)t) A person who has recruited how many members can travel
free of charge?'

b. ?Nan-nin atumeta hito desu.
't(1)t is those who have recruited 20 members.'

c. 20-nin desu.
't(1)t is 20 members.' (Kuno and Masunaga's (41))

Regardless of whether examples such as (8) and (1) 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 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 g and adopt the term 'null-pronominal'. The reader is referred
to Hasegawa (1984, 1986) for the analysis of WCO sentences with
such 'null pronouns' 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 & Haji
(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 prescribes a definite NP from containing a free
variable (cf. Fienberg 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 of 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

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.

(1) a. *Its owner saw the 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), Misima-ga kaita hon, can mean not only 'the book that Mishima wrote' but also 'a book 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 Che's and Pesetsky's argument may hold.

An interesting fact pointed out to me by Hajime Hojii (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 [Misima-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.

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 Hojii (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 Hojii (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.

(via) for which z [∀y: y = a person][∃x: x = a picture] (y has seen x of z)

b. for which z [∃x: x = a picture][∀y: y = a person] (y has seen x of z)

c. [∀y: y = a person] for which z [∃x: x = a picture] (y has seen x of z)

In (via) 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 pronounal (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 pronounal are coindexed.

(1) a. *Dare-ga [Mary-ga nani-o katta ka] siraete no. [lit.] No matter who investigates what, Mary bought, (it) won't be found.

b. *[Dare-ni [Mary-ga nani-o katta ka] kikita hito-ga e. [lit.] The person that asked whom what, Mary bought wants to obtain (it)?

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 (1a)) and the relative clause (in (1b)) will be raised by QR and LF wh-movement, respectively. The definition of `indirect binding' in (34b) must be changed into something like (1i).

(1i) 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 [w-h] feature.

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.

REFERENCES


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