

Scope Ambiguity and 'Scrambling'

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1. Outline

Wide-scope distributive readings (henceforth DR) exemplified in (1b) and (1c) are among the phenomena that have been extensively discussed in the literature, particularly in the context of the investigation of the properties of LF.

- (1) a. (At least) two students visited three professors (under discussion).
 b. $\exists X(X \subseteq \textit{student} \wedge |X| = 2) \forall x(x \in X) [\exists Y(Y \subseteq \textit{professor} \wedge |Y| = 3) \forall y(y \in Y) [x \textit{ visited } y]]$
 c. $\exists Y(Y \subseteq \textit{professor} \wedge |Y| = 3) \forall y(y \in Y) [\exists X(X \subseteq \textit{student} \wedge |X| = 2) \forall x(x \in X) [x \textit{ visited } y]]$

In Japanese syntax, DRs have been used crucially for the investigation of the nature of 'scrambling'. Hoji (85)¹, drawing from Kuroda's (69/70) observations, puts forth the generalizations as summarized in (2).

- (2) The Standard Generalizations on Quantifier Scope in Japanese^{2,3}

	(i) SUB>OBJ	(ii) OBJ>SUB
a SUB OBJ VERB	YES	NO
b OBJ SUB VERB	YES	YES

(Kuroda 69/70, Hoji 85)

	(i) DAT>ACC	(ii) ACC>DAT
c SUB DAT ACC VERB	YES	NO
d SUB ACC DAT VERB	YES	YES

(Hoji 85)

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1. Throughout the paper, I eliminate the first two digits of the year of publication.
 2. SUB stands for a subject QP, ACC an accusative QP, and DAT a dative QP. When the accusative/dative distinction is not relevant, I will use OBJ to signify either an accusative QP or a dative QP. $\alpha > \beta$ signifies the DR for α over β .
 3. YES/NO signifies that the surface order listed at the left of the same row has/lacks the DR listed at the top of the same column.

Hoji maintains that the extra scope order, i.e. the OBJ>SUB in (2b) and the ACC>DAT in (2d), is a consequence of syntactic movement, taking SUB OBJ VERB and SUB DAT ACC VERB to be the 'base orders'.

Subsequent to Hoji 85, several researchers have challenged the generalizations in (2). Kitagawa (90) and Kuno et al. (99)⁴ claim that OBJ>SUB is available in (3a) and Kuroda (93), Kitagawa (94), and Miyagawa (97) claim that the ACC>DAT is possible in (3c).

(3) Alternative Generalizations

	(i) SUB>OBJ	(ii) OBJ>SUB
a	SUB OBJ VERB	YES
b	OBJ SUB VERB	YES

(Kitagawa 90, Kuno et al. 99)

	(i) DAT>ACC	(ii) ACC>DAT
c	SUB DAT ACC VERB	YES
d	SUB ACC DAT VERB	YES

(Kuroda 93, Kitagawa 94, Miyagawa 97)

Hoji's claim in regard to the 'base orders' has also been challenged accordingly. For example, Kitagawa (90) argues, partly on the basis of (3a) and (3b), that both SUB OBJ VERB and OBJ SUB VERB can be derived from each other. Similarly, Kitagawa (94) and Miyagawa (97) argue, partly on the basis of (3c) and (3d), that both SUB DAT ACC VERB and SUB ACC DAT VERB can be derived from each other.

Although the works mentioned above hold different views in regard to the generalizations of DRs and the derivation of the relevant surface orders, they all share one crucial assumption, viz., that all instances of DRs are uniformly derived based upon LF properties. It is argued in Hayashishita 99 and 00 (henceforth H:99 and H:00, respectively), however, that there are two kinds of DRs: $\alpha>\beta$ due to LF properties (henceforth $^{LF}DR<\alpha, \beta>$) and $\alpha>\beta$ due to a post-LF cognitive representation (henceforth $^{PostLF}DR<\alpha, \beta>$). The aim of this paper is to consider all the DRs in (3) in the light of this $^{LF}DR/^{PostLF}DR$ distinction.

Section 2 examines whether the DRs in (3) obtains in the $^{PostLF}DR$ -free environments. The results to be presented are summarized in (4).^{5,6}

4. Kitagawa (90) reports that OBJ>SUB in (3a) is available only marginally. But he attributes the marginality to a non-syntactic reason (due to the PF/LF mismatch (p.28)), and the grammar proposed in Kitagawa 90 derives SUB>OBJ and OBJ>SUB in (3a) on a par with each other. I thus understand that Kitagawa (90) claims OBJ>SUB to be available in (3a).

5. The distribution of ^{LF}DR s in (4) coincides with Hoji's (85) generalization in (2); hence, one might suspect that Hoji's (85) generalizations in (2) are about ^{LF}DR s and not $^{PostLF}DR$. Given his use of certain QPs that were not commonly used in the relevant literature at that time, this might not be a totally unreasonable guess. It

(4)		(i) SUB>OBJ	(ii) OBJ>SUB
a.	SUB OBJ VERB	Can be an ^{LF} DR	Cannot be an ^{LF}DR
b.	OBJ SUB VERB	Can be an ^{LF} DR	Can be an ^{LF} DR
		(i) DAT>ACC	(ii) ACC>DAT
c.	SUB DAT ACC VERB	Can be an ^{LF} DR	Cannot be an ^{LF}DR
d.	SUB ACC DAT VERB	Can be an ^{LF} DR	Can be an ^{LF} DR

Section 3 briefly addresses the question of how OBJ SUB VERB and SUB ACC DAT VERB yield two distinct ^{LF}DRs. I will suggest that those surface orders are derived in two different ways, as argued in Ueyama 97, 98, and 99, and that those two ways each yields precisely one ^{LF}DR, as argued in Hayashishita 97 (henceforth H:97). Thus, it seems that the scope ambiguity can be attributed to the structural ambiguity associated with those surface orders (contra Kuroda 69/70, Hoji 85, Kitagawa 90, Kitagawa 94, and Miyagawa 97, among others).

2. The Distribution of ^{LF}DRs

It is argued in H:99 and H:00 that there are two kinds of DRs: (i) $\alpha > \beta$ due to LF properties (^{LF}DR< α , β >) and (ii) $\alpha > \beta$ due to a post-LF cognitive representation (^{PostLF}DR< α , β >). ^{LF}DRs obtain as long as the c-command condition in (5) is met.

- (5) ^{LF}DR< α , β > can obtain if and only if the QR-trace of α c-commands the QR-trace of β (i.e., the A-position c-command); cf. Reinhart 76 and Huang 82.

^{PostLF}DR< α , β >, on the other hand, does not make reference to c-command. However, there are two necessary conditions for ^{PostLF}DRs, as listed in (6).

- (6) a. ^{PostLF}DR< α , β > requires that α 'refer' to a specific group.
 b. ^{PostLF}DR< α , β > does not allow a clause-mate of α to be interpreted as a Generalized Quantifier (GQ) in the sense of Barwise and Cooper 81.⁷

should however be pointed out that we have no way to tell that this is indeed the case, since OBJ>SUB in SUB OBJ VERB and ACC>DAT in SUB DAT ACC VERB are indeed available, with the 'right choice' of QPs. It is thus clear that even if the generalizations in (2) are only concerned with ^{LF}DRs and not ^{PostLF}DR, the relevant empirical demonstration is not successful in Hoji 85.

6. Given the results in (4), we can provide an explanation for the discrepancy between the generalizations in (2) and (3), i.e., the NOs in (2) are judgments made in regard to ^{LF}DRs, and the shaded YESs in (3) are judgments made in regard to ^{PostLF}DRs.

7. I assume that *three men in three men came*, for example, has the GQ interpretation in (i) as well as the group interpretation in (ii).

For an illustration of (6a), consider (7).

- (7) a. **Type A:** QPs that can 'refer' to a specific group

Toyota to Nissan 'Toyota and Nissan', *dareka* 'someone'
subete-no kaisyā 'all companies', *sannin-no otoko* 'three men'

- b. **Type B:** QPs that cannot 'refer' to a specific group

sanninzyoo-no gakusee 'three or more students',
40%izyoo no gakusee '40% or more of the students',
sukunakutomo sannin-no gakusee 'at least three students',
kanarinokazu-no gakusee 'a good number of students'

The QPs of Type B cannot 'refer' to a specific group in a normal context due to their lexical meanings⁸; cf. Liu 90. On the other hand, the QPs of Type A can 'refer' to a specific group. While $^{PostLF}DR<\alpha, \beta>$ obtains only if α is a QP of Type A, $^{LF}DR<\alpha, \beta>$ obtains irrespective of the QP type.

Turning to (6b), I adopt the following two assumptions: (i) if a QP α can be interpreted as a GQ, and the QR-trace of α c-commands a dependent term β then the bound variable anaphora can be established between α and β (henceforth $BVA<\alpha, \beta>$) (see FN15), and (ii) if a QP α can be interpreted as a GQ, and the QR-trace of α c-commands the QR-trace of another QP β , then α can be distributed over another QP β (cf. (5)). Thus, $^{LF}DR<\alpha, \beta>$ can, but $^{PostLF}DR<\alpha, \beta>$ cannot, co-exist with $BVA<\gamma, \delta>$ or $\gamma>\varepsilon$, where (i) γ is a clause-mate of α , (ii) δ is a dependent term, and (iii) ε is a QP.

On the basis of the discussion above, we can construct three tests to determine whether $\alpha>\beta$ in question can be an instance of $^{LF}DR<\alpha, \beta>$.

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- (i) GQ: $\exists X(X \subseteq man \wedge |X| = 3) \forall x(x \in X) [x \text{ came}]$
(ii) Group: $\exists X(X \subseteq man \wedge |X| = 3) [X \text{ came}]$

I also assume that the GQ interpretation obtains if a QP undergoes QR, while the group interpretation obtains if a QP stays in situ. $^{LF}DR<\alpha, \beta>$ in (5) thus obtains only when both α and β are interpreted as a GQ.

8. They may 'refer' to a specific group with some appropriate pragmatic control. For example, *sanninzyoo-no gakusee* 'three or more students' can be interpreted as 'referring' to a specific group that contains three or more students. In order to avoid this type of interpretation, in the experiments to be conducted below, I will place the relevant sentences in the antecedent clause of a conditional, as in (i) and (ii).

- (i) mosi **sannin-no gakusee**-ga kitara ... 'if three students came, ...'
(ii) mosi **sanninzyoo-no gakusee**-ga kitara ... 'if three or more students came, ...'

In the antecedent clause of a conditional, *sanninzyoo-no gakusee* 'three or more students' seems unable to 'refer' to a specific group, while *sannin-no gakusee*, which is of Type A, can do so easily.

- (8) a. **Test 1:** Is $\alpha > \beta$ possible even if α is of Type B in (7)?
 If yes, then it can be an ^{LF}DR; otherwise, it must be a ^{PostLF}DR.
- b. **Test 2:** When $\alpha > \beta$ obtains, can $BVA < \gamma, \delta >$ be established, where γ is a clause-mate of α , δ is a dependent term, and γ c-commands δ ?
 If yes, then it can be an ^{LF}DR; otherwise, it must be a ^{PostLF}DR.
- c. **Test 3:** When $\alpha > \beta$ obtains, can a clause-mate of α be distributed over another QP that it c-commands?
 If yes, then it can be an ^{LF}DR; otherwise, it must be a ^{PostLF}DR.

In the following eight subsections, I apply these three tests to the DRs in (3) to see whether they can be instances of ^{LF}DR.

2.1. SUB>OBJ in SUB OBJ VERB

Consider (9)-(11).⁹

- (9) Test 1: YES.¹⁰
15%izyoo-no ginkoo-ga mittuizyoo-no kouriten-o siensita-ra ...
 'If **15% or more of the banks** supported **three or more retail shops**, ...'
^{YES}15%-MORE > 3-MORE
- (10) Test 2: YES
subete-no ginkoo-ga mittuizyoo-no zidoosya gaisya_i-ni sok_o-no
 kanrengaisya-o syookaisita.
 '(Lit.) **Every bank** introduced to **three or more automobile companies**_i its_i related company.'
^{YES}∀ > 3-MORE & BVA < 3-MORE, sok_o >
- (11) Test 3: YES.
sannin-no heddohantaa-ga hutariizyoo-no hito-ni yottu-no
 kaisya-o syookaisita.
 '**Three headhunters** introduced to **two or more people** four companies.'
^{YES}3 > 2-MORE & 2-MORE > 4

(9) illustrates that SUB>OBJ in SUB OBJ VERB obtains even if the SUB is of Type B. (10) and (11) illustrate that when SUB>OBJ in SUB OBJ VERB obtains, clause-mates of the SUB can maintain the properties of GQ. For instance, in (10)_i, when the subject QP is distributed over the dative QP, BVA can be established between the dative QP, a clause-mate of the subject QP, and a dependent term. This leads us to conclude that SUB>OBJ in SUB OBJ VERB can be an instance of ^{LF}DR.

2.2. OBJ>SUB in SUB OBJ VERB

Consider (12)-(14).¹¹

9. The generalizations captured in (9)-(11) are also illustrated in H:99.

10. In the interests of space, I do not provide an example where the relevant QP is of Type A.

- (12) Test 1: NO.
 a. **hutatuizyoo-no ginkoo-ga itutu-no kouriten-o siensita-ra ...**
 'If **two or more banks** supported **five retail shops**, ...'
 $\text{YES}_{5>2\text{-MORE}}$
 b. **hutatuizyoo-no ginkoo-ga 20.5%izyoo-no kouriten-o siensita-ra**
 'If **two or more banks** supported **20.5% or more of the retail shops**, ...' (Cf. (18).)
 $\text{NO}_{20.5\text{-MORE}>2\text{-MORE}}$
- (13) Test 2: NO.
sukunakutomo mittu-no ginkoo_i-ga subete-no zidoosya gaisya-ni soko_i-no torihikisaki-o syookaisita. (Cf. (19).)
 '(Lit.) *At least three banks_i* introduced to **every automobile company** *its_i customers.*'
 $\text{NO}_{\forall>3\text{-LEAST}} \& \text{BVA}<3\text{-LEAST}, \text{soko}>$
 [Note: If $\text{YES}_{\forall>3\text{-LEAST}}$, then $\text{NO}_{\text{BVA}<3\text{-LEAST}, \text{soko}>}$, or if $\text{YES}_{\text{BVA}<3\text{-LEAST}, \text{soko}>}$, then $\text{NO}_{\forall>3\text{-LEAST}}$.]
- (14) Test 3: NO.
sanninizyoo-no heddohantaa-ga hutari-no hito-ni yottu-no kaisya-o syookaisita. (Cf. (20).)
 '**Three or more headhunters** introduced to **two people** *four companies.*'
 $\text{NO}_{2>3\text{-MORE}} \& 3\text{-MORE}>4$
 [Note: If $\text{YES}_{2>3\text{-MORE}}$, then $\text{NO}_{3\text{-MORE}>4}$, or if $\text{YES}_{3\text{-MORE}>4}$, then $\text{NO}_{2>3\text{-MORE}}$]

The paradigm in (12) illustrates that OBJ>SUB in SUB OBJ VERB cannot obtain if the OBJ is of Type B. (13) and (14) illustrate that when OBJ>SUB in SUB OBJ VERB obtains, clause-mates of the OBJ lose the properties of GQ. For example, in (14), the dative QP can be distributed over the subject QP only if the subject QP, a clause-mate of the dative QP, is not distributed over the accusative QP. Conversely, the subject QP can be distributed over the accusative QP only if the dative QP is not distributed over the subject QP. This indicates that OBJ>SUB (unlike SUB>OBJ) in SUB OBJ VERB cannot be an instance of ${}^{\text{LF}}\text{DR}$; it must be an instance of ${}^{\text{PostLF}}\text{DR}$.¹²

2.3. SUB>OBJ in OBJ SUB VERB

For the rest of the experiments, I simply supply the relevant examples, trusting the readers to fill in the details. (15)-(17) illustrate that SUB>OBJ in OBJ SUB VERB can be an instance of ${}^{\text{LF}}\text{DR}$.

- (15) Test 1: YES.
mittuizyoo-no kouriten-o 15%izyoo-no ginkoo-ga siensita-ra ...

11. The generalizations captured in (12)-(14) are also illustrated in H:99 and H:00.

12. It is argued in H:99 that in the English SUB VERB OBJ order, SUB>OBJ can be an instance of ${}^{\text{LF}}\text{DR}$, but OBJ>SUB cannot.

- (16) '(Lit.) If **three or more retail shops**, **15% or more of the banks** supported, ...' ^{YES}15%-MORE>3-MORE
 Test 2: YES.
mittuizyoo-no zidoosya gaisya_i-ni subete-no ginkoo-ga soko_i-no
kanrengaisya-o syookaisita.
 '(Lit.) To **three or more automobile companies_i**, **every bank** introduced *its_i* related company.'
^{YES}∇>3-MORE & BVA<3-MORE, *soko*>
- (17) Test 3: YES.
hutariizyoo-no hito-ni sannin-no heddohantaa-ga yottu-no
kaisya-o syookaisita.
 '(Lit.) To **two or more people**, **three headhunters** introduced *four* companies.'
^{YES}3>2-MORE & 2-MORE>4

2.4. OBJ>SUB in OBJ SUB VERB

(18)-(20) illustrate that OBJ>SUB in OBJ SUB VERB can be an instance of ^{LF}DR.¹³

- (18) Test 1: YES.
20.5%izyoo-no kouriten-o hutatuizyoo-no ginkoo-ga siensita-ra
 '(Lit.) If **20.5% or more of the retail shops**, **two or more banks** supported, ...' (Cf. (12b).) ^{YES}20.5%-MORE>2-MORE
- (19) Test 2: YES.
subete-no zidoosya gaisya-ni sukunakutomo mittu-no ginkoo_i-ga
soko_i-no torihikisaki-o syookaisita. (Cf. (13).)
 '(Lit.) To **every automobile company**, **at least three banks_i** introduced *its_i* customers.'
^{YES}∇>3-LEAST & BVA<3-LEAST, *soko*>
- (20) Test 3: YES.
hutari-no hito-ni sanninzyoo-no heddohantaa-ga yottu-no
kaisya-o syookaisita. (Cf. (14).)
 '(Lit.) To **two people**, **three or more headhunters** introduced *four* companies.'
^{YES}2>3-MORE & 3-MORE>4

2.5. DAT>ACC in SUB DAT ACC VERB

We now turn to the di-transitive construction. (21)-(23) indicate that DAT>ACC in SUB DAT ACC VERB can be an instance of ^{LF}DR.

- (21) Test 1: YES.
 . Kimura sensee-ga **10%izyoo-no kaisya-ni sannin-no gakusee-o**
syookaisita-ra ...
 'If Prof. Kimura introduced to **10% or more of the companies**
three students, ...' ^{YES}10%-MORE>3

13. The generalizations captured in (18)-(20) are also illustrated in H:00.

- (22) Test 2: YES.
sukunakutomo hutatu-no zinzaihaken gaisya_i-ga soka_o-ga syusaisita paatii-de yottuizyoo-no kaisya-ni sannin-no gakusee-o syookaisita.
 '(Lit.) *At least two human-resource companies_i* introduced at the party that *i_i* organized to **four or more companies three students.**'
^{YES}4-MORE>3 & BVA<2-LEAST, *soko*>
- (23) Test 3: YES.
 aru zinzaihaken gaisya-no syain-ga **mittuizyoo-no kaisya-ni yonin-no gakusee-o hutatu-no paatii-de** syookaisita
 'A certain employee in a human-resource company introduced to **three or more companies four students at two parties.**'
^{YES}3-More>4 & 4>2

2.6. ACC>DAT in SUB DAT ACC VERB

(24)-(26) suggest that ACC>DAT in SUB DAT ACC VERB cannot be an instance of ^{LF}DR; it must be an instance of ^{PostLF}DR.

- (24) Test 1: NO.
 a. Kimura sensee-ga **hutatuizyoo-no kaisya-ni sannin-no gakusee-o** syookaisita-ra ...
 'If Prof. Kimura introduced to **two or more companies three students, ...**'
^{YES}3>2-More
 b. Kimura sensee-ga **hutatuizyoo-no kaisya-ni 10%izyoo-no gakusee-o** syookaisita-ra ... (Cf. (30).)
 'If Prof. Kimura introduced to **two or more companies 10% or more of the students, ...**'
^{NO}10%-MORE>2-MORE
- (25) Test 2: NO.
sukunakutomo hutatu-no zinzaihaken gaisya_i-ga soka_o-ga syusaisita paatii-de yottuizyoo-no kaisya-ni sannin-no gakusee-o syookaisita. (Cf. (31).)
 '(Lit.) *At least two human-resource companies_i* introduced at the party that *i_i* organized to **four or more companies three students.**'
^{NO}3>4-MORE & BVA<2-LEAST, *soko*>
 [Note: if ^{YES}3>4-MORE, then ^{NO}BVA<2-LEAST, *soko*>, or if ^{YES}BVA<2-LEAST, *soko*>, then ^{NO}3>4-MORE.]
- (26) Test 3: NO.
 aru zinzaihaken gaisya-no syain-ga **mittuizyoo-no kaisya-ni yonin-no gakusee-o hutatu-no paatii-de** syookaisita.
 'A certain employee of a human-resource company introduced to **three or more companies four students at two party.**' (Cf. (32).)
^{NO}4>3-MORE & 3-MORE>2
 [Note: if ^{YES}4>3-MORE, then ^{NO}3-MORE>2, or if ^{YES}3-MORE>2, then ^{NO}4>3-MORE.]

2.7. DAT>ACC in SUB ACC DAT VERB

(27)-(29) lead us to conclude that DAT>ACC in SUB ACC DAT VERB can be an instance of ^{LF}DR.

- (27) Test 1: YES.
 Kimura sensee-ga **sannin-no gakusee-o 10%izyoo-no kaisya-ni** syookaisita-ra ...
 'If Prof. Kimura introduced **three students** to **10% or more of the companies**, ...' ^{YES}10%-MORE>3
- (28) Test 2: YES.
sukunakutomo hutatu-no zinzaihaken gaisya_i-ga soka_i-ga syusaisita paatii-de **sannin-no gakusee-o yottuizyoo-no kaisya-ni** syookaisita.
 '(Lit.) *At least two human-resource companies_i* introduced at the party that *i_i* organized **three students** to **four or more companies**.' ^{YES}4-MORE>3 & BVA<2-LEAST, *soko*>
- (29) Test 3: YES.
 aru zinzaihaken gaisya-no syain-ga **yonin-no gakusee-o mittuizyoo-no kaisya-ni** *hutatu-no paatii-de* syookaisita.
 'A certain employee in a human-resource company introduced **four students** to **three or more companies** at *two parties*.' ^{YES}3-More>4 & 4>2

2.8. ACC>DAT in SUB ACC DAT VERB

Finally, (30)-(32) indicate that ACC>DAT in SUB ACC DAT VERB can be an instance of ^{LF}DR.

- (30) Test 1: YES.
 Kimura sensee-ga **10%izyoo-no gakusee-o hutatuizyoo-no kaisya-ni** syookaisita-ra ... (Cf. (24b).)
 'If Prof. Kimura introduced **10% or more of the students** to **two or more companies**, ...' ^{YES}10%-MORE>2-MORE
- (31) Test 2: YES.
sukunakutomo hutatu-no zinzaihaken gaisya_i-ga soka_i-ga syusaisita paatii-de **sannin-no gakusee-o yottuizyoo-no kaisya-ni** syookaisita. (Cf. (25).)
 '(Lit.) *At least two human-resource companies_i* introduced at the party that *i_i* organized **three students** to **four or more companies**.' ^{YES}3>4-MORE & BVA<2-LEAST, *soko*>
- (32) Test 3: YES.
 aru zinzaihaken gaisya-no syain-ga **yonin-no gakusee-o mittuizyoo-no kaisya-ni** *hutatu-no paatii-de* syookaisita.

'A certain employee of a human-resource company introduced **four students** to *three or more companies* at two party.'
(Cf. (26).) ^{YES}4>3-MORE & 3-MORE>2

A summary of the results in the preceding subsections is given in (4)¹⁴

3. On 'Scrambling'

We have observed in Section 2 that OBJ SUB VERB and SUB ACC DAT VERB can have two distinct ^{LF}DRs (i.e., ^{LF}DR<OBJ, SUB> and ^{LF}DR<SUB, OBJ> for the former, and ^{LF}DR<ACC DAT> and ^{LF}DR<DAT, ACC> for the latter). Let us call these surface orders 'marked orders'. Adopting the condition for ^{LF}DR< α , β > in (5), we can conclude that it must be possible for the 'marked orders' to be associated with two distinct LFs, as in (33) and (34).

- (33) a. PF: OBJ SUB VERB
 b. LF₁: [OBJ [SUB VERB]] (before QR) \Rightarrow ^{LF}DR<OBJ, SUB>
 c. LF₂: [SUB [OBJ VERB]] (before QR) \Rightarrow ^{LF}DR<SUB, OBJ>
- (34) a. PF: SUB ACC DAT VERB
 b. LF₁: [SUB [ACC [DAT VERB]]] (before QR) \Rightarrow ^{LF}DR<ACC, DAT>
 c. LF₂: [SUB [DAT [ACC VERB]]] (before QR) \Rightarrow ^{LF}DR<DAT, ACC>

In the investigation of the nature of 'scrambling', we must then address the question in (35).

- (35) How can the 'marked orders' be linked to two distinct LFs?

Due to space limitation, however, I can only briefly introduce the line of thinking adopted in H:97 and further articulated in H:forthcoming. In the discussion to follow, let us call an OBJ located on the left of its clause-mate SUB a *preposed* OBJ, and an ACC located on the left of its clause-mate DAT a *preposed* ACC.

H:97 illustrates that OBJ SUB VERB does not always yield both ^{LF}DR<SUB, OBJ> and ^{LF}DR<OBJ, SUB>, observing that in some environments only ^{LF}DR<SUB, OBJ> obtains, while in others only ^{LF}DR<OBJ, SUB> obtains. First, when a *preposed* OBJ exhibits A-properties such as

14. It should be pointed out that the LF/Post-LF dichotomy is also relevant to the distribution of BVA. It is generally assumed, leaving the 'Spec-binding' cases aside, that BVA< α , β >, where α is a QP and β is a dependent term, requires the A-position c-command of α over β (cf. Reinhart 83). Ueyama (98: Appendix D.2.1.), however, points out that when a QP 'refers' to a specific group, the relevant c-command is not necessary. What is of interest here is that when BVA< α , β >, where α is a QP and β is a dependent term, obtains without the relevant c-command, clause-mates of α lose the properties of GQ noted above. This suggests the possibility of two kinds of BVA, viz., ^{LF}BVA and ^{PostLF}BVA, so to speak; cf. Hayashishita forthcoming (henceforth H:forthcoming) for further discussion.

BVA being established between the *preposed* OBJ and a dependent term¹⁵, it must take scope in its surface position. Consider (36).

- (36) *mittuizyoo-no daigaku_i-ni* [[*soko_i-o* ooensiteiru] **hutatuizyoo-no kaisya**]-ga touhyoosita.
 '(Lit.) *Three or more universities_i*, [more than two companies [which have been supporting *it_i*]] voted for.'
^{YES}BVA<3-More, *soko*> & 3-MORE>2-MORE
^{NO}BVA<3-More, *soko*> & 2-MORE>3-MORE

In (36), when BVA is established between the *preposed* OBJ and a dependent term, the SUB cannot be distributed over the *preposed* OBJ. Conversely, when the SUB is distributed over the *preposed* OBJ, the BVA cannot be established.

Second, in the environments where *preposed* OBJs cannot show A-properties (i.e., where BVA cannot be established between them and a dependent term that they c-command), they cannot take scope in their surface positions.¹⁶ Ueyama (97, 98, 99) identifies three such environments: (i) in the embedded clause of a certain type (including a perceptual report construction), (ii) when there is another *preposed* OBJ, and BVA is established between the *preposed* OBJ and a dependent term contained in the SUB, and (iii) when a OBJ is *preposed* across a clause boundary. We will only discuss (ii) and (iii) here. Consider (37) and (38).

- (37) *mittuizyoo-no kaisya_i-o yonin-no gakusee-ni* [[*soko_i-o* ooensiteiru] **hutari-no kyoozyu**]-ga syookaisita.
 '(Lit.) *Three or more companies_i*, to **four students**, [two professors [who have been supporting *it_i*]] introduced.'
^{YES}2>4 & BVA<3-MORE, *soko*>, but ^{NO}4>2 & BVA<3-MORE, *soko*>
 (38) **hutari-no kodomo-ni₁** [**sanninzyoo-no gakusee**-ga [John-ga *ec₁* hanasikaketeita] to hookokusitekita].
 '(Lit.) to **two children₁**, [**three or more students** reported that [John was speaking *ec₁*]].'
^{YES}3-MORE>2, but ^{NO}2>3-MORE.

15. I assume that the ^{LF}BVA< α , β > (see FN14), where α is a QP and β is a dependent term, can obtain if and only if the QR-trace of α c-commands β at LF (i.e., A-position c-command). For BVA in general, including ^{PostLF}BVA, I maintain that the BVA< α , β >, where α is a QP and β is a dependent term, can obtain if the QR-trace of α c-commands β at LF. In (36) I utilized a QP of Type B for the *preposed* OBJ to ensure that the relevant BVA is an instance of ^{LF}BVA, with the *preposed* OBJ being in an A-position.

16. This generalization is first presented in H97 on the basis of Ueyama's (97) observation on binding phenomena, and subsequently adopted by Ueyama (98, 99). I refer the readers to Ueyama 98: Chapter 2 for the complete paradigms.

In (37), BVA is established between the first *preposed* OBJ and a dependent term, and the second *preposed* OBJ, *yonin-no gakusee-ni*, cannot be distributed over the SUB. In (38), the *preposed* OBJ is located before the matrix subject, and it cannot be distributed over the matrix subject QP.¹⁷

The above discussion can be summarized as in (39).

- (39) a. If *preposed* OBJs exhibit A-properties, they must take scope in their surface position.
 b. If *preposed* OBJs do not exhibit A-properties, they cannot take scope in their surface position.

On the basis of (39), (33) can be refined as (40).

- (40) a. Where the OBJ exhibits A-properties
 PF: OBJ SUB VERB
 LF: [OBJ [SUB VERB]](before QR) \Rightarrow ^{LF}DR<OBJ, SUB>
 b. Where the OBJ does not exhibit A-properties
 PF: OBJ SUB VERB
 LF: [SUB [OBJ VERB]](before QR) \Rightarrow ^{LF}DR<SUB, OBJ>

Assuming that the generalizations regarding *preposed* OBJs in (39) can be extended to *preposed* ACCs, (34) can be similarly refined as (41).¹⁸

- (41) a. Where the ACC exhibits A-properties
 PF: SUB ACC DAT VERB
 LF: [SUB [ACC [DAT VERB]]] (before QR) \Rightarrow ^{LF}DR<ACC, DAT>
 b. Where the ACC does not exhibit A-properties
 PF: SUB ACC DAT VERB
 LF: [SUB [DAT [ACC VERB]]] (before QR) \Rightarrow ^{LF}DR<DAT, ACC>

The above discussion suggests that the 'marked orders' are derived in two distinct ways in such a way that the *preposed* OBJs/ACCs exhibit A-properties in one case but not in the other, as argued in Ueyama 97, 98 and 99, and that the scope ambiguity in the 'marked orders' is attributed to the structural ambiguity, as argued in H:97, (contra Kuroda 69/70, Hoji 85, Kitagawa 90, Kitagawa 94, and Miyagawa 97, among others). Assuming that the 'marked orders' are derived in two distinct ways, we now have two logical possibilities for each case, as stated in (42) and (43).

- (42) Where a *preposed* OBJ/ACC exhibits A-properties
 a. A *preposed* OBJ/ACC is base-generated in its surface position (i.e., an A-position); cf. Ueyama 97, 98, and 99.

17. The generalization illustrated by (38) is ascribed to Tada. But see Ueyama 98: Chapter 2, Footnote 29 for the remark that the examples given by Tada (which are cited in Boskovic & Takahashi 95) fail to illustrate the validity of the generalization.

18. H:forthcoming presents the relevant empirical materials.

- b. A *preposed* OBJ/ACC is fronted to its surface position by overt A-movement.
- (43) Where a *preposed* OBJ/ACC does not exhibit A-properties
- a. A *preposed* OBJ/ACC is fronted to its surface position by stylistic movement.
- b. A *preposed* OBJ/ACC is fronted to its surface position by overt A'-movement and the movement is always 'undone' at LF; cf. Saito 92.

H:97 and more recently H:forthcoming pursue the analyses in (42a) and (43a).¹⁹ Because of the space limitation, however, the relevant empirical as well as conceptual justifications for this choice cannot be provided here.²⁰

4. Summary and Further Issues

In this paper, I have examined DRs in Japanese in the light of the ${}^{LF}DR/{}^{PostLF}DR$ distinction given in H:99 and H:00, and demonstrated that the scope ambiguity in the 'marked orders' (OBJ SUB VERB, SUB ACC DAT VERB) is quite distinct in nature from the one in the 'unmarked orders' (SUB OBJ VERB, SUB DAT ACC VERB). Only the former, but not the latter, can be due to two distinct ${}^{LF}DR$ s. Thus, for the investigation of the LF properties of 'scrambling', we must address the question of how 'marked orders' can be linked to two distinct ${}^{LF}DR$ s. I have suggested that the 'marked orders' are derived in two distinct ways, each giving rise to precisely one scope order.

Among the many issues suppressed in this paper is how ${}^{LF}DR$ and ${}^{PostLF}DR$ are derived. In H:99 and H:00, the ${}^{LF}DR/{}^{PostLF}DR$ distinction is claimed to be a direct consequence of two ways of interpreting sentences in general. H:forthcoming explores consequences of the two ways of interpreting sentences, in relation to BVA (see FN 14), the scope of negation, the scope of focus inducing particles such as *even*, and the scope of *wh*-words (in particular, pair-list readings), and the interaction between BVA and the scope *wh*-words (in particular, functional readings).²¹

19. Decisive arguments in support of (42a) and those in support of (43a), in turn, each speak for the thesis that the 'marked orders' are derived in two distinct ways. For it is inconceivable that one way of deriving the 'marked orders' accommodates (42a) simultaneously with [(43a) or (43b)] or (43a) simultaneously with [(42a) or (42b)].

20. See Ueyama 99:Section 5 for the arguments in support of (42a).

21. H:00 and H:forthcoming contain several arguments for the approach taken in H:99, H00 and this paper, in comparison with the standard approach, which utilizes QR to shift scope orders (works by May and more recently by Beghelli & Stowell).

References

- Barwise, Jon, and Robin Cooper. 1981. Generalized Quantifiers and Natural Language. *Linguistics and Philosophy* 4:159-219.
- Boskovic, Zeljko, and Daiko Takahashi 1995. Scrambling and Last Resort. *Linguistic Inquiry* 29:347-366.
- Hayashishita, J.-R. 1997. On the Scope Ambiguity in the Scrambling Construction in Japanese. Ms., University of Southern California.
- Hayashishita, J.-R. 1999. Two Ways of Deriving Distributive Readings. In *Proceedings of the 23rd Annual Penn Linguistics Colloquium*: 201-216. University of Pennsylvania Working Papers in Linguistics Volume 6.1.
- Hayashishita, J.-R. 2000. More on Two Ways of Deriving Distributive Readings. To appear in *Japanese/Korean Linguistics* vol.9, CSLI Publications.
- Hayashishita, J.-R. forthcoming. *Syntactic Scope and Non-Syntactic Scope*. Doctoral dissertation, University of Southern California.
- Hoji, Hajime. 1985. *Logical Form Constraints and Configurational Structures in Japanese*. Doctoral dissertation, University of Washington.
- Huang, C.-T. James. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Doctoral dissertation, MIT.
- Kitagawa, Yoshihisa. 1990. Anti-Scrambling. Ms., University of Rochester. (A paper read at the Tilburg University Workshop on Scrambling, 10/19/90.)
- Kitagawa, Yoshihisa. 1994. Shells, Yolks and Scrambled E.g.s. *NELS* 24:221-239.
- Kuno, Susumu, Ken-ichi Takami, and Yuru Wu. 1999. Quantifier Scopepe in English, Chinese, and Japanese. *Language* 75:63-111.
- Kuroda, S.-Y. 1969/70. Remarks on the Notion of subject with Reference to Words like *Also, Even* or *Only*. In *Annual Bulletin*. Research Institute of Logopedics and Phoniatics, University of Tokyo, vol.3:111-129, and vol.4:127-152.
- Kuroda, S.-Y. 1993. On the Scope Principle and Scope Ambiguities in Japanese. Ms., UCSD and KUIS.
- Liu, F-H. 1990. *Scope Dependency in English and Chinese*. Doctoral dissertation, University of California, Los Angeles.
- Miyagawa, Shigeru. 1997. Against Optional Scrambling. *Linguistic Inquiry* 28:1-25.
- Reinhart, Tanya. 1976. *The Syntactic Domain of Anaphora*. Doctoral dissertation, MIT.
- Reinhart, Tanya. 1983. Coreference and Bound Anaphora: a Restatement of the Anaphora Questions. *Linguistics and Philosophy* 6:47-88.
- Saito, Mamoru. 1992. Long Distance Scrambling in Japanese. *Journal of East Asian Linguistics* 1:69-118.
- Ueyama, Ayumi. 1997. Scrambling in Japanese and Bound Variable Construal. Ms., University of Southern California.
- Ueyama, Ayumi. 1998. *Two Types of Dependency*. Doctoral dissertation, University of Southern California, distributed by GSIL publications, USC, Los Angeles.
- Ueyama, Ayumi. 1999. Two Types of Scrambling Constructions in Japanese. To appear in A. Barss & T. Langendoen, eds. *Anaphora: A Reference Guide*, Blackwell, Cambridge.