

Chapter 3

Two Sources of Scope Interaction

3.1. Introduction

This chapter continues to investigate the scope interaction among *quantificational phrases* (= QPs). As in Chapter 2, I will refer to readings where one QP is within the scope of another QP as *wide scope readings*.¹ Among wide scope readings, readings whose scope order corresponds to the surface linear order of a given sentence will be called *surface scope readings*, and those whose scope order is reversed from the surface linear order of a given sentence *inverse scope readings*. For convenience, I will abbreviate a wide scope reading where a QP β is within the scope of a QP α to $WSR\langle\alpha, \beta\rangle$.

In Chapter 2, we have investigated the scope interaction among QPs in the configuration of (1), where a QP_{Sub} and a QP_{Obj} stand for a subject QP and an object QP respectively, and concluded with the generalizations in (2). As in Chapter 2, the configuration in (1) is referred to as *the basic order* for convenience.

(1) [... QP_{Sub} [... QP_{Obj} ...]], where the QP_{Sub} and the QP_{Obj} are clause-mates

(2) (= Chapter 2 (18))

- a. $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ obtains in the basic order only if all of the conditions, (i)-(iii), are met.²

¹ See the cautious remark in FN 1 in Chapter 2 regarding what counts as a wide scope reading.

² But see FN 7 in Chapter 2.

- b. $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ obtains in the basic order even if it is not the case that all of the conditions, (i)-(iii), are met.
- i. The speaker refers to a specific group with the QP taking wide scope.
 - ii. If there is a QP α that is not the QP_{Sub} or the QP_{Obj} , or a potential dependent term β , then the QP taking narrow scope does not take wide scope with respect to α or bind β .
 - iii. If the verb is negated, the scope of the verbal negation is limited to the verb itself.

The aim of this chapter is to provide a theoretical characterization of the generalizations in (2). In particular, I will argue that (3) holds.

- (3) Surface scope readings may emerge through LF compositional computation while inverse scope readings do not.

The rest of the chapter is organized as follows. In Section 3.2, I put forth two pieces of arguments in support of (3), making crucial reference to comparative constructions and 'scrambling'. One conclusion drawn from Section 3.2 is that there are two sources of the scope interactions among QPs: (i) LF compositional computation and (ii) an extra-grammatical operation. Section 3.3 considers the implications of the generalizations in (2) in the light of this conclusion. Section 3.4 further substantiates the existence of the two sources of scope interaction, by demonstrating some instances of surface scope readings must involve the extra-grammatical operation (although surface scope readings generally can emerge through LF compositional computation). In Section 3.5, I probe into the nature of the extra-grammatical operation. Finally, I conclude

in Section 3.6 with a summary and a remark on the methodological implications of this chapter in studies of generative grammar.

3.2. Surface scope readings may emerge through LF compositional computation while inverse scope readings do not.

The proponents for the thesis that $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ obtains in the basic order through LF compositional computation must assume that the basic order can be represented as (4a) at LF, where both the QP_{Sub} and the QP_{Obj} are in a position that is the sister of an element that denotes a one-place predicate, so as to accommodate their quantificational interpretations.³ To derive (4a) from the basic order, it is standardly assumed that both the QP_{Sub} and the QP_{Obj} undergo covert syntactic movement (cf. May 1977).⁴ Similarly, the proponents for the thesis that $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ obtains in the basic order through LF compositional computation must assume that the basic order can be represented as (4b).⁵

(4) (Ψ stands for an element that denotes a one-place predicate.)

a. LF: [Ψ QP_{Sub} [Ψ QP_{Obj} [Ψ ... t_{Sub} [... t_{Obj} ...]]]]

b. LF: [Ψ QP_{Obj} [Ψ QP_{Sub} [Ψ ... t_{Sub} [... t_{Obj} ...]]]]

³ Among the proponents of the thesis are May (1977), Montague (1974), Cooper (1975, 1983), Aoun & Li (1994), Hornstein (1995), and Beghelli & Stowell (1997).

⁴ Works that do not adopt covert movement in May 1977 assume some analogous operations to derive the representations in (4), and *quantifying-in* in Montague 1974 and *the Cooper storage* in Cooper 1975, 1983 are two such operations. May (1977) assumes that the movement is optional in principle although a QP must raise in order to have quantificational interpretation; however, Beghelli & Stowell (1997) maintain that it is due to feature-checking, hence, obligatory.

⁵ The researchers listed in FN 3 are among the proponents for the thesis.

We therefore obtain supportive evidence for the thesis in (3), by demonstrating that surface scope readings can be considered as emerging on the basis of (4a) while inverse scope readings cannot be understood to be based on (4b). In the following subsections, I will provide two pieces of such evidence, using comparative constructions and 'scrambling'.

3.2.1. CM-Comparatives

In this subsection, I argue that surface scope readings may emerge on the basis of (4a), but inverse scope readings are not based on (4b), by demonstrating that the generalizations in (5) hold, where the definition of A-position is (6).⁶ The discussion in this section thus supports the view that a QP may or may not undergo covert movement.

- (5) a. $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ can obtain in the basic order even if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF.
- b. $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ cannot obtain in the basic order if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF.
- (6) A position α is an A-position if, and only if α is a theta position of a verb or a case position.

⁶ In a framework that assumes *AgrS* and *AgrO* (e.g. Hornstein 1995), the specs of *AgrS* and *AgrO* are case positions, and according to the definition in (6), they are regarded as A-positions. But because the empirical materials to be discussed in this section cannot be accounted for if we treat them as A-positions, I will not adopt such a framework in this paper. In other words, I assume that a position that is a case position but not a theta position is only the spec of an IP, i.e., A-positions consist of theta-positions and the spec of an IP. If the line of thinking in Fukui 1986, Kitagawa 1986, and Kuroda 1988 that Japanese lacks subject raising is correct, A-positions consist of only theta positions in Japanese, see also FN 20 in Chapter 2.

To demonstrate that (5) holds, we must first identify an environment where a noun phrase cannot stay in an A-position for an independent syntactic reason. I claim that the comparative construction exemplified by (7) is one such environment.

- (7) [IP [AdvP [CP John-ni yorimo] sakini] [IP Kimura kyoozyu-ga Bill-ni
John-DAT than early Kimura professor-NOM Bill-DAT
Mary-o syookaisita]] (to siyoo).
Mary-ACC introduced that suppose
'(Suppose that) [IP [IP Prof Kimura introduced Mary to Bill] [AdvP earlier [CP than
to John]]].'

(7) is understood to mean that Prof. Kimura introduced Mary to Bill earlier than he (= Prof. Kimura) introduced Mary to John, despite the fact that in the comparative clause, only *John-ni* is pronounced. Following Hoji 2002, I will refer to the comparative construction in (7) as *CM-comparative*, where (i) what is pronounced in the comparative clause is only a NP that serves as the locus of comparison, and (ii) the NP is case-marked.^{7, 8} For convenience, I will call the NPs that serve as the locus of comparison *locus NPs* or simply *LNPs*, e.g., *John* and *Bill* in (7).

⁷ The first property distinguishes CM-comparatives from, for example, the construction exemplified by (i-a) where the comparative clause contains a predicate besides the locus NP, and the second one distinguishes them from the construction exemplified by (i-b) where the comparative clause includes only the locus NP without a case-marker.

- (i) a. [IP [AdvP [CP [IP *ec*₁ John-ni *ec*₂ syookaisuru] yorimo] sakini] [IP Kimura kyoozyu₁-ga
John-DAT introduce than early Kimura professor-NOM
Bill-ni Mary₂-o syookaisita]] (to siyoo).
Bill-DAT Mary-ACC introduced that suppose
'(Suppose that) [IP [IP Prof Kimura₁ introduced Mary₂ to Bill] [AdvP earlier [CP than [IP *ec*₁ in-
troduced *ec*₂ to John]]].'
- b. [IP [AdvP [CP John yorimo] sakini] [IP Kimura kyoozyu-ga Bill-ni Mary-o
John than early Kimura professor-NOM Bill-DAT Mary-ACC
syookaisita]] (to siyoo).
introduced that suppose
'(Suppose that) [IP [IP Prof Kimura introduced Mary to Bill] [AdvP earlier [CP than John]]].'

Hoji (1998b, 2002) argues, on the basis of various kinds of bound anaphora, that the comparative clause of a CM-comparative is identical to its antecedent clause at LF, except the locus NPs.⁹ Once Hoji's claim is endorsed, the LF copying or PF deletion analysis is called for. I endorse his claim, and adopt the LF copying analysis in Hoji 1998b, without further discussion.¹⁰ For concreteness, I assume that (7), for example, is analyzed as (8).^{11, 12}

Following Hoji (1998b, 2002), I assume that the constructions in (i) must be grammatically distinguished from CM-comparatives. We will discuss some difference between a CM-comparative and the construction exemplified by (i-b) later in this section.

⁸ The locus NPs in CM-comparatives must be dative-marked (or marginally accusative-marked). Accordingly, in all of the CM-comparative examples we will consider, the locus NPs are dative-marked.

⁹ Hoji (2002:Sections 3.4, 4.2, and 5.2) demonstrates that when bound variable anaphora cannot be established between two elements in the antecedent clause, a sloppy identity reading cannot obtain in the comparative clause, and Hoji (1998b:Section 3.3:143) shows that if bound variable anaphora obtains in the antecedent clause, then a sloppy identity reading is forced in the comparative clause.

¹⁰ The choice between LF copying and PF deletion does not affect any of the ensuing discussions.

¹¹ As far as the linear order is concerned, the AdvP of a CM-comparative can appear sentence-initially, as in (7) or between any of two major constituents of the antecedent clause, as in (i-a)-(i-c).

- (i) a. [IP [IP Kimura kyoozyu-ga [AdvP [CP John-ni yorimo] sakini] Bill-ni Mary-o
Kimura professor-NOM John-DAT than early Bill-DAT Mary-ACC
syookaisita]] (to siyoo).
introduced that suppose
- b. [IP [IP Kimura kyoozyu-ga Bill-ni [AdvP [CP John-ni yorimo] sakini] Mary-o
Kimura professor-NOM Bill-ni John-DAT than early Mary-ACC
syookaisita]] (to siyoo).
introduced that suppose
- c. [IP [IP Kimura kyoozyu-ga Bill-ni Mary-o [AdvP [CP John-ni yorimo] sakini]
Kimura professor-NOM Bill-ni Mary-ACC John-DAT than early
syookaisita]] (to siyoo).
introduced that suppose

However, all of the surface strings in (7), (i-a), (i-b), and (i-c) must be represented at LF in such a way that the AdvP locates sentence-initially as in (8); otherwise, the infinite regress problem ensues at the time of copying, very much as in the case of *antecedent contained deletion* in English (cf. May 1985), as pointed out in Watanabe 1993.

(8) a. Before *to Bill* (the ^LNP of the antecedent clause) raises
 [IP [AdvP [CP to John [C' [IP ec] than]] early] [IP Prof. Kimura introduced
 Mary to Bill]]

b. After *to Bill* (the ^LNP of the antecedent clause) raises
 [IP [AdvP [CP to John [C' [IP ec] than]] early] [IP to Bill₁ [IP Prof. Kimura
 introduced Mary t₁]]]

c. After LF copying takes place (= LF)
 [IP [AdvP [CP to John₁' [C' [IP Prof. Kimura introduced Mary t₁] than]] early] [IP to
 Bill₁ [IP Prof. Kimura introduced Mary t₁]]]

Crucially, this analysis assumes that the locus NP of the antecedent clause undergoes *constituent raising* in the sense of Reinhart 1991 to adjoin the IP in which it originates, so as to avoid non-constituent copying, hence it cannot stay in an A-position at LF. We can thus utilize this construction to illustrate the generalizations in (5).

¹² An anonymous reviewer for *NELS33* has pointed out that (i) below is also a conceivable analysis for (7), where the locus NP of the antecedent clause, *Bill-ni* 'to Bill' raise to the IP that contains the AdvP. I wish to assume without any discussion that (i) is ruled out by some parallelism principle within a theory of focus.

- (i) a. Before *to Bill* (the ^LNP of the antecedent clause) raises
 [IP [AdvP [CP to John [C' [IP ec] than]] early] [IP Prof. Kimura introduced Mary to Bill]]
- b. After *to Bill* (the ^LNP of the antecedent clause) raises
 [IP to Bill₁ [IP [AdvP [CP to John [C' [IP ec] than]] early] [IP Prof. Kimura introduced Mary
 t₁]]]
- c. After LF copying takes place (= LF)
 [IP to Bill₁ [IP [AdvP [CP to John₁' [C' [IP Prof. Kimura introduced Mary t₁] than]] early] [IP Prof.
 Kimura introduced Mary t₁]]]

Let us begin with the generalization in (5a), i.e., $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ can obtain in the basic order even if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF. Consider the following examples:¹³

- (9) a. $[_{IP} [_{AdvP} [_{CP} \text{Kimura kyoozyu-ni yorimo}] \text{sakini}] [_{IP} \text{sootyoo-ga Kimura professor-DAT than early dean-NOM}$
 $[_{S} \text{hutari-no zyokyooyu-ni}] \quad [_{O} \text{sanninzyoo-no gakusei-o}]$
 two-GEN assistant:professor-DAT three:more-GEN student-ACC
 suisensaseta]] (koto)
 made:recommend that
 '(That) [$[_{IP} [_{IP} \text{the dean made } [_{S} \text{two assistant professors}] \text{recommend } [_{O} \text{three or more students}]]] [_{AdvP} \text{earlier } [_{CP} \text{than Prof. Kimura}]]]$ ']
- b. $[_{IP} [_{AdvP} [_{CP} \text{Toyota-ni yorimo}] \text{sakini}] [_{IP} \text{seihi-ga } [_{S} \text{subete-no Toyota-DAT than early government-NOM all-GEN}$
 $\text{biirugaisya-ni}] [_{O} \text{mittuizyoo-no oote hokengaisya-o}]$
 beer:company-DAT three:more-GEN large insurance:company-ACC
 hihansaseta]] (koto)
 made:criticize that
 '(That) [$[_{IP} [_{IP} \text{the government made } [_{S} \text{every beer company}] \text{criticize } [_{O} \text{three or more large insurance companies}]]] [_{AdvP} \text{earlier } [_{CP} \text{than Toyota}]]]$ ']

The antecedent clauses of the CM-comparatives in (9) have the configuration of $[NP_{Sub} [QP_{Sub} [QP_{Obj} \text{ Verb}]] \text{ Cause}]$, where the QP_{Sub} is the locus NP (hence, it cannot stay in an A-position at LF).¹⁴ These examples nevertheless allow the subject QP in the antecedent clause to take wide scope with respect to the clause-mate object QP.

¹³ As in Chapter 2, *S* and *O* in italicized bold subscript stand for *subject* and *object*, and are used to mark the QPs whose scope interaction is under discussion.

¹⁴ As mentioned in FN 8, the locus NPs in CM-comparatives must be dative-marked (or marginally accusative-marked). The use of CM-comparatives involving causative constructions here is necessitated for this reason.

This is not surprising under the assumption that $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ can emerge in the basic order through LF compositional computation, more precisely, through the compositional computation applied to the LF representation, $[\Psi QP_{Sub} [\Psi QP_{Obj} [\Psi \dots t_{Sub} [\dots t_{Obj} \dots]]]]$, where Ψ is an element that denotes a one-place predicate. We can assume, for example, that the availability of the surface scope reading in (9a) is attributed to the analysis in (10).

(10) a. After the QP_{Sub} (the L NP of the antecedent clause) raises

[_{IP} [_{AdvP} [_{CP} Prof. Kimura [_C [_{IP} ec] than]] early] [_{IP} two assistant professors₁ [_{IP} the dean made t_1 recommend three or more students]]]

b. After the QP_{Obj} raises

[_{IP} [_{AdvP} [_{CP} Prof. Kimura [_C [_{IP} ec] than]] early] [_{IP} two assistant professors₁ [_{IP} three or more students₂ [_{IP} the dean made t_1 recommend t_2]]]]

c. After LF copying takes place (= LF)

[_{IP} [_{AdvP} [_{CP} Prof. Kimura₁' [_C [IP three or more students₂ [IP the dean made t_1 recommend t_2]]]] than]] early] [_{IP} two assistant professors₁ [_{IP} three or more students₂ [_{IP} the dean made t_1 recommend t_2]]]]

In fact, when the surface scope reading under discussion obtains in (9a), the scope order among the AdvP and the two QPs is exactly what (10) predicts.¹⁵ That is, the meaning of (9a) can be (11c), but not (11a) or (11b).

¹⁵ I assume that the AdvP in a CM-comparative is an existential quantifier over a degree variable plus its restrictor, cf. Larson 1988.

- (11) a. $QP_{Sub} > QP_{Obj} > AdvP$

There are two x s, x is an assistant professor such that there are three or more y s, y is a student such that the time at which the dean made x recommend y precedes the time at which he (= the dean) made Prof. Kimura recommend y .

- b. $QP_{Sub} > AdvP > QP_{Obj}$

There are two x s, x is an assistant professor such that the time at which there are three or more y_1 s, y_1 is a student such that the dean made x recommend y_1 precedes the time at which there are three or more y_2 s, y_2 is a student such that he (= the dean) made Prof. Kimura recommend y_2 .

- c. $AdvP > QP_{Sub} > QP_{Obj}$

The time at which there are two x s, x is an assistant professor such that there are three or more y_1 s, y_1 is a student such that the dean made x recommend y_1 precedes the time at which there are three or more y_2 s, y_2 is a student such that he (= the dean) made Prof. Kimura recommend y_2 .

To substantiate this intuition truth-conditionally, we may consider the following situations.

- (12) There are two assistant professors, X and Y, and 8 students, A, B, C, D, E, F, G, and H.

- a. Situation 1

The dean made X recommend A, B, C, and D at the time Δ_1 .

The dean made Prof. Kimura recommend A, B, C, and D at the time Δ_2 .

The dean made Y recommend E, F, G, and H at the time Δ_3 .

The dean made Prof. Kimura recommend E, F, G, and H at the time Δ_4 .

[*o* mittuizyoo-no konpyuutaagaisya]-ni gakusei-o syookaisita]].
 three:more-GEN computer:company-DAT student-ACC introduced

'[_{IP} [_{IP} [_S Every professor] introduced students to [_o three or more computer companies]] [_{AdvP} earlier [_{CP} than to Toyota]]].'

The antecedent clauses of the CM-comparatives in (13) have the configuration of [_{QP_{Sub}} [_{QP_{Obj}} Verb]] where the _{QP_{Obj}} is the locus NP (hence, it cannot stay in A-positions at LF). In these examples, the subject QP in the antecedent clause can take scope above the clause-mate object QP.

This is also expected under the assumption that surface scope readings can obtain through LF compositional computation. We can attribute, for example, the surface scope reading under discussion in (13a) to the analysis in (14).¹⁶

(14) a. After the _{QP_{Obj}} (the ^LNP of the antecedent clause) raises

[_{IP} [_{AdvP} [_{CP} Prof. Kimura [_C [_{IP} ec] than]] early] [_{IP} three or more assistant professors₂ [_{IP} two students approached *t*₂]]]

b. After the _{QP_{Sub}} raises

[_{IP} two students₁ [_{IP} [_{AdvP} [_{CP} Prof. Kimura [_C [_{IP} ec] than]] early] [_{IP} three or more assistant professors₂ [_{IP} *t*₁ approached *t*₂]]]]

c. After LF copying takes place (= LF)

[_{IP} two students₁ [_{IP} [_{AdvP} [_{CP} Prof. Kimura₂' [_C [_{IP} *t*₁ approached *t*₂'] than]] early] [_{IP} three or more assistant professors₂ [_{IP} *t*₁ approached *t*₂]]]]

¹⁶ Note that if *two students* does not raise above the AdvP, it cannot bind the trace *t*₁ in the comparative clause, as illustrated in (i).

(i) After LF copying takes place (= LF)
 [_{IP} [_{AdvP} [_{CP} Prof. Kimura₂' [_C [_{IP} [_{IP} *t*₁ approached *t*₂'] than]] early] [_{IP} two students₁ [_{IP} three or more assistant professors₂ [_{IP} *t*₁ approached *t*₂]]]]

Under the analysis in (14), it is predicted that when the surface scope reading under discussion obtains in (13a), the AdvP takes scope below the QP_{Sub} but above the QP_{Obj} . That is, (13a) can give rise to (15b), but not (15a) or (15c). Our intuition confirms that the prediction is correct.

(15) a. $QP_{\text{Sub}} > QP_{\text{Obj}} > \text{AdvP}$

There are two x s, x is a student such that there are three or more y s, y is an assistant professor such that the time at which x approached y precedes the time at which x approached Prof. Kimura.

b. $QP_{\text{Sub}} > \text{AdvP} > QP_{\text{Obj}}$

There are two x s, x is a student such that the time at which there are three or more y s, y is an assistant professor such that x approached y precedes the time at which x approached Prof. Kimura.

c. $\text{AdvP} > QP_{\text{Sub}} > QP_{\text{Obj}}$

The time at which there are two x_1 s, x_1 is a student such that there are three or more y s, y is an assistant professor such that x_1 approached y precedes the time at which there are two x_2 s, x_2 is a student such that x_2 approached Prof. Kimura.

The situations in (16) allow us to substantiate our intuition partially. (Since (15a) cannot be easily differentiated from (15b) truth-conditionally, the absence of (15a) is difficult to confirm.)

(16) There are three students, X, Y, and Z, and eight assistant professors, A, B, C, D, E, F, G, and H.

a. Situation 1

X approached A, B, C, and D at the time Δ_1 .

X approached Prof. Kimura at the time Δ_2 .

Y approached E, F, G, and H at the time Δ_3 .

Y approached Prof. Kimura at the time Δ_4 .

$\Delta_1 \neq \Delta_3$, $\Delta_2 \neq \Delta_4$, and Δ_1 and Δ_3 precede Δ_2 and Δ_4 respectively.

b. Situation 2

X approached A, B, C, and D, and Y approached E, F, G, and H at the time Δ_1 .

X and Z approached Prof. Kimura at the time Δ_2 .

Δ_1 precedes Δ_2 .

If the meaning of (13a) could be (15c), in addition to (15b) (or (15a)), (13a) should be able to be true in both of the situations in (16). Otherwise, (13a) is true in (16a), but not in (16b). The fact seems to be that (13a) can be truthfully uttered only in (16a). Hence, we have partially substantiated our intuition above, and in turn the analysis in (14).

To sum up so far, I have, on one hand, argued that the generalization in (5a) holds (i.e., $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ can obtain in the basic order even if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF), and at the same time, confirmed that $WSR\langle QP_{Sub}, QP_{Obj} \rangle$ can obtain in the basic order through the compositional computation applied to the LF representation, $[\Psi QP_{Sub} [\Psi QP_{Obj} [\Psi \dots t_{Sub} [\dots t_{Obj} \dots]]]]$, where Ψ is an element that denotes a one-place predicate.

I now turn to the generalization in (5b), i.e., $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ cannot obtain in the basic order if the QP_{Sub} or the QP_{Obj} is not in an A-position. First consider the following sentences.

- (17) a. $[_{IP} [_{AdvP} [_{CP} \text{Kimura kyoozyu-ni yorimo}] \text{sakini}] [_{IP} [_{S} \text{sanninizyoo-no Kimura professor-DAT than early three:more-GEN}]]]$

gakusei]-ga [_o rei-no hutari-no kyoozyu]-ni tikazuita].
 student-NOM the-GEN two-GEN professor-DAT approached

'[_{IP} [_{IP} [_S Three or more students] approached [_o the two professors]] [_{AdvP} earlier [_{CP} than Prof. Kimura]]].'

- b. [_{IP} [_{AdvP} [_{CP} Toyota-ni yorimo] sakini] [_{IP} [_S sanninizyoo-no kyoozyu]-ga
 Toyota-DAT than early three:more-GEN professor-NOM

[_o subete-no amerika-no zidoosyagaisya]-ni gakusei-o suisensita]].
 all-GEN America-GEN automobile:company-DAT student-ACC recommended

'[_{IP} [_{IP} [_S Three or more professors] recommended students to [_o every American automobile company]] [_{AdvP} earlier [_{CP} than to Toyota]]].'

The antecedent clauses of the CM-comparatives in (17) have the configuration of [QP_{Sub} [QP_{Obj} (NP_{Obj}) Verb]] where the QP_{Obj} is the locus NP (hence, it cannot stay in an A-position at LF). What is of interest is that the examples in (17) do not allow the object QP in the antecedent clause to take scope above the subject QP, despite the fact that the antecedent clauses, while pronounced independently, can allow such an option, as illustrated in (18).

- (18) a. [_S Sanninizyoo-no gakusei]-ga [_o rei-no hutari-no kyoozyu]-ni tikazuita.
 three:more-GEN student-NOM the-GEN two-GEN professor-DAT approached

'[_S Three or more students] approached [_o the two professors].'

- b. [_S Sanninizyoo-no kyoozyu]-ga [_o subete-no amerika-no
 three:more-GEN professor-NOM all-GEN America-GEN

zidoosyagaisya]-ni gakusei-o suisensita.
 automobile:company-DAT student-ACC recommended

'[_S Three or more professors] recommended students to [_o every American automobile company].'

The observation regarding the sentences in (17) is rather unexpected under the assumption that $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ can obtain in the basic order through LF composi-

tional computation, i.e., the compositional computation applied to the LF representation, $[\Psi \text{QP}_{\text{Obj}} [\Psi \text{QP}_{\text{Sub}} [\Psi \dots t_{\text{Sub}} [\dots t_{\text{Obj}} \dots]]]]$, where Ψ is an element that denotes a one-place predicate. Under this assumption, we can, for example, reasonably analyze (17a) as (19), predicting the inverse scope reading under discussion to be possible with the scope order of the AdvP taking scope above both the subject and object QPs, (if not with the other two scope orders).

(19) After the QP_{Obj} (the $^{\text{L}}\text{NP}$ of the antecedent clause) raises

$[\text{IP} [\text{AdvP} [\text{CP} \text{Prof. Kimura}_{1'} [\text{C}' [\text{IP} \text{ec}] \text{than}]] \text{early}] [\text{IP} \text{the two professors}_{1'} [\text{IP} \text{three or more students approached } t_1]]]$

a. After the QP_{Sub} raises

$[\text{IP} [\text{AdvP} [\text{CP} \text{Prof. Kimura}_{1'} [\text{C}' [\text{IP} \text{ec}] \text{than}]] \text{early}] [\text{IP} \text{the two professors}_{1'} [\text{IP} \text{three or more students}_{2'} [\text{IP } t_2 \text{ approached } t_1]]]]]$

b. After LF copying (= LF)

$[\text{IP} [\text{AdvP} [\text{CP} \text{Prof. Kimura}_{1'} [\text{C}' [\text{IP} \text{three or more students}_{2'} [\text{IP } t_2 \text{ approached } t_1]] \text{than}]] \text{early}] [\text{IP} \text{the two professors}_{1'} [\text{IP} \text{three or more students}_{2'} [\text{IP } t_2 \text{ approached } t_1]]]]]$

I conclude on the basis of the contrast between (17) and (18) that $\text{WSR} < \text{QP}_{\text{Obj}}, \text{QP}_{\text{Sub}} >$ fails to obtain in the basic order if the QP_{Obj} is not in an A-position. The comparison of (17) with (20) further corroborates the conclusion.

(20) a. $[\text{IP} [\text{AdvP} [\text{CP} \text{Kimura kyoozyu yorimo}] \text{sakini}] [\text{IP} [\text{S} \text{sanninizyoo-no gakusei}] \text{-ga} \text{Kimura professor than early three:more-GEN student-NOM} [\text{o rei-no hutari-no kyoozyu} \text{-ni tikazuita}]].$
 the-GEN two-GEN professor-DAT approached

'[IP [IP [S Three or more students] approached [O the two professors]] [AdvP earlier [CP than Prof. Kimura]]].'

- b. [IP [AdvP [CP Toyota yorimo] sakini] [IP [S sanninzyoo-no kyoozyu]-ga
Toyota than early three:more-GEN professor-NOM

[O subete-no amerika-no zidoosyagaisya]-ni gakusei-o suisensita]].
all-GEN America-GEN automobile:company-DAT student-ACC recommended

'[IP [IP [S Three or more professors] recommended students to [O every American automobile company]] [AdvP earlier [CP than Toyota]]].'

The examples in (20) are exactly identical to those in (17) except that the locus NPs of the comparative clauses are not case-marked. Following Hoji (2002), I will call the comparative construction in (20) *Non-CM-comparative*. Hoji (2002) argues, on the basis of various kinds of bound variable anaphora, that unlike a CM-comparative, a Non-CM-comparative does not involve LF copying (or PF deletion) (i.e., its comparative clause contains an instance of (covert) *deep anaphor* in the sense of Hankamer & Sag 1976), implying that the locus NP of the antecedent clause in a Non-CM-comparative needs not move out of the IP in which it originates, and may stay in an A-position.¹⁷ Strikingly,

¹⁷ The following empirical materials also support for the thesis that a Non-CM-comparative does not involve LF copying (or PF deletion).

- (i) a. John-wa [AdvP [CP Mary-ni yorimo] sakini] Susan-ni email-de soodansita.
John-TOP Mary-DAT than early Susan-DAT email-with consulted
'John consulted with Susan through email [AdvP [CP earlier than with Mary]].'
b. John-wa [AdvP [CP Mary yorimo] sakini] Susan-ni email-de soodansita.
'John consulted with Susan through email [AdvP [CP earlier than Mary]].'

(i-a) can be true, for example, in the situation where John consulted, on a given day, with Mary by telephone at 10am, with Susan by email at 2pm, and with Mary by email at 6pm. (i-b), by contrast, cannot be true if John contacted Mary earlier than Susan. This observation indicates that (i-a), but not (i-b), can allow the comparative clause to mean that John consulted with Mary through email; hence, CM-comparatives can be considered as involving IP-ellipsis while Non-CM-comparatives cannot. Furthermore, it is not reasonable to consider Non-CM-comparatives as involving some form of ellipsis; for, it is conceptually difficult to maintain the licensing condition for ellipsis that rules out for (i-b) the ellipsis corresponding to the antecedent clause, *John consulted x through email*, but not the ellipsis corresponding to its part, *John consulted x*.

the Non-CM-comparatives in (20), although their surface forms are very similar to those of the CM-comparatives in (17), allow the object QP in the antecedent clause to take wide scope with respect to the subject QP, and this is fully consistent with the conclusion that $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ fails to obtain in the basic order if the QP_{Obj} is not in an A-position.

Let us now consider the availability of $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ in the basic order in the situation where the QP_{Sub} cannot be in an A-position. The CM-comparative examples in (21) are relevant for addressing the issue.

- (21) a. $[IP [AdvP [CP Kimura kyoozyu-ni \text{ yorimo}] sakini] [IP sootyoo-ga$
 Kimura professor-DAT than early dean-NOM
- $[S sanninzyoo-no zyokyozyu]-ni \quad [o rei-no hutari-no gakusei]-o$
 three:more-GEN assistant:professor-DAT the-GEN two-GEN student-ACC
- suisensaseta]] (to siyoo).
 made:recommend (that suppose)
- '(Suppose that) $[IP [IP the dean made [S three or more assistant professors]$
 recommend $[o the two students]] [AdvP earlier [CP than Prof. Kimura]]]$.'
- b. $[IP [AdvP [CP Toyota-ni \text{ yorimo}] sakini] [IP sei-hu-ga \quad [S mittuizyoo-no$
 Toyota-DAT than early government-NOM three:more-GEN
- biirugaisya]-ni $[o subete-no oote hokengaisya]-o \quad hihansaseta]]$
 beer:company-DAT all-GEN large insurance:company-ACC made:criticize
- (to siyoo).
 that suppose
- '(Suppose that) $[IP [IP the government made [S three or more beer companies]$
 criticize $[o every large insurance company]] [AdvP earlier [CP than Toyota]]]$.'

The antecedent clauses in (21) have the configuration of $[NP_{Sub} [QP_{Sub} [QP_{Obj} Verb]] Cause]$, where the QP_{Sub} is the locus NP (hence, it cannot stay in A-position at LF). As

in the above cases, these examples do not permit the object QP in the antecedent clause to take scope above the subject QP, although such an option is available when the antecedent clauses are pronounced independently, as shown in (22).

- (22) a. Sootyoo-ga [_S sanninizyoo-no zyokyooyu]-ni [_O rei-no hutari-no
dean-NOM three:more-GEN assistant:professor-DAT the-GEN two-GEN
gakusei]-o suisensaseta] (to siyoo).
student-ACC made:recommend (that suppose)
'(Suppose that) the dean made [_S three or more assistant professors] recommend [_O the two students].'
- b. Seihu-ga [_S mittuizyoo-no biirugaisya]-ni [_O subete-no oote
government-NOM three:more-GEN beer:company-DAT all-GEN large
hokengaisya]-o hihansaseta (to siyoo).
insurance:company-ACC made:criticize that suppose
'(Suppose that) the government made [_S three or more beer companies] criticize [_O every large insurance company].'

Once again, this fact is rather unexpected under the assumption that inverse scope readings can emerge through LF compositional computation. For nothing prevents us from analyzing (22a), for example, as (23), and expecting the inverse scope reading under discussion to be possible with the scope order of the AdvP taking scope below the object QP and above the subject QP.

- (23) a. After the QP_{Sub} (the ^LNP of the antecedent clause) raises
[_{IP} [_{AdvP} [_{CP} Prof. Kimura₁' [_{C'} [_{IP} ec] than]] early] [_{IP} three or more
assistant professors₁ [_{IP} the dean made t₁ recommend the two students.]]]
- b. After the QP_{Obj} raises
[_{IP} the two students₂ [_{IP} [_{AdvP} [_{CP} Prof. Kimura₁' [_{C'} [_{IP} ec] than]] early] [_{IP}
three or more assistant professors₁ [_{IP} the dean made t₁ recommend t₂]]]]

c. After LF copying takes place (= LF)

[_{IP} the two students₂ [_{IP} [_{AdvP} [_{CP} Prof. Kimura₁' [_{C'} [_{IP} the dean made t₁
recommend t₂] than]] early] [_{IP} three or more assistant professors₁ [_{IP} the dean
 made t₁ recommend t₂]]]]

The Non-CM-comparative counterparts of (21), on the other hand, can give rise to the inverse scope readings under discussion, as illustrated in (24).

- (24) a. [_{IP} [_{AdvP} [_{CP} Kimura kyoozyu yorimo] sakini] [_{IP} sootyoo-ga
 Kimura professor than early dean-NOM
 [_S sanninizyoo-no zyokyozyu]-ni [_o rei-no hutari-no gakusei]-o
 three:more-GEN assistant:professor-DAT the-GEN two-GEN student-ACC
 suisensaseta]] (to siyoo).
 made:recommend (that suppose)
 '(Suppose that) [_{IP} [_{IP} the dean made [_S three or more assistant professors]
 recommend [_o the two students]] [_{AdvP} earlier [_{CP} than Prof. Kimura]]].'
- b. [_{IP} [_{AdvP} [_{CP} Toyota yorimo] sakini] [_{IP} seihiu-ga [_S mittuizyoo-no
 Toyota than early government-NOM three:more-GEN
 biirugaisya]-ni [_o subete-no oote hokengaisya]-o hihansaseta]]
 beer:company-DAT all-GEN large insurance:company-ACC made:criticize
 (to siyoo).
 that suppose
 '(Suppose that) [_{IP} [_{IP} the government made [_S three or more beer companies]
 criticize [_o every large insurance company]] [_{AdvP} earlier [_{CP} than Toyota]]].'

I take the contrast between (21) on the one hand, and (22) and (24) on the other as evidence that $WSR < QP_{Obj} QP_{Sub} >$ cannot obtain in the basic order if the QP_{Sub} is not in an A-position.

I have thus demonstrated that the generalizations in (5) holds, repeated here.

- (5) a. $WSR\langle QP_{Sub}, QP_{Obj}\rangle$ can obtain in the basic order even if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF.
- b. $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ cannot obtain in the basic order if the QP_{Sub} or the QP_{Obj} is not in an A-position at LF.

The following English materials seem to be also in support of (5).

- (25) a. [_{IP} [_{IP} [_S Every student] talked to [_O some professor]] [_{AdvP} earlier [_{CP} than to Prof. Kimura]]].
- b. [_{IP} [_{IP} [_S Most professors] introduced student to [_O three or more companies]] [_{AdvP} earlier [_{CP} than to Toyota]]].
- (26) a. [_{IP} [_{IP} [_S Every student] talked to [_O some professor]] [_{AdvP} earlier [_{CP} than Prof. Kimura]]].
- b. [_{IP} [_{IP} [_S Most professors] introduced student to [_O three or more companies]] [_{AdvP} earlier [_{CP} than Toyota]]].

The examples in (25) differ minimally from those in (26) in the presence or absence of the preposition *to* in the comparative clauses, and both allow the subject QP in the antecedent clause to take scope above its clause-mate the object QP. Let us refer to the former as *PP-comparative* and the latter as *Non-PP-comparative*.

What is of interest is that PP-comparatives do not allow the object QP in the antecedent clause to take scope above the subject QP, while such an option is permitted in Non-PP-comparatives. This is illustrated in (27)-(28).

- (27) a. [_{IP} [_{IP} [_S Some student] talked to [_O every assistant professor]] [_{AdvP} earlier [_{CP} than to Prof. Kimura]]].

- b. [_{IP} [_{IP} [_S Three or more professors] introduced students to [_O the two companies]] [_{AdvP} earlier [_{CP} than to Toyota]]].
- (28) a. [_{IP} [_{IP} [_S Some student] talked to [_O every assistant professor]] [_{AdvP} earlier [_{CP} than Prof. Kimura]]].
- b. [_{IP} [_{IP} [_S Three or more professors] introduced students to [_O the two companies]] [_{AdvP} earlier [_{CP} than Toyota]]].

Under the assumption that (i) a PP-comparative is analyzed on a par with a CM-comparative, and (ii) a Non-PP-comparative is (or can be) analyzed as a Non-CM-comparative, the generalizations in (5) nicely account for the fact that PP-comparatives allow surface scope readings but not inverse scope readings, cf. (25) and (27), while Non-PP-comparatives allow both of the readings, cf. (26) and (28).

I conclude on the basis of the generalizations in (5) that surface scope readings may emerge on the basis of (4a) while inverse scope readings are not due to (4b), and that the former may emerge through LF compositional computation while the latter does not.

3.2.2. Covert and overt mismatch¹⁸

In this subsection, I will provide another piece of evidence that $WSR < QP_{Obj}, QP_{Sub} >$ does not obtain in the basic order through the compositional computation applied to the LF representation, [_Ψ QP_{Obj} [_Ψ QP_{Sub} [_Ψ ... t_{Sub} [... t_{Obj} ...]]]], where Ψ is an element that denotes a one-place predicate.

¹⁸ Some of the discussion in this section is also found in Hayashishita 2000a:Section 3.2, pp.286-288.

Consider the generalizations in (2) once again, which I repeat here for convenience.

(2) (= Chapter 2 (68))

- a. $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ obtains in the basic order only if all of the conditions, (i)-(iii), are met.
- b. $WSR\langle QP_{Sub}, QP_{Obj}\rangle$ obtains in the basic order even if it is not the case that all of the conditions, (i)-(iii), are met.
 - i. The speaker refers to a specific group with the QP taking wide scope.
 - ii. If there is a QP α that is not the QP_{Sub} or the QP_{Obj} , or a potential dependent term β , then the QP taking narrow scope does not take wide scope with respect to α or bind β .
 - iii. If the verb is negated, the scope of the verbal negation is limited to the verb itself.

Suppose that inverse scope readings were able to emerge through LF compositional computation. Then, the generalizations in (2a) would be interpreted as indicating that the LF representations in (29)-(31), where Ψ signifies an element that denotes a one-place predicate, and the QP_{Sub} and the QP_{Obj} are clause-mates, are, for example, not accessible to the speaker.

(29) LF: $[\Psi QP_{Obj} [\Psi QP_{Sub} [\Psi \dots t_{Sub} [\dots t_{Obj} \dots]]]]$,

where the QP_{Obj} does not refer to a specific group

(30) a. LF: $[\Psi QP_{Obj} [\Psi QP_{Sub} [\Psi QP_{\alpha} [\Psi \dots t_{Sub} [\dots t_{Obj/\alpha} \dots t_{\alpha/Obj} \dots]]]]]]$

b. LF: $[\Psi QP_{Obj} [\Psi QP_{Sub} [\Psi \dots t_{Sub} [\dots NP_{\alpha}/t_{Obj} \dots t_{Obj}/NP_{\alpha} \dots]]]]$,

where the NP_{α} is bound by the QP_{Sub}

- (31) a. LF: [not [ψ QP_{Obj} [ψ QP_{Sub} [ψ ... t_{Sub} [... t_{Obj} ...]]]]]
 b. LF: [ψ QP_{Obj} [not [ψ QP_{Sub} [ψ ... t_{Sub} [... t_{Obj} ...]]]]]

The proponents of the thesis under discussion, therefore, may seek out some pragmatic principles so as to systematically rule out the representations in (29)-(31) (although to formulate such principles seems rather difficult, to say the least).^{19, 20} I contend, however, that the speaker does utilize the representations under discussion. Hence, resorting to pragmatic principles is not an option, and the thesis that WSR<QP_{Obj}, QP_{Sub}> can obtain in the basic order through LF compositional computation must be rejected.

My argument is on the basis of the scope interaction in the configuration of [QP_{Obj} [... QP_{Sub} ...]], where the QP_{Obj} and the QP_{Sub} are clause-mates, (= the scrambled order). As we will observe below, WSR<QP_{Obj}, QP_{Sub}> obtains in the scrambled order even if it is not the case that all of the conditions in (2-i)-(2-iii) are met, and one of the direct implications from this generalization is that the speaker's intuitions regarding the availability of WSR<QP_{Obj}, QP_{Sub}> in the scrambled order are based on the representations in (29)-(31).

Let us now go over some empirical materials to illustrate the generalization under discussion. First, the examples in (32) illustrate that WSR<QP_{Obj}, QP_{Sub}> obtains in the scrambled order even when it is reasonable to assume that the speaker does not refer to a

¹⁹ Incidentally, ruling them out by pragmatic principles is not an option for Hornstein 1995 and Beghelli & Stowell 1997, since they assume that wide scope readings in general, including inverse scope readings, are consequences of feature-driven movement.

²⁰ I thank Barry Schein for pointing out to me (p.c. March 2001) that the proponents may resort to pragmatic principles and maintain the thesis under discussion.

specific group with the QP_{Obj} . This suggests that (29) is an accessible LF representation for the speaker.

(32) (Cf. Chapter 2 (15).)

- a. USC-de-wa maitosi [_o goninizyoo-no sinnyuusei]-o [_s sannin-no
USC-at-TOP every:year five:more-GEN new:student-ACC three-GEN

kyoozyu]-ga zinbunkagakusyoo-ni suisensuru.
professor-NOM humanity:award-DAT recommend

'(Lit.) In USC, each year, [_o five or more incoming students], [_s three
professors] recommend for the humanity award.'
- b. kondo-no gakkai-wa, mosi [_o takusan-no happyoosya]-ni [_s hutariizyoo-no
coming-GEN conference-TOP if many-GEN presenter-DAT two:more-GEN

hito]-ga giron-o sikaketa ra, seikoo to siyoo.
person-NOM argument-ACC initiated if success that suppose

'(Lit.) In the coming conference, if [_o many presenters], [_s two or more persons]
argue with, let us consider the conference to be a success.'

Second, the examples in (33) show that in the configuration, [QP_{α} [... QP_{Sub} [... QP_{β}/t_{α} ... t_{α}/QP_{β} ...]]], where the QP_{α} is the direct or indirect object, and the QPs are clause-mates, $WSR\langle QP_{\alpha}, QP_{Sub}\rangle$ can co-occur with $WSR\langle QP_{Sub}, QP_{\beta}\rangle$, suggesting that the speaker also utilizes the LF representation in (30a).

(33) (Cf. Chapter 2 (22), (27), and (29).)

- a. [_o rei-no hutari-no gakusei]-o [_s sanninizyoo-no kyoozyu]-ga [_o hutatu-no
the-GEN two-GEN student-ACC three:more-GEN professor-NOM two-GEN

kaisya]-ni suisensiteita.
company-DAT recommended

'(Lit.) [_o The two students], [_s three or more professors] recommended to [_o two
companies].'

- b. [_o Subete-no gakusei]-ni [_s sannizyoo-no heddohantaa]-ga [_o hutatu-no
all-GEN student-DAT three:more-GEN headhunter-NOM two-GEN
kaisya]-o syookaisiteita.
company-ACC introduced

'(Lit.) To [_o every students], [_s three or more headhunters] introduced [_o two companies].'

Third, the speaker also seems to utilize the representation in (30b). The examples in (34), for instance, illustrate that in the configuration, [QP_{α} [... QP_{Sub} [... NP_{β}/t_{α} ... t_{α}/NP_{β} ...]]], where the QP_{α} is the direct or indirect object, and the QPs are clause-mates, $WSR\langle QP_{\alpha}, QP_{Sub} \rangle$ can obtain while the QP_{Sub} binds the NP_{β} .

(34) (Cf. Chapter 2 (40), (43), and (45).)

- a. [_o Rei-no hutatu-no kaisya]-o [_s mittuizyoo-no ginkoo]-ga soko-no
the-GEN two-GEN company-ACC three:more-GEN bank-NOM that:place-GEN
torihikisaki-ni syookaisita to siyoo.
customer-DAT introduced that suppose

'(Lit.) Suppose that [_o the two companies], [_s three or more banks] introduced to its customer.'

- b. Tyoosa-ni yoruto, [_o subete-no bengosi]-ni [_s itutuizyoo-no kaisya]-ga
survey-DAT according:to all-GEN attorney-DAT five:more-GEN company-NOM
soko-no mondai-ni taisite-no kaiketusaku-o dasuyoo motometeita.
that:place-GEN problem-DAT against-GEN solution-ACC report requested

'(Lit.) According to a survey, [_o every attorneys], [_s five or more companies] asked to come up with a solution to its problem.'

Furthermore, the examples in (35) show that $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ can obtain in the scrambled order with all of the following scope orders, (i) the negation> QP_{Obj} > QP_{Sub} order, (ii) the QP_{Obj} >negation> QP_{Sub} order, and (iii) the QP_{Obj} > QP_{Sub} >negation

order. I hence conclude that the LF representations in (31) are also accessible to the speaker.

(35) (Cf. Chapter 2 (60).)

- a. Mosi [_o subete-no gakusei]-o [_s hutariizyoo-no kyoozyu]-ga Toyota-ni
if all-GEN student-ACC two:more-GEN professor-NOM Toyota-DAT

suisensi-na-katta ra, John-wa hungaisuru daroo.
recommend-not-PAST if John-TOP get:mad probably

'(Lit.) If [_o every student], [_s two or more professors] do not recommend to Toyota, John would be mad.

- b. [_o Rei-no hutari-no kyoozyu]-ni [_s sanninizyoo-no gakusei]-ga
the-GEN two-GEN professor-DAT three:more-GEN student-NOM

hanasikake-na-katta node, John-wa gakkarisiteiru daroo.
talk-not-PAST since John-TOP being:disappointed probably

'(Lit.) Since [_o the two professors], [_s three or more students] did not approach, John must be disappointed.'

Given that the LF representations in (29)-(31) are the accessible representations for the speaker, I take the generalization in (2a) as constituting evidence against the thesis that $WSR \langle QP_{Obj}, QP_{Sub} \rangle$ obtains in the basic order based on the LF in (4b), pointing to the conclusion that the reading under discussion does not emerge through LF compositional computation.

3.3. Two sources of scope interaction: (i) LF compositional computation and (ii) MINOR, an extra-grammatical operation

In Section 3, we have reached the conclusion that surface scope readings may obtain through LF compositional computation while inverse scope readings do not. It thus follows that (i) there are (at least) two sources of wide scope readings, LF compositional computation and an extra-grammatical operation, which I will call MINOR for conven-

ience, and (ii) inverse scope readings must be due to MINOR. In the light of this, I claim that the generalizations in (2) are part of the generalizations in (36).

- (36) a. $WSR\langle\alpha, \beta\rangle$ can obtain due to MINOR, where α and β are QPs, only if all of the conditions, (i)-(iii), are met.²¹
- b. $WSR\langle\alpha, \beta\rangle$ can obtain through LF compositional computation, where α and β are QPs, even if it is not the case that all of the conditions, (i)-(iii), are met
- i. The speaker refers to a specific group with α .
 - ii. If there is a QP γ that is not α or β or a potential dependent term δ , then β does not take wide scope with respect to γ or bind δ
 - iii. If the verb of which α is an argument is negated, the scope of the verbal negation is limited to the verb itself.

I also maintain (37), based on the discussion in Sections 3.2.1, supporting the view that a QP may or may not undergo covert movement.

- (37) When $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, both α and β stay in an A-position.

3.4. Surface scope readings involving MINOR

I have so far argued that inverse scope readings must be due to MINOR while surface scope readings need not. Logically speaking, nothing excludes the possibility that surface scope readings can be due to MINOR. In this section, I argue that some instances of surface scope readings are indeed due to MINOR, thereby further supporting

²¹ But see FN 7 in Chapter 2.

the thesis that there are two sources of scope interaction: LF compositional computation and MINOR.

First consider the following sentence:

(38) [_S Every professor] did not recommend [_O three or more students] to Toyota.

(38) can be taken to mean that each professor has three or more students that he or she did not recommend to Toyota, and this fact leads us to conclude that while *every professor* takes wide scope with respect to *three or more students*, *three or more students* can still take scope above the negation.

There are three logically possible analyses to account for the reading under discussion in (38), which are listed in (39). (Recall that if $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, the scope of the verbal negation that is a clause-mate of α is limited to the verb itself, see (36).)

(39) a. Analysis 1

$WSR\langle QP_{Sub}, QP_{Obj}\rangle$, obtaining in the basic order where the verb is negated, is due to MINOR, provided that the QP_{Obj} takes scope above the negation.

b. Analysis 2

$WSR\langle QP_{Sub}, QP_{Obj}\rangle$, obtaining in the basic order where the verb is negated, is through LF compositional computation, provided that the QP_{Obj} takes scope above the negation.

c. Analysis 3

WSR<QP_{Sub}, QP_{Obj}>, obtaining in the basic order where the verb is negated, may be either due to MINOR or through LF compositional computation, provided that the QP_{Obj} takes scope above the negation.

Analysis 1 is possible only if the assumption in (40a) is valid, and Analyses 2 & 3, on the other hand, depend on the assumption in (40b).²²

(40) a. Assumption 1

An object QP cannot raise above its clause-mate verbal negation via covert movement.

b. Assumption 2

An object QP can raise above its clause-mate verbal negation via covert movement.

To examine which analysis is correct, let us consider the following example:

(41) [_S Every professor] did not recommend [_O three or more students] to [_α two companies].

Under Analyses 2 & 3, which depend on the assumption in (40b), it is predicted that (41) can be represented at LF as either (42a) or (42b). Hence, we expect that *every professor* can take wide scope with respect to *three or more students*, which in turns scope above

²² Analysis 1, if maintained, thus argues in effect that the *shortest move* principle in Fox 2000 below is an absolute principle, contra Fox (2000), who claims that a QP, after moving to the closest position in which it is interpretable, can continue to raise as long as the *scope economy* principle is not violated.

(i) (= Fox 2000:Ch.2 (6), p.23)

Shortest Move

QR must move a QP to the closest position in which it is interpretable. In other words, a QP must always move to the closest clause-denoting element that dominates it.

two companies, with either of the scope orders in (43a) and (43b); i.e, (41) can be used to express the interpretations in (44a) and (44b).

- (42) a. [_{IP} every professor₁ [_{NegP} three or more students₂ [_{NegP} two companies₃ [_{NegP} not [_{VP} t₁ ... t₂ ... t₃ ...]]]]]]
- b. [_{IP} every professor₁ [_{NegP} three or more students₂ [_{NegP} not [_{VP} two companies₃ [_{VP} t₁ ... t₂ ... t₃ ...]]]]]]
- (43) a. *every* > *three or more* > *two* > negation
- b. *every* > *three or more* > negation > *two*
- (44) a. Each professor has three or more students such that for each of the students, there are two companies to which he or she (= student) was not recommended by him or her (= professor).
- b. Each professor has three or more students such that for each of the students, it is not the case that he or she (= student) was recommended to two companies.

Analysis 1, on the other hand, adopts the assumption in (40a); hence, it predicts that (41) cannot be represented at LF as (42a) or (42b), and the readings under discussion is not possible for (41) if it is interpreted through LF compositional computation. Under Analyses 1 & 3, the interpretation of (41) may involve MINOR. But MINOR also does not give rise to (44a) or (44b) for the following reasons. If the wide scope reading of *every professor* over *three or more students* obtains in (41) due to MINOR, *three or more students* should not be able to take scope above *two companies*.

The fact seems to be that (41) cannot be used to indicate (44a) or (44b). When *every professor* takes wide scope with respect to *three or more students*, which in turn scopes above *two companies*, in (41), the negation may take scope below *every profes-*

sor, but must take scope above the other QPs. I hence reject Analyses 2 & 3, and adopt Analysis 1 with the assumption in (40a). We have thus observed an instance of a surface scope reading due to MINOR.

A similar argument can be constructed, using binding. First observe that the sentence in (45) can be understood to mean that each professor has at least one student that he or she did not recommended to Toyota, indicating that while *every professor* takes wide scope with respect to *at least one student* in (45), *at least one student* can take scope above the negation.

(45) [_S Every professor] did not recommend [_o at least one student] to Toyota.

To account for the reading under discussion in (45), the three analyses in (39) are logically possible.

To examine which analysis to be maintained, we may consider (46).

(46) [_S Every professor] did not recommend [_o at least one student] to his favorite company.

Under Analyses 2 & 3, which adopt the assumption in (40b), (46) should be able to be represented as (47), and we predict that (46) can be understood to mean that each professor has at least one student that he or she did not recommend to his or her favorite company.

(47) [_{IP} every professor₁ [... [_{NegP} at least one student₂ [_{NegP} not [_{VP} t₁ ... t₂ ... *his* ...]]]]]

Analysis 1, however, leads us to predict that such a reading is not possible. Because Analysis 1 adopts the assumption in (40a), (47) is not an available representation for (46); hence, LF compositional computation does not give rise to the reading under

discussion. MINOR does not give us the reading either. For, if the wide scope reading of *every professor over at least one student* obtains in (46) through MINOR, *at least one* should not be able to bind a dependent term. The fact, once again, speaks for Analysis 1.

We can also motivate Analysis 1, using other types of QPs. Here, I provide two more sets of examples. In the examples in (48), the direct object QP can take scope above the negation while the subject QP takes wide scope with respect to it.

- (48) a. If [_S many professors] did not introduce [_O two students] to companies, the chair would get mad.
- b. [_S A half of the professors] did not recommend [_O more than two students] to Toyota.

However, as illustrated in the sentences in (49), when the subject QP takes scope above the direct QP, which in turn takes scopes above the indirect QP, neither the direct QP nor the indirect QP can take scope above the negation. This is consistent with Analysis 1, but not with Analysis 2 or 3.

- (49) a. If [_S many professors] did not introduce [_O two students] to [_O at least one company], the chair would get mad.
- b. [_S A half of the professors] did not recommend [_O more than two students] to [_O at least one company].

To the extent that Analysis 1 is correct, the assumption in (40a) must be valid. Under the assumption that there are two and only two sources of scope interaction among QPs, (i) LF compositional computation and (ii) MINOR, we thus predict from (40a) that the generalization in (50) should hold.

(50) Let α be an object QP and β any QP other than α .

In the event that α takes scope above its clause-mate negation, neither $WSR\langle\alpha, \beta\rangle$ nor $WSR\langle\beta, \alpha\rangle$ can obtain through LF compositional computation, and they must be due to MINOR.

The prediction seems to be correct as the following discussion indicates. In the sentences in (51), the wide scope reading of the direct object QP over the indirect object QP is possible, but if the direct object QP takes scope above the negation at the same time, the indirect object QP cannot take scope below the negation, i.e., it must take scope above it.

- (51) a. Prof. Smith did not recommend [_o more than three students] to [_o two companies].
- b. John did not introduce [_o every girl] to [_o more than three girls].

(51a), for example, can be taken to mean that there are more than three students such that each of the students has two companies such that Prof. Smith did not recommend him or her to them, but it cannot be understood to mean that there are more than three students such that for each of the students, it is not the case that Prof. Smith recommend his or her to two companies. This directly follows from (50). When the direct object QP takes scope over the negation in the sentences under discussion, the wide scope reading of the direct object QP over the indirect object QP must be due to MINOR. We then expect that the negation should take scope below both of the QPs. (Recall that when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, the scope of the verbal negation that is clause-mate of α is limited to the verb itself.) We have thus not only con-

firmed the prediction in (50), but also observed another instance of a surface scope reading due to MINOR.

We have so far argued for the existence of wide scope readings due to MINOR with English and Japanese in a parallel fashion (i.e., Chapter 2 and the preceding sections of the present chapter except Section 3.2.2). One may thus wonder if we can also observe in Japanese instances of surface scope readings that are due to MINOR. Although I believe that there are such instances, it does not seem possible to isolate them in the way we did for English, given that a verbal negation in Japanese is morphologically affixed to the verb and the option of the negation taking scope only the verb itself seems always available even when a given sentence is interpreted through LF compositional computation.²³ I leave the identification of surface scope readings due to MINOR in Japanese for my future research.

3.5. On MINOR

I have argued above that there are two sources of scope interaction among QPs, LF compositional computation and an extra-grammatical operation (the latter of which I will continue to call MINOR). One may legitimately ask what the extra-grammatical operation is. To address such a question, we must first rigorously describe the nature of cognitive domains other than the grammar and how they interact with the grammar, and such a task is beyond the scope of this dissertation. In this section, I would nevertheless

²³ In Hayashishita 2000c, I assume that a verbal negation in Japanese is attached not to the verb itself, but to the VP headed by it, and attempt to produce a paradigm that is similar to the English paradigm above. Admittedly, however, the reported judgments are subtle and not convincing.

like to spell out the properties of the extra-grammatical operation on the basis of the preceding discussions and provide some speculative remarks.

3.5.1. Properties of MINOR

In this subsection, I will spell out four properties that should be attributed to MINOR. First, the generalization that both surface and inverse scope readings can be due to MINOR seems to indicate (52).

(52) Property 1

MINOR is an operation that does not make reference to c-command.

Second, the generalization that $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, only if the speaker refers to a specific group with α suggests (53).

(53) Property 2

MINOR includes the substantiation of a specific group that is 'compatible with' the denotation of a QP.

Third, the generalization that when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, some interpretive restriction is imposed on β , as well as on the verbal negation that is a clause-mate of α , indicates that MINOR is an operation that applies to more than α , the scope taking element. The (unchallenged) observation that the QP_β in the configuration of $[IP \dots QP_\alpha [IP \dots QP_\beta \dots]]$ cannot take wide scope with respect to the QP_α , as illustrated in (54) (cf., May 1988, Ruys 1992 and Fox 2000), seems to suggest that the domain of MINOR consists of only the items that are major constituents of the same clause. I hence maintain (55).

- (54) (= Fox 2000:Ch.2 (88), p. 62)
- a. #Someone said that every man is married to Sue.
 - b. #Someone said that Sue is married to every man.

(55) Property 3

MINOR operates on a domain consisting of A_1, A_2, \dots, A_n , where A_1, A_2, \dots, A_n are major constituents of the same clause.

Recall the generalization that when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, β cannot take scope above another QP. Since the scope interaction due to MINOR requires both of the QPs to be in A-positions, the possibility that the QP β takes wide scope with respect to another QP through LF compositional computation is automatically excluded. But what is implied in this generalization is that the other possibility, namely the scope taking of the QP β due to MINOR is also excluded. I hence maintain (56).

(56) Property 4

MINOR is an operation that makes one element bear clausal scope, and is allowed only once per its domain.

In fact, the generalization that when $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ obtains in the basic order, the QP_{Sub} cannot scope over another QP or bind a dependent term is part of the general generalization that when $WSR\langle QP_{Obj}, QP_{Sub}\rangle$ obtains in the basic order, no clause-mate of the QP_{Obj} can scope over or bind another element. In the configurations in (57), for ex-

ample, $WSR\langle QP_{Obj}, QP_{Sub} \rangle$ cannot co-occur with $WSR\langle QP_{Sub}, QP_{\alpha} \rangle$ or $WSR\langle QP_{\alpha}, QP_{Sub} \rangle$.²⁴

- (57) a. [... QP_{Sub} [... QP_{Obj} ... QP_{α} ...]], where QP_{Sub} , QP_{Obj} and QP_{α} are clause-mates
- b. [... QP_{Sub} [... QP_{α} ... QP_{Obj} ...]], where QP_{Sub} , QP_{Obj} and QP_{α} are clause-mates
- c. [... QP_{α} ... QP_{Sub} [... QP_{Obj} ...]], where QP_{Sub} , QP_{Obj} and QP_{α} are clause-mates

3.5.2. Speculative remarks

I have spelled out above four properties that should be attributed to MIINOR. On the basis of these properties, I would like to speculate that MINOR is an operation that applies to a domain consisting of A_1, A_2, \dots, A_n , where A_1, A_2, \dots, A_n are major constituents of the same clause, and create a mental representation where a specific group, which is 'grabbed' from some cognitive domain other than the lexicon of the language on the basis of the lexical information of an NP/a QP in the domain of the operation, is associated with one place predicate, which is formed on the basis of the lexical information of the rest of the elements in the domain. I speculate that the wide scope reading of *three professors over more than two students* in (58) is, for example, due to the representation in (59).

- (58) (Context: You investigate how many students visited Prof. A, Prof. B, and Prof. C, and report the result.)

²⁴ A partial illustration of this generalization is given in Hayashishita 2000a:Section 5, p. 295.

More than two students visited three professors.

(59) $\{a, b, c\} \dashv\vdash \lambda x \exists y (visited(x, y) \wedge more-than-two(y) \wedge student(y))$

One may wonder why the generalization holds that when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, some interpretive restriction is imposed on β , as well as the verbal negation that is a clause-mate of α . Regarding this question, I would like to speculate as follows. MINOR, I believe, is an operation that associates a specific group with one place predicate, crucially without making reference to c-command relation. Within the predicate, therefore, the c-command relations of the elements are not defined, and as a consequence, the scope order cannot be defined. Hence, when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, β cannot take scope above another QP or bind a dependent term. The reason why the scope of a verbal negation in the situation under discussion is limited to the verb itself is that what a verbal negation can do without making reference to c-command information is only to negate the verb next to it, and as a consequence, it appears to take scope below all of its clause-mate QPs.

I would also like to attribute the generalization that $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, only if both α and β stay in an A-position to the assumption that MINOR does not make reference to c-command relation. Since c-command relation is not available information for MINOR, if an element α is in an A'-position, the binding relation between it and its trace cannot be interpreted, and as a consequence, the information regarding which verb α is an argument of and which theta role

α has cannot be retrieved. Hence, MINOR is not possible if an element in its domain is not in an A-position.²⁵

3.5.3. Can MINOR be considered as *Predication* in the sense of Kuroda 1992:Ch.1?

The properties of MINOR spelled out in Section 3.5.1 and the speculative remark regarding MINOR in Section 3.5.2 remind us of *Predication* in the sense of Kuroda 1992:Ch.1.

Traditionally, it is understood that the speaker, uttering a declarative sentence, asserts a proposition to be true. Kuroda (1992:Ch.1), drawing on Marty's work, maintains that there are two distinct cognitive acts with which a proposition can be formed. They are called *Predication* and *Description*.

Kuroda assumes that *Predication* is a cognitive act in which some entity, *Subject*, is substantiated beyond mere perception, and it is associated with an attribute, *Predicate*. According to his claim, when the speaker utters (60), for example, some cat is substantiated, and the entity is associated with an attribute λx (*x sleeps-well*).

(60) (= Kuroda 1992:Ch.1 (7))

The cat sleeps well.

If every declarative sentence were to involve *Predication*, the recognition of such a cognitive act would be trivial. Kuroda argues, however, that such is not the case. He claims, for example, when the speaker utters (61) upon observing that a cat is sleeping,

²⁵ One may wonder if a representation by MINOR can be created without the generative procedure of the grammar. Although I acknowledge the possibility, I do not have an argument for, or against, the view.

she or he does not substantiate a specific entity beyond the perception relevant for the observation; hence, Predication is not involved.

(61) (= Kuroda's 1992:Ch.1 (21))

A cat is sleeping there.

Note the resemblance between the characteristics of Predication and of MINOR. In Predication, some entity is substantiated in the speaker's mind, cf. Property 2 of MINOR in (53),²⁶ and this entity is associated with one place predicate. Furthermore, it is understood that Predication is allowed once per its domain, as one NP in a clause can correspond to the Subject of Predication, cf. Property 4 of MINOR in (56).

The similarity between Predication and MINOR is not limited to what is mentioned above. Ueyama (1998) extends Kuroda's (1992:Ch.1) intuition to embedded contexts. In our terms, she claims that the embedded clause of the perceptual report construction in (62) cannot express Predication.

(62) John-ni neko-ga neteiru tokoro-ga mieta.
John-DAT cat-NOM is:sleeping moment-NOM saw

'John saw a cat sleeping.'

Notice that the speaker in (62) is simply reporting that John had the perception of a certain event, namely, a cat is sleeping. It is reasonable to assume that the speaker does not

²⁶ Kuroda (1992:ch.1) assumes that an NP that corresponds to the Subject of Predication must be definite. This assumption is based on (i) another assumption that in Japanese, an NP that corresponds to the Subject of Predication must be a WA-marked NP and (ii) the fact that a WA-marked NP can be translated to a definite noun, but not to an indefinite noun in non-generic contexts. I wish to contend, however, that a non-WA-marked NP can also correspond to the Subject of Predication. To the extent that this contention is reasonable, Kuroda's characterization of the Subject of Predication is not founded; for a non-WA-marked NP can be translated into a definite or indefinite noun. And his claim regarding (61) must be modified as follows: when the speaker utters (61) upon observing that a cat is sleeping, she or he NEED NOT substantiate a specific entity beyond the relevant perception; hence Predication MAY NOT be involved.

substantiate any entity beyond the confines of John's perception and thus Predication is not involved in the embedded clause. What is of our interest is that MINOR seems unable to operate in the embedded clause of the perceptual report construction. As we will observe shortly, inverse scope readings, which emerge due to MINOR, cannot obtain in the embedded clause under discussion, but the availability of surface scope readings is unaffected.

First, inverse scope readings are possible in 'regular' embedded clauses. This is illustrated in (63).

(63) a. (Context: You have certain two professors in mind, Prof. A and Prof. B.)

John-wa [_{IP} [_S sanninzyoo-no gakusei]-ga [_O hutari-no kyoozyu]-ni
John-TOP three:more-GEN student-NOM two-GEN professor-DAT

hanasikaketeita] to hookokusitekita.
was:speaking that reported

'John reported that [_{IP} [_S three or more students] were speaking to [_O two professors]]'

b. John-wa [_{IP} [_S sukunakutomo sannin-no kyoozyu]-ga [_O subete-no gakusei]-o
John-TOP at:least three-GEN professor-NOM all-GEN student-ACC

sikatteita] to itteita.
was:scolding that said

'John said that [_{IP} [_S at least three professors] were scolding at [_O every student]].'

We can utter truthfully (63a), for example, in the situation that John reported that Mark, Luke, and John were speaking to Prof. A, and Paul, Barnabas, Timothy, and Peter were speaking to Prof. B.

However, inverse scope readings cannot obtain in the embedded clause of the perceptual report construction under discussion, as the examples in (64) illustrate.

- (64) a. (Context: You have certain two professors in mind, Prof. A and Prof. B.)

John-ni [_{IP} [_S sanninizyoo-no gakusei]-ga [_O hutari-no kyoozyu]-ni
John-DAT three:more-GEN student-NOM two-GEN professor-DAT

hanasikaketeiru] tokoro-ga mieta.
is:speaking moment-NOM saw

‘John saw [_{IP} [_S three or more students] speaking to [_O two professors]].’

- b. John-ni [_{IP} [_S sukunakutomo sannin-no kyoozyu]-ga [_O subete-no gakusei]-o
John-DAT at:least three-GEN professor-NOM all-GEN student-ACC

sikatteiru] tokoro-ga mieta.
is:rebuking moment-NOM saw

‘John saw [_{IP} [_S at least three professors] scolding at [_O every student]].’

We can also find a contrast that seems analogous to the one we have just observed in English. As the examples in (65) and (66) illustrate, inverse scope readings are possible in 'regular' embedded clauses, but not in the embedded clause of the perceptual report construction.

- (65) a. (Context: You have certain two professors in mind, Prof. A and Prof. B.)

John reported that [_{IP} [_S more than three professors] were talking to [_O two professors]].

- b. John said that [_{IP} [_S at least three students] were greeting [_O every professor]].

- (66) a. (Context: You have certain two professors in mind, Prof. A and Prof. B.)

John saw [_{IP} [_S more than three professors] talking to [_O two professors]].

- b. John saw [_{IP} [_S at least three students] greeting [_O every professor]].

The availability of surface scope readings, on the other hand, is insensitive to the clause type difference under discussion. As the examples in (67) and (68) illustrate, surface scope readings can obtain both in 'regular' embedded clauses and in the embedded clause of the perceptual report construction.

- (67) a. John-wa [_{IP} [_S sanninizyoo-no gakusei]-ga [_O hutari-no kyoozyu]-ni
 John-TOP three:more-GEN student-NOM two-GEN professor-DAT
 hanasikaketeita] to hookokusitekita.
 was:speaking that reported
 'John reported that [_{IP} [_S three or more students] were speaking to [_O two professors]].'
- b. John-wa [_{IP} [_S subete-no gakusei]-ga [_O sanninizyoo-no kyoozyu]-ni
 John-TOP all-GEN student-NOM three:more-GEN professor-DAT
 aisatusiteita] to itteita.
 was:greeting that said
 'John said that [_{IP} [_S every student] was greeting [_O three or more professors]].'
- (68) a. John-ni [_{IP} [_S sanninizyoo-no gakusei]-ga [_O hutari-no kyoozyu]-ni
 John-DAT three:more-GEN student-NOM two-GEN professor-DAT
 hanasikaketeiru] tokoro-ga mieta.
 is:speaking moment-NOM saw
 'John saw [_{IP} [_S three or more students] speaking to [_O two professors]].'
- b. John-ni [_{IP} [_S subete-no gakusei]-ga [_O sanninizyoo-no kyoozyu]-ni
 John-DAT all-GEN student-NOM three:more-GEN professor-DAT
 aisatusiteiru] tokoro-ga mieta.
 is:greeting moment-NOM saw
 'John saw [_{IP} [_S every student] greeting [_O three or more professors]].'

The same seems to be true also in English, as illustrated in (69) and (70).

- (69) a. John reported that [_{IP} [_S more than three students] were talking to [_O two professors]].

- b. John said that [_{IP} [_S every student] was greeting [_O more than two professors]].
- (70) a. John saw [_{IP} [_S more than three students] talking to [_O two professors]].
- b. John saw [_{IP} [_S every student] greeting [_O more than two professors]].

In summary, we have observed some similarities between MINOR and Predication in the sense of Kuroda 1992:Ch.1. In the absence of a rigorous description of the nature of cognitive domains other than the grammar and how they interact with the grammar, we are obviously not at the stage of determining whether or not we can equate MINOR with Predication. However, whatever proposal one may put forth for MINOR must account for the generalization that wide scope readings cannot obtain due to MINOR in a certain type of a clause.

3.6. Summary and further remarks

In this chapter, I have argued that there are two sources of wide scope readings, (i) LF compositional computation and (ii) MINOR, an extra-grammatical operation. It is demonstrated that the sources of surface scope readings may be either LF compositional computation or MINOR while inverse scope readings must be due to MINOR. I have also maintained that when $WSR\langle\alpha, \beta\rangle$ obtains due to MINOR, where α and β are QPs, both α and β stay in A-positions. It is thus entailed that when $WSR\langle QP_{Sub}, QP_{Obj}\rangle$ obtains in the basic order, the relevant LF may be either (71a) or (71b).

- (71) (Ψ stands for an element that denotes a one-place predicate.)
- a. [Ψ QP_{Sub} [Ψ QP_{Obj} [Ψ ... t_{Sub} [... t_{Obj} ...]]]]
- b. [Ψ ... QP_{Sub} [Ψ ... QP_{Obj} ...]], where the QP_{Sub} and QP_{Obj} are in an A-position

As noted in Chapter 1, reported judgments regarding scope interpretations are often controversial. Given the discussion in this chapter, this state of affair is no longer surprising. It may well be the case that one reports his or her intuition regarding a given sentence, making reference only to LF compositional computation, and the other, considering both LF compositional computation and MINOR. Indeed, a reasonable interpretation of the conflict between Chomsky (1957) and Katz & Postal (1964) briefly sketched in Chapter 1 is precisely this, i.e., Chomsky (1957) being the former, and Katz & Postal (1964) being the latter. It is perhaps worth noting in this connection that Chomsky qualifies his generalization with "*under the normal interpretation of these sentences*", and Katz & Postal with "*although the facts are far from clear*".

This chapter has also provided us with the operational tests by which we can determine that a given scope interpretation of a given sentence emerges directly from LF compositional computation, thereby situating us in a better position to investigate LF properties than it has been. With the generalizations in (36) alone, repeated here, three such tests can be constructed.

- (36) a. $WSR\langle\alpha, \beta\rangle$ can obtain due to MINOR, where α and β are QPs, only if all of the conditions, (i)-(iii), are met.
- b. $WSR\langle\alpha, \beta\rangle$ can obtain through LF compositional computation, where α and β are QPs, even if it is not the case that all of the conditions, (i)-(iii), are met
- i. The speaker refers to a specific group with α .
- ii. If there is a QP γ that is not α or β or a potential dependent term δ , then β does not take wide scope with respect to γ or bind δ

- iii. If the verb of which α is an argument is negated, the scope of the verbal negation is limited to the verb itself.

Furthermore, it is demonstrated that covert movement is more limited than it has been thought. We have observed in Section 3.4 that an object QP cannot raise above its clause-mate negation through covert movement; the *shortest move* principle in Fox 2000:Ch.2 is an absolute principle, see FN 22. In addition, the generalization that surface scope readings may obtain in the basic order based on the LF in (4a) while inverse scope readings obtained in the basic order are not due to the LF in (4b) leads us to conclude that a QP α can c-command a QP β at LF only if α c-commands β prior to covert movement (cf. Reinhart 1976, Huang 1982, Hoji 1985) in both English and Japanese. (4) is repeated here for convenience.

- (4) (Ψ stands for an element that denotes a one-place predicate.)
- a. LF: [Ψ QP_{Sub} [Ψ QP_{Obj} [Ψ ... t_{Sub} [... t_{Obj} ...]]]]
- b. LF: [Ψ QP_{Obj} [Ψ QP_{Sub} [Ψ ... t_{Sub} [... t_{Obj} ...]]]]

This conclusion is also consistent with the fact that the 'preposed' object QP in the scrambled order can take scope above the subject QP through LF compositional computation (see Section 3.2.2), under the unchallenged assumption that the 'preposed' object QP in the scrambled order can be understood as c-commanding the subject QP prior to covert movement (cf. Hoji 1985, Yoshimura 1992, Saito 1992, and Ueyama 1998, 2002, among others). Making reference only to the scope interaction between two QPs through LF compositional computation, therefore, we are now able (i) to investigate their c-command relation prior to covert movement, and (ii) to address the issue of the

base order in a given construction in languages whose word order is, or appears to be, free.²⁷

Finally, I did not attempt to provide a concrete proposal regarding what MINOR exactly is, (though I have spelled out the properties that whatever proposal one may put forth must account for). As a consequence, a number of phenomena associated with the scope interaction due to MINOR were also left unaccounted for, e.g., no account was provided for (36a-ii) and (36a-iii). By definition, MINOR is not a grammatical operation, and we cannot define it with theoretical postulates in a theory of the grammar. As I have noted earlier, to put forth a reasonable proposal regarding MINOR requires a rigorous description of the properties of cognitive domains other than the grammar and their interaction with the grammar. Given that there is no study available in the field that seems to be useful for our present concern, it was inevitable that we would leave open the theoretical characterization of MINOR in the present study.

²⁷ Hayashishita (2000b) examines the base order of the *di*-transitive construction in Japanese, making use of some of the operational tests that are based on the materials in this chapter.