

A Remark on Scope Principle and Polarity Expressions in Japanese*

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0. Introduction

In this paper, we will be concerned with the scope properties of different classes of quantified expressions (henceforth, QEs) and the types of LF-movement they are subject to. To begin with, we will extend the Quantifier Raising (henceforth, QR) and the Scope Principle along the line of May (1985) to the instances of scope interaction between a quantified phrase (henceforth, QP) and a negation operator or a modal operator. It will be shown that a negation operator and a modal operator, which we assume to lie under INFL at S-Structure, are subject to QR and hence must obligatorily be raised at LF. Then, turning to polarity expressions (henceforth, PEs), we will argue that certain differences in scope properties between the two classes of PEs come from different properties of their licensing morphemes. There we will see that the PEs licensed by a morpheme under C (henceforth, C-morpheme) move into CP-SPEC while those licensed by a morpheme under I (henceforth, I-morpheme), in particular Negative Polarity Expressions (henceforth, NPEs), must be adjoined to IP. We will also point out a difference between the NPEs in Japanese and *any* in English. Finally, we will consider how to express a structural condition between *NEG* and a NPE at LF.

1. A Review of May's Scope Principle

Let us briefly review the Scope Principle in this section. In May (1977), the construal ambiguity of the scope order of *some* and *every* in (1) was attributed to the possibility of deriving two different LF structures in (2) from the S-Structure (1):

(1) Someone loves everyone.

- (2) a. [_s someone₁ [_s everyone₂ [_s t₁ loves t₂]]]
b. [_s everyone₂ [_s someone₁ [_s t₁ loves t₂]]]

In May(1985), he claimed that QR must observe the Empty Category Principle (henceforth, the ECP) so that only (2b) should be the legitimate LF of (1) because t_1 in (2a) is not adjacent to its antecedent-governor *someone*.¹ He then proposed the Scope Principle, which applies to (2b) and derives the two possible readings observed in (1). The definition of the Scope Principle, although stated somewhat roughly for the sake of the discussion that follows, is presented as follows:

(3) Scope Principle:

Operators are freely assigned a relative scope order iff they mutually α -command.²

Let us assume that S is an instance of maximal projections, namely IP, and see how the Scope Principle applies to (4), another LF of (1):

(4) [CP [IP everyone₂ [IP someone₁ [IP t₁ loves t₂]]]]

The Scope Principle applies to the above structure and assigns free scope orders to the two QPs, since the two adjoined QPs are both dominated by the same set of maximal projections (in this case, a single membered set, though), CP:

A VP-adjoined QP, however, cannot interact with an IP-adjoined QP in scope, as the following example shows:

(5) Who bought everything for Max? (May(1985))

In this example, the WH-phrase *who* can take scope over the QP *everything*, but interpreting them in the reverse order is impossible. We can account for this nonambiguity by saying that *everything* must be adjoined only to VP in order for *who* to achieve the antecedent-government of its trace, and that from that position, it is impossible for the QP to α -command the WH in CP-SPEC:

(6) [CP who₁ [IP t₁ [VP everything₂ [VP buy t₂ for Max]]]]

Let us now turn to examine the scope interaction of QPs in Japanese:

- (7) a. *dareka-ga daremo-o aishiteiru*
 someone-NOM everyone-ACC love
 "Someone loves everyone."
 b. *daremo-o dareka-ga aishiteiru*
 "Everyone, someone loves."

The sentence in (7a), the literal translation of the English sentence (1) into Japanese displays the same ambiguity as in (1). The same is true of (7b), where the object QP *daremo-o* has been scrambled to the initial position of the sentence.

Kuroda(1970) and Hoji(1986) have noted that there is no ambiguity in the scope order of a subject QP and an object QP in such nonscrambling cases as (7a), and that if the linear order of QPs in S-structure is different from that in D-Structure, as in such scrambling cases as (7b), the ambiguity is observed.

However, although it takes some effort to obtain the *every > some* reading in (7a), it is possible to derive the relevant two readings in the sentence, just as it is in (7b). We will be convinced of this when we compare (7a) with the following example in which the relevant universal QP is embedded in the complement clause. Consider:

- (8) [*dareka-ga* [*daremo-ga* Mary-o aishiteiru to]
 someone-NOM everyone-NOM Mary-ACC love
 itta
 said
 "Someone said that everyone loves Mary."

Because the scope of QPs is strictly clause-bound, it is almost impossible to construe *daremo-ga* as taking a broad scope over the matrix subject *dareka-ga*. Comparing (7a) with (8), we can notice the contrast in the possibility of obtaining the broad scope construal of the universal QP. I believe this contrast is a real one, so let us

maintain that the Scope Principle safely applies in Japanese as well as in English.

2. An Extension of the Scope Principle

In this section, we will see that the Scope Principle can account for the scope interaction between a QP and a negation or a modal operator. Firstly, let us examine some relevant facts.

2.1. Scope Interaction of Quantifiers, Negation, and Modal Operators

The sort of ambiguity observed in a multiply quantified sentence as (1) can also be found in sentences involving negation operators. Consider the following examples containing a QP and a negation operator:

- (9) a. Everyone doesn't walk to school.
 b. John didn't talk to every student. (Ladusaw (1979))

Both of the sentences are interpretively ambiguous between a complete negation and a partial negation reading.³ (9a), for example, can be construed either as "*No one walks to school*" (*every* > *not*) or as "*Not everyone walks to school.*" (*not* > *every*).

The same sort of ambiguity in (9) can be observed in Japanese as well. Consider the followings:

- (10) a. *daremo-ga hashira-nakatta* (koto)
 everyone-NOM run NEG-PAST
 "Everyone didn't run."
 b. *John-ga daremo-o ijime-nakatta* (koto)
 John-NOM everyone-ACC bully NEG-PAST
 "John didn't bully everyone."

Although I admit it takes some effort to obtain a partial negation reading in either case, it is certainly possible to obtain both of the relevant readings in Japanese as well.

Consider the scope interaction of a QP and a modal operator,

then. Here, too, the scope interaction does hold between a QP and a modal operator, both in English and in Japanese:

- (11) a. Each of those candidates may win in the election.
 b. John should solve one of these problems.
 (Kroch (1974))
- (12) a. John-ga migime -dake-o tsumu-reru (koto)⁴
 John-NOM right eye only-ACC close CAN
 "John can close only his right eye."
 b. daremo-ga sono-shiken-ni gookaku-dekiru (koto)
 everyone-NOM the test DAT pass CAN
 "Everyone can pass the test."

(11a), for instance, can be interpreted either as "For each candidate there is some possibility that he wins. (each > may)" or as "There is some possibility that all of the candidates win in the election (may > each)", which is somewhat pragmatically weird. Likewise, the Japanese sentence (12a) reads ambiguously between "John can wink (his right eye). (can > only)" and "John can shut his right eye, but not his left eye. (only > can)."

2.2. Head-Operators and the Scope Principle

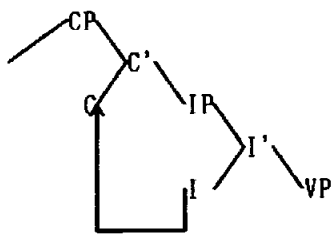
Let us appeal to the Scope Principle in order to account for the ambiguity observed in 2.1. Furthermore, let us assume that a negation and a modal operator are both generated under INFL, and refer to them as Head-Operators as opposed to Adjoined-Operators such as QPs. We will see that the Scope Principle can give just a correct account of the sort of ambiguity we have observed.

Firstly, let us consider the mapping rules from SS to LF. We are on a significant assumption that those items that take scope are subject to Move @ at LF. Negation and modal operators, then, are subject to this rule, because they have a scope-taking property. Let us take the movement of those operators as an instance of INFL-Movement, as is assumed in Hasegawa (1986). This movement is a strictly

local one, and cannot be long-distant.⁵ Therefore, the locus of the moved Head-Operator must be the most immediate C, the head of CP, and cannot be any position further up in the tree. Furthermore, since this is a movement of a head position, the movement should be carried out in a head-to-head fashion, not in an adjunction-to-adjunction fashion (cf. Chomsky (1986)).

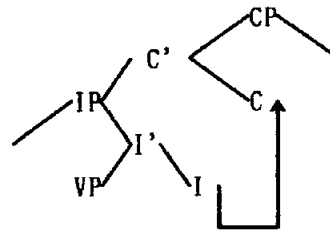
The movement of a Head-Operator (NEG, Modals), then, is shown graphically as follows:

(13) a. English:



Move Q

b. Japanese:



Move Q

Having assumed the Head-Operator movement as shown above, let us consider the application of the Scope Principle to negated-quantified sentences, for example, (9b) and (10b), repeated here as (14a) and (14b), which are mapped onto LFs as in (15a) and (15b), respectively.

(14) a. John didn't talk to every student.

b. John-wa daremo-o ijime-nakatta
 John-TOP everyone-ACC tease NEG-PAST
 "John didn't tease everyone."

(15) a. [CP [C' didn't_{t1} [IP every student_{t2} [IP John [I' t₁
 [VP talk to t₂]]]]]]]

b. [John-wa [t₂ ijime_{VP}] t₁ I'] IP] daremo-o IP] nakatta
 C'] CP]

In both cases, the IP-adjoined QP and the negation operator in C command each other because they share the CP as their most immediately

dominating maximal projection. Therefore, the Scope Principle applies to the two operators and hence assign either scope order, *not* > *every* or *every* > *not*.

We may naturally ask whether the Scope Principle can apply to a sequence of Head-Operators. Let us consider a Japanese case:

- (16) John-wa migime-o tsumu-re-nai
 John-TOP right eye-ACC close-CAN-NEG
 "John cannot close his right eye."

As is observed, it is definitely impossible to obtain the sort of ambiguity we are discussing:

- (17) NOT > CAN "John is incapable of closing his right eye."
 *CAN > NOT "John is capable of keeping his right eye
 open."

Thus, in Japanese, it seems that the scope order of Head-Operators is fixed to the reverse of their linear order at S-Structure and cannot be changed by any rules such as the Scope Principle. Let us take it as an independent constraint to the application of the Scope Principle:

- (18) The scope order of Head-Operators is fixed.

Incidentally, the following examples tells us that no 'alien' adjoined operator can come between any two Head-Operators in their scope order:

- (19) a. John-ga migime -dake-o tsumu-re-nai (koto)
 John-NOM right eye-ONLY-ACC close-CAN-NEG
 b. John-ga daremo-o settoku-deki-nakatta (koto)
 John-NOM everyone-ACC persuade-CAN-NOT-PAST

It seems impossible to construe either of these sets of operators as NOT > QP > CAN order, although they can be construed as NOT > CAN > QP

or QP > NOT > CAN :

(20) ((19a))

- a. NOT > CAN > ONLY "John cannot wink (his right eye)"
- b. *NOT > ONLY > CAN "John can shut his left eye as well as his right eye."
- c. ONLY > NOT > CAN "As far as only his right eye is concerned, John cannot shut it."

(21) ((19b))

- a. NOT > CAN > EVERY "John had the ability to persuade up to eight people, but not all (ten)."
- b. *NOT > EVERY > CAN "For each of eight people but not all (ten), John had the ability to persuade him."
- c. EVERY > NOT > CAN "For each person that John were to persuade, he failed to do so."

Let us propose the following principle in order to account for the phenomena described above, referring to it as 'Head-Operator Freezing':

(22) Head-Operator Freezing:

Head-Operators are frozen so that;

- (i) their scope order does not change,
- (ii) other QEs must take scope either broader or narrower than the whole set of Head-Operators.

Let us go back to the Head-Operator movement and argue that this happens obligatorily both in Japanese and in English.⁶ As we have already seen, the following examples are both ambiguous between QP > NEG and NEG > QP readings:

- (23) a. John-wa migime-dake-o tsumura-nakatta
 John-TOP right eye-only-ACC close NEG-PAST

"John did not close only his right eye."

- b. John-wa *daremo-o* seme-nakatta
 John-TOP everyone-ACC blame-NEG-PAST
 "John didn't blame everyone."

However, this ambiguity cannot be observed in the second conjunct of the following examples where the VP-node is replaced by *soo-s*, a pro-form of VP:

- (24) a. John-wa *migime-dake-o* tsumutta ga, Bill-wa
 close-PAST but Bill-TOP
 soo-shi-nakatta
 do so NEG-PAST
 "John closed only his right eye, but Bill did not do so."
 b. John-wa *daremo-o* semeta ga, Bill-wa sooshi-
 blame-PAST but
 na atta
 NEG-PAST
 "John blamed everyone, but Bill did not."

Let us assume, following Sag (1976), Williams (1977), and May (1985), that a deleted VP in the second conjunct is reconstructed at LF by copying the VP in the first conjunct just as in the following way and that the same can take place as for a Japanese pro-form *soo-s* :

- (25) John ate ice cream , and Mary did, too.

- (26) LF:
 John [*v_{FP}* ate ice cream], and Mary [*v_{FP}* e], too
 → Mary [*v_{FP}* ate ice cream]

Let us consider the LF of (24a), for example:

- (27) [_{IP} *migime-dake* ₁ [_{IP} John [_{VP} *t*₁ *tsumutta*]]]
 Bill [_{VP} *soo-s*]
 → [_{VP} *t*₁ *tsumur*]

If we move the QP *migime-dake* to IP, the VP in the first conjunct will contain a variable but not the operator that must bind it. This results in the copied VP in the second conjunct containing a free variable, violating the following wide supported principle:

- (28) Traces must be properly bound. (Fiengo (1977) etc.)

We, however, have an optional choice to adjoin the QP to VP instead of to IP, and in that case, no such violation as the one above occurs, because this time the copied VP contains an operator QP that binds the trace *t*₁:

- (29) John [_{VP} *migime-dake*₁ [_{VP} *t*₁ *tsumur*]]
 Bill [_{VP} *soo-s*]
 → [_{VP} *migime-dake*₁ [_{VP} *t*₁ *tsumur*]]

Having seen that an object QP in the second conjunct is adjoined to VP, let us consider why the second conjunct in (24a,b) displays no ambiguity. Consider the LF of the second conjunct, where the negation operator has moved to C by the Head-Operator movement:

- (30) [[[John [[*t*₁ *tsumur* _{VP}] *migime-dake* _{1VP}] *t*₂ _{IP}]] _{IP}]
nai _Z *c*] _{CP}]

Here, the Head-Operator *nai* under C *m*-commands the VP-adjoined QP but the VP-adjoined QP cannot *m*-command *nai* because its most immediately dominating maximal projection is IP. If we were to assume that the Head-Operator movement be optional and *nai* in (30) can stay in its original position I, then we would have to wrongly predict the relevant construal ambiguity because the VP-adjoined QP and *nai* in INFL would *m*-command each other and that nothing prevents the application

of the Scope Principle there.

The same holds for English cases as well. Linebarger (1987) observes that although (31a) is ambiguous between *NOT > MANY* and *MANY > NOT* readings, only *NOT > MANY* reading must be possible when followed by a tag, as in (31b):

- (31) a. He didn't answer many questions. (ambiguous)
 b. He didn't answer many questions, did he? (NOT > MANY)

Assuming that the deleted VP in the tag is reconstructed at LF, the QP *many questions* must be adjoined to VP in the first clause. If the Head-Operator movement were optional, again we will have to make a wrong prediction that (31b) should be ambiguous.

Let us summarize this section. We have seen that the Scope Principle can also account for the scope interaction of a QP and a Head-Operator such as *NOT* and *CAN*, appealing to the Head-Operator movement as an instance of *MOVE @*, but that a sequence of Head-Operators is frozen and behave as if they were one operator. We also argued that the Head-Operator movement must be obligatory, as the VP-reconstruction cases have just shown.

3. Scope of Polarity Expressions

3.1. Some Polarity Expressions

PEs constitutes another class of QEs, distinct from QPs such as *daremo-ga* and *dareka-o*. PEs differ from QPs in that they require the specified licenser in a certain position higher up in the tree. The followings are some instances of such class of QEs:

- (32) Negative Polarity Expressions
 a. John-wa *daremo* seme-na katta
 anyone blame-NEG-PAST
 b. *John-wa *daremo* semeta
 anyone blame-PAST
 "John *(did not) blame anyone."

- c. John-wa *migime-shika* tsumura-nai
 right eye only close-NEG
- d. *John-wa *migime-shika* tsumuru
 right eye only close
 "John closes only his right eye."

(33) Non-Assertive Polarity Expressions

- home-run-o a. **ippon-demo* utta
 a single hit
 "I hit any home-run."
- b. *ippon-demo* utta-ra, kiss-shite-ageru-wa-yo
 hit-IF kiss
 "If you hit any home-run, I will kiss you."
- c. *ippon-demo* utta-ka?
 hit-Q
 "Did you hit any home run?"
- d. **ippon-demo* uta-nakatta
 hit-NEG
 "I did not hit any home run."
- e. *ippon-demo* uta-nai-to, kubi-ni suru-zo
 hit-NEG-IF, dismiss
 "If you don't hit any home run, we will dis-
 miss you."

What is observed here is that the PEs *daremo* and *NP-shika* cannot appear unless the sentence does not include *NEG*. Likewise, *NP-demo* requires *IF* (*ra*, *to*), or *Q* (*ka*, *no*), which renders the sentence non-assertive.

What is interesting here in connection to the Scope Principle is that PEs do not interact in scope with their licensors. Rather, they fuse with their licensors, resulting in the creation of one operator. Consider (32c) for example:

- (34) John-wa *migime-shika* tsumura-nai (= (32c))

Here, rather than construed as interacting in scope with *nai*, the *NP-shika* is combined with *nai* and the set (*shika + nai*) is construed as one operator meaning *ONLY*.

Incidentally, WH-phrases such as *dare-ga* or *nani-o* can also be referred to as a subclass of PEs:

- (35) a. *dare-ga kimashita-ka ?*
 who NOM come-PAST Q
 "Who came?"
- b. *Mary-ga nani-o katte-mo, John-wa yorokoba-nai.*
 NOM what buy no matter TOP glad NEG
 "No matter what Mary buys, John will not be glad."
- c. **Mary-ga nani-o katta.*

Thus we may refer to WH-phrases as Q-polarity expressions in that they must be licensed by the presence of such Q-morphemes as *ka* or *mo*. (cf. Nishigauchi (1986))

3.2. Two Classes of PEs and Certain Differences Between Them

The PEs described above have a common property that they require certain licensing morphemes. However, this class of QEs must be distinguished further with respect to their scope properties. Let us first observe the relevant difference in scope properties and attribute the difference to the different characteristics that the C-morphemes and I-morphemes, namely, *NEG*.

3.2.1. Unbounded Dependency

As we will observe below, non-assertive PEs and WH-phrases can be licensed by their corresponding morphemes which lie higher than the clause that immediately contains the PE. Consider:

- (36) a. *Mary-ga [John-ga (home-run-o) ippon-demo utta-to]*
 NOM NOM any single hit
*yuu- *(to),*
 say IF

- (39) Mary-wa [John-ga *nanimo* katta to] omowa-nai
 think NEG

3.2.2. Scope Interaction with Head-Operator

Another difference that is observed between non-assertive PEs and WH-phrases on one hand and NPEs on the other lies in the possibility of interacting in scope with a Head-Operator. Consider first whether a non-assertive PE and a WH-phrase can be construed ambiguously with respect to a modal operator *reru* (CAN):

- (40) a. John-ga *migime* -*dake-demo* tsumu-reru-nara, ...
 NOM right eye only close CAN IF
 "If John can close his right eye only."
 b. John-wa *dare-dake-o* aise-ru -ka ?
 TOP who only love CAN Q
 Lit. "Only who can John love?"

The judgement is somewhat subtle in (40a), but we can obtain two readings in both cases:

- (41) a. (40a)
 (dake-demo-IF) > CAN
 "If his right eye is the only eye that John can close,..."
 CAN > (dake-demo-IF)
 "If John can wink (his right eye), ..."
 b. (40b)
 (dare-dake-Q) > CAN
 "Who is the only girl that John can love?"
 CAN > (dare-dake-Q)
 "Who can John love without loving any other girl?"

However, the sort of ambiguity observed above cannot hold with respect to an NPE and CAN. Consider:

- (42) John-wa *migime-shika* tsumu-re-nai

There is no scope interaction between *shika-NEG* and *CAN* so that the sentence can only be interpreted as (43a):

- (43) a. (*shika-NEG*) > *CAN*
 "The right eye is the only eye that John can close."
 b. **CAN* > (*shika-NEG*)
 "John can close his right eye without closing the left eye."

One might argue that the ambiguity in (40a,b) comes from the fact that *dake-demo* and *dare-dake*, in fact, are a sort of 'hybrid' QE in the sense that *dake* and a PE are mixed into one operator, and that at LF, the *dake* operator is detached from the hybrid operator and by itself behaves as one operator. This is not the case, however, if we consider the following sentence containing an alleged hybrid QE:

- (44) John-wa *migime-dake-shika* tsumu-re-nai

If *dake* were to behave as one operator independent from *shika-NEG* at LF, we would predict the same sort of ambiguity observed in (40a,b). However, there is only one reading obtained for (44), the one approximately equal to (43a). The following reading is not possible:

- (45) *(*shika-Neg*) > *CAN* > *dake*
 "The right eye is the only eye that John can close without closing the other eye."

3.2.3. Certain Differences Between C-morphemes and I-morphemes

The difference in scope facts between non-assertive PEs and WH-phrases on one hand and NPEs on the other naturally leads us to question what makes this difference. The crucially relevant point seems to be that non-assertive PEs and WH-phrases are attracted and hence licensed by a C-morpheme, while NPEs are licensed by *NEG* under *INFL*. There is a good reason to believe this structural difference between Q, IF-morphemes and *NEG*-morphemes. While a *NEG* morpheme appears

inside a predicate, a Q- or IF-morpheme always lies on the edge of a sentence:

(46) a. John-wa ko -*na* -katta-*ka*?
 come NEG PAST Q

"Didn't John come?"

b. John-ga ko-*na*-katta-*ra*
 IF

"If John does not come,..."

Assuming this distinction with respect to their structural position is valid, let us further assume the following condition:

(47) Only those morphemes generated under C can accept their corresponding PEs into CP-SPEC.

This condition states that in order for a QE to move into CP-SPEC, its licenser must be some morpheme which is in some sense 'inherent' to the projection C. Such morphemes as *ka* (Q) or *ra* (IF) are generated under C and thus can accept non-assertive PEs and WH-phrases into CP-SPEC. On the other hand, a negation morpheme *nai* is generated under I(NFL) so that it cannot meet the condition (47), although at LF it is obligatorily raised up to under C by QR, as we have discussed.

The distinction stated above logically renders non-assertive PEs and WH-phrases on one hand and NPEs on the other subject to different types of LF-movement. The former two can move into CP-SPEC at LF and hence a long distance movement is possible. NPEs are rejected by CP-SPEC and hence must move to some other position. The locus of an NPE must be somewhere 'close enough' to its licensing morpheme *nai* that has been raised up to under C. A candidate is the adjunction to IP, but not anywhere lower than IP, for example, VP. The following example will tell us that this is so:

(48) a. *John-wa *nani*mo kawa-*na*katta-shi, Bill-mo soo-shi-
 TOP anything buy NEG-PAST also do so

nakatta

"John did not buy anything, and Bill did not, either."

- b. **Mary-wa Bill-shika seme-nakatta-shi, Marsha-mo*
blame NEG PAST

soo-shi-nakatta

"Mary did not blame other people than Bill, and Marsha did not, either."

As we discussed in 2.2., in order for the VP in the second conjunct not to contain a free variable, the QE in the first conjunct should be adjoined to VP:

- (49) [C' *nai* [IP [VP PE₁ [VP t₁]]]], [C' *nai* [IP [VP PE₁ [VP t₁]]]]

However, the ungrammaticality of both (48a, b) tells us that the VP adjunction of a PE does not make the PE close enough to *nai* under C. Thus let us assume that a negative PE is adjoined to IP and licensed by a negative morpheme there.

Then, if the movement into CP-SPEC and the adjunction to IP are diagnostic of unbounded dependency and clause-boundedness respectively, as is generally assumed, we can give a correct account for one of the scope facts of PEs that we have observed above; that those PEs licensed by a C-morpheme can take scope over a higher clause than the one it is embedded in, while an NPE, which is licensed by *NEG* under *INFL*, takes scope only within the immediate clause that it is a constituent of:

- (36) a. *Mary-ga* [*John-ga* (*home-run-o*) *ippon-demo utta-to*]
*yuu- *(to)*,
b. *Mary-ga* [*John-ga nani-o katta-to*] *iimashita- *(ka)*

- (37) a. *Mary-ga* [*John-ga* (*home-run-o*) *ippon-demo utta*
koto]-o *shitteiru- *(to)*, ...

b. Mary-wa [John-ga nani-o katta koto]-o shitteimasu
-(ka)?

- (38) a. *Mary-ga [John-ga nanimo katta to] iwa- nakatta
b. *Mary-wa [John-ga nanimo katta koto]-o shira-nai

One more distinction to make between a morpheme under C and NEG is whether they are visible to the constraint (22) after they fuse with their PE into one operator. We will take the following assumption.

The C-morphemes do not take scope in the same sense as the I-morphemes do. Rather, they are just operators whose function are to determine the sentence type (whether the sentence is a question, a subjunctive, an assertive, etc.), and to give a quantificational force^a to a WH-phrase or a non-assertive PE which has moved into CP-SPEC. Thus they do not fuse into one operator in the same way that an NPE does. Instead, they remain as a 'sentence operator' in the sense stated above even after their corresponding PE has moved into CP-SPEC. It is the PE in CP-SPEC alone that should be taken as a scope-taking QE, not including a C-morpheme as a part of it. Hence, we can account for why a non-assertive PE and a WH- phrase can take narrower scope than a Head-Operator. Since Q and IF remain as sentence operators which are separated from PEs, they need not go under a Head-Operator in scope relation even when their corresponding PEs are construed as taking a narrower scope than the Head-Operator.

Hence, while those PEs attracted by an I-morpheme is constrained by the condition (22), those PEs attracted by a C-morpheme are not, because they in fact do not conspire with a C-morpheme to become a scope-taking operator but by themselves become a scope-taking operator by being given a quantificational force from the C-morpheme. Consider again:

- (40) a. John-ga migime-dake-demo tsumu-reru-nara, ...
b. John-wa dare-dake-o aise-ru-ka?

(42) John-wa *migime-shika* tsumu-re-nai

Our intuition has told us that while (40a, b) are ambiguous, it is not the case with (42). The nonambiguity of (42) can be accounted for with the constraint (22). The wide scope reading of *CAN* is ruled out because in that case the order of *CAN* and *NEG* are illegally reversed:

(50) (*shika* + *NEG*) > *CAN*
 **CAN* > (*shika* + *NEG*)

This is not the case with *C*-morphemes, however, so that the scope order of a PE and *CAN* can be freely changed, as we observe in (40a, b).

Summarizing this section, PEs are divided into two classes with respect to what morpheme licenses them. We have seen that the different scope properties of the two classes of PEs can naturally be ascribed to the different characteristics of the licensing morphemes.

4. On English *Any*

We have seen that NPEs in Japanese are not accepted into CP-SPEC and hence must be adjoined to IP. In this section, we will discuss English *any* and suggest that it moves into CP-SPEC at LF, where it will be governed by a licensing feature under *C*. As well as in negative environments, *any* can appear in *IF*-clauses, yes-no questions, *WH*- questions, etc. A crucial difference between *any* and NPEs in Japanese, probably a parametrized difference, is that in English, *NEG*, as well as *IF* and *Q*, can accept *any* into CP-SPEC at LF so that *any* behaves just like a *WH*-phrase in situ with respect to its scope property.

It has been assumed that *any* must take scope 'adjacent' to *not* (Linebarger (1980)). This assumption naturally leads us to assume that *any* must move somewhere near *not* at LF.⁹ The following examples suggest that *any* is indeed subject to LF-movement:

- (51) a. I don't think that Mary solved any problems.
 b. *I don't think that any problems, Mary solved.

(Lasnik & Uriagereka (1988))

- (52) a. Who thinks that I like who ?
 b. *Who thinks that who I like ? (ibid.)

A *WH*-phrase in situ must move up to another *WH*-phrase that has already been raised up in syntax. But if it is topicalized in the embedded clause as in (52b), it cannot move further up, because a further movement from an A'-position is somehow blocked. The situation is quite similar with respect to *any* as in (51).

Then where must an *any*-phrase move? We have seen that in Japanese, an NPE must be adjoined to IP to be governed by *NEG* under C. However, let us assume that in English, *NEG* that has been raised to C accepts an NPE so that NPEs in English must move into CP-SPEC at LF. Then we expect a sort of "superiority effect" to hold for an *any*-phrase as well as for a *WH*-phrase. This prediction will be borne out. Consider:

- (53) a. Who ate anything ?
 b. ?*What did anybody eat ? (Lawler (1971))

- (54) a. Who ate what ?
 b. *What did who eat ?

If the contrast observed in (53) is a real one, then our assumption can account for the contrast, just in the same way as we do with respect to the superiority effect observed in *WH*-movement cases such as those in (54).

Furthermore, a long distant association of *NEG* and an *any*-phrase is possible in English:¹⁰

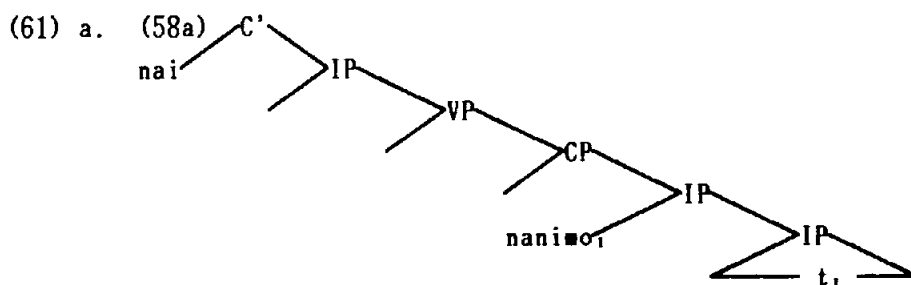
- (55) a. They didn't require that we register anyone.
 (Riemsdijk and Williams (1986))
 b. John never reads books which have any pages missing.
 (May (1985))

- (59) a. **watashi-wa* [*sono-jiko-de daremo shinda to*]
 I TOP in that accident anyone died
kiitei-nai
 heard NEG
 Lit. "I have not heard that anyone died in that accident."
 b. ?*watashi-wa* [*sono-jiko-de daremo shinda to*] *wa*
kiitei-nai
 c. *sono-jiko-de daremo shina-nakatta*

We have already seen that an NPE and its licensing *NEG* must be clause-mates, so that when the PE is embedded in a complement clause as in (58a) and (59a), the sentence is not acceptable. What is interesting is that if we attach a 'contrastive *wa*' in the sense of Hoji (1986) to the complement clause, as in (58b) and (59b), the grammaticality improves, although the resulting sentence is somewhat less acceptable than the simplex sentences as in (58c) and (59c). The same sort of contrast cannot be observed when an NPE is embedded in a complex NP:

- (60) a. **John-wa* [*Mary-ga nanimo katta koto*]-o *shira-nai*
 (= (38a))
 b. **John-wa* [*Mary-ga nanimo katta koto*]-*wa* *shira-nai*

Hoji (1986) discusses that a NP with a 'contrastive *wa*' that remain in situ is subject to QR and is adjoined to IP. Let us assume that a complement clause with a 'contrastive *wa*' is subject to the same rule. Thus, the LF structures of (58a) and (58b) are given respectively as follows:



The observation above tells us that the notion of 'barrier' seems to be playing a central role in deciding the grammaticality. Let us assume the following condition on the structural relation between *NEG* and an NPE:

(64) No barrier must intervene between *NEG* and an NPE at LF.

The definition of barrier is given as follows:

(65) *x* is a B(locking) C(ategory) for *y* iff *x* is not L-marked and *x* dominates *y*. (Chomsky (1986))

(66) *x* is a barrier for *y* iff (a) or (b):
 a. *x* immediately dominates *z*, *z* a BC for *y*;
 b. *x* is a BC for *y*, *x* ≠ IP. (ibid.)

In (63), there is no barrier between the relevant two elements so that they meet the condition (64).¹² In (61b), the intervening CP becomes a barrier either because of the inheritance from IP, if we assume a segment can be a BC, or because the CP itself is not L-marked. In (62), there are two barriers, namely, CP and NP. CP becomes a barrier because of the inheritance from IP or because *koto* assigns an oblique Case to CP,¹³ and NP becomes a barrier since it is not L-marked.

This line of thought leads us to assume that, if the structural relation of *NEG* to an NPE is to be expressed in terms of government, the notion of 'gradation' may be introduced into the notion 'government'; government into one barrier results in only a 'weak' violation of government, while two barriers blocks government completely, although this should not be the case with proper-government which requires 'no barrier' between a governor and a governee. Another way that might be pursued to express the relevant structural condition would be to appeal to the Subjacency Condition, which states one barrier only 'weakly' blocks the association of two positions, while two barriers does so 'strongly'. In either case, the number of barriers is playing an important role in deciding the grammaticality.

An NPE in a complement clause, as (58a) and (59a), shows a strong violation as well because there are more than one barriers between the IP-adjoined NPE in the complement clause and *NEG* in the matrix clause.

In Section 3, we ruled out (48), a VP-deletion case containing an NPE, for the reason that the PE cannot be 'close enough' to *NEG* if the reconstructed VP in the second conjunct contains both a binder *nanimo*, and a bindee t_1 :

- (48) a. *John-wa *nanimo* kawa-nakatta-shi, Bill-mo soo-shi-nakatta
 b. *Mary-wa *Bill-shika* seme-nakatta-shi, Marsha-mo soo-shi-nakatta

- (49) [c' nai [IP [VP PE₁ [VP t₁]]]], [c' nai [IP [VP PE₁ [VP t₁]]]]

We could exclude this representation by making IP a barrier. IP could be a barrier since it inherits the barrierhood from the segment of VP, which is a BC, or since IP itself is not L-marked and becomes a barrier if we modify the definition (66) and assume that IP can also be an inherent barrier.

A problem remains as to why both (48a, b) are bad even though there is only one barrier between the PE and *NEG*, which makes us expect the sentences to be only a weak violation of the condition (64).

6. Conclusion

In this paper, we have seen that QR and the Scope Principle can be successfully extended to an account of scope interaction between a QP and a Head-Operator such as *NEG* or *CAN*. In particular, we have argued for an obligatory movement of a Head-Operator under INFL based on the evidence from VP-deletion cases. An exploration into the scope properties of some PEs in Japanese has revealed the necessity of dividing PEs into two classes. Those licensed by a morpheme under C can take broad scope over a matrix clause even though they are

embedded within a complement clause or in a complex NP, while NPEs are clause-bound. We attributed this difference to the properties of the licensing morphemes. The morphemes inherent to the projection of C, in other words, generated under C, can accept their corresponding PE into CP-SPEC, while *NEG*, which is assumed to generate under I, cannot. English *any*, however, behaves differently from the NPEs in Japanese with respect to the scope property. We have assumed that in English, the raised *NEG* under C accepts a PE into CP-SPEC, as opposed to the one in Japanese, in order to account for the long distant dependency of *any* in English. Finally, the array of data given in (58)-(60) suggests that 'barriers' may be playing an important role in defining a structural condition between *NEG* and an NPE in Japanese.

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¹ The ECP in May (1985) crucially makes use of the notion of 'adjacency' in its antecedent-government part. Thus, an operator cannot antecedent-govern its trace if some other operator intervenes between the operator and its trace.

² M-command and domination are defined as follows:

- (i) x m-commands y iff x does not dominate y and every maximal projection z that dominates x dominates y .
(cf. Chomsky (1986))
- (ii) x is dominated by y if it is dominated by every segment of y .
(Chomsky (1986))

³ Judgements seem to vary among speakers. Hornstein (1984), for example, notes sentences like (9a,b) have only a partial negation reading.

⁴ The example (12a) was brought to my attention by Masaki Sano.

⁵ This movement is subject to the ECP. See Chomsky (1986) and Travis (1984).

⁶ Hasegawa (1986) assumes that the INFL-movement is an optional rule.

⁷ One consequence of assuming the 'moving back' of *NEG* down into the complement clause of a NEG-raising verb (specifically, to C of the complement clause) is the following:

- (i) *watashi-wa* [*Mary-ga migime-dake-o tsumu-reru to*]
I TOP NOM right eye only close CAN
a. *omowa-nai* b. *kiitei-nai*
think NEG hear NEG
"I don't think/ haven't heard that Mary can close only the right eye."

Some speakers have judged (a), a case of a NEG-raising verb, to be ambiguous between the wide scope reading of *dake* and *nai*, while they have judged (b), a case of an ordinary verb, to be obligatorily construed as *nai* > *dake*.

⁸ See Nishigauchi (1986) for a detailed explanation on this.

⁹ But see Aoun, Hornstein, and Sportiche (1981) and Hornstein (1984) who argue for a non-movement analysis of *any*.

¹⁰It has been pointed out in Aoun, Hornstein, and Sportiche (1981) that a 'that-trace' effect, allegedly an instance of the ECP effect, holds for a subject *WH*-phrase in situ in a complement clause, but not for an NPE in the same position. May (1985) has pointed out, however, that 'that-trace' effects are considerably weak with respect to the extraction of a subject *WH* at LF:

(i) ?Who believes that who suspected Philby? (May (1985))

We may conclude from this observation that the ECP is not at work with respect to the subject extraction at LF and that the absence of the same effect for NPEs is not a problem:

(ii) a. Philby doesn't believe that anyone suspects Burgess.
(ibid.)

b. They didn't require that anyone register.
(Riemsdijk and Williams (1986))

However, (i) is not very acceptable as opposed to the total grammaticality of (ii, a, b). We must stipulate that the marginality of the *WH* cases comes from some reason peculiar to *WH*-phrases.

¹¹We assume, following Chomsky (1986), that a segment does not count as a maximal projection. Thus in (63), the IP-node right above *namino*, is not a maximal projection because it is a segment of the whole set of IPs.

¹²We assume that a segment of a maximal projection cannot be a barrier. Thus in (63), the segment IP right above the PE is not a barrier.

¹³We are following Chomsky (1986), who stipulates that if CP is given an oblique Case by N, it becomes a barrier.

REFERENCES

Aoun, J., N. Hornstein, and D. Sportiche. 1981. "Some Aspects of Wide

- Scope Quantification," *Journal of Linguistic Research* 1, 69-95.
- Chomsky, N. 1986. *Barriers*. MA: MIT Press.
- Fiengo, R. 1977. "On Trace Theory," *Linguistic Inquiry* 8, 35-61.
- Hasegawa, N. 1986. "Polarity Neutralization: INFL Movement and the Immediate Scope of Negation," ms. UMass.
- Hoji, H. 1986. *Logical Form Constraints and Configurational Structures in Japanese*. Ph.D. dissertation. Univ. of Washington.
- Hornstein, N. 1984. *Logic as Grammar*. MA: MIT Press.
- Kroch, A. 1974. *The Semantics of Scope in English* Ph.D. dissertation. MIT.
- Kuroda, S-Y. 1970. "Remarks on the Notion of Subject with Reference to Words Like *Also, Even, or Only* " Part 1. *Annual Bulletin Vol.3*. Logopedics and Phoniatrics Research Institute. Tokyo Univ.
- Ladusaw, W. 1979. *Polarity Sensitivity as Inherent Scope Relations*. Ph.D. dissertation. Univ. of Texas at Austin.
- Lasnik, H. and J. Uriagereka. 1988. *A Course in GB Syntax*. MA. MIT Press.
- Lawler, . 1971. "Any Questions" in *Papers from the Seventh Regional Meeting of the Chicago Linguistic Society*. Univ. of Chicago.
- Linebarger, M. 1980. *The Grammar of Negative Polarity* Ph.D. dissertation. MIT.
- _____ 1987. "Negative Polarity and Grammatical Representation," *Linguistic and Philosophy* 10 , 325-387.
- May, R. 1977. *The Grammar of Quantification* Ph.D. dissertation. MIT.
- _____ 1985. *Logical Form*. MA. MIT Press.
- McGloin, N. 1976. "Negation," in M. Shibatani ed. *Syntax and Semantics Vol.5, Japanese Generative Grammar* .Academic Press. New York.
- Nishigauchi, T. 1986. *Quantification in Syntax*. Ph.D. dissertaion. UMass.
- Riemsdijk, H. and E. Williams. 1986. *Introduction to the Theory of Grammar*. MA. MIT Press.
- Sag, I. 1976. *Deletion and Logical Form*. Ph.D. dissertation. MIT.
- Sano, M. 1985. "LF-movement in Japanese," *Descriptive and Applied Linguistics*, ICU. Tokyo.
- Travis, L. 1984. *Parameters and Effects of Word Order Variation* Ph.D.

dissertation. MIT.

Williams, E. 1977. "Discourse and Logical Form," *Linguistic Inquiry* 8,
101-139.

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