Reconstruction Obeys Minimality: A Representational Theory of Symmetrical Grammar*

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Abstract
This paper claims that reconstruction obeys a minimality condition just like upward movement such as Wh-movement, Quantifer Raising and A-movement. The strongest interpretation of this claim is that there is no essential difference between upward movement and reconstruction and any theory of grammar that deals with the two operations differently is wrong and should be modified accordingly. It will be shown, however, that the standard derivational theory that posits the derivational component to treat upward movement and the LF representation/component to accommodate reconstruction cannot be modified in any straightforward manner. Alternatively, I will propose a representational theory of grammar in which there is no distinction between derivational component and LF representation/component, hence no distinction between upward movement and reconstruction either. It will be demonstrated that the proposed representational theory exceeds any conceivable derivational theory in explanatory adequacy.

Keywords: Derivations vs. Representations, Symmetry, Chains, Reconstruction, Quantifier Raising, Scrambling, Object Shift, Remnant Movement, Superiority, Relativized Minimality, Double Objects

1. Introduction

It is a fact about human language that virtually every sentence contains a mismatch between Phonological Form (PF) and Logical Form (LF): An element is interpreted in a position where it is not pronounced. Such mismatches show up in two varieties. The first variety comes from upward movement such as A-movement, Wh-movement, Quantifier Raising (QR) and head-movement. For example, in the case of overt Wh-movement, a moving element is typically pronounced in its scope position and unpronounced in a position where it is interpreted as a variable. The other variety is brought about by (radical)

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reconstruction (e.g., reconstruction of a scrambling phrase in Japanese), by which an element is "moved back" to its base or intermediate position and interpreted there, with the result that the surface position gets no semantic interpretation. In the Principles-and-Parameters approach, many attempts have been made to incorporate constraints on the first type of mismatches into the theory of grammar, and some of such attempts have been crystallized into minimality conditions on movement such as Superiority, Relativized Minimality, the Minimal Link Condition and so on. As compared to many efforts to formalize conditions on upward movement, however, relatively less efforts have been devoted to the investigation of the nature of mismatches of the second type, reconstruction. Thus, it is still an open question whether reconstruction obeys any sort of minimality condition or not (see Boeckx (2001) who proposes a certain minimality condition on A-movement reconstruction).

This paper claims that reconstruction does obey a minimality condition just like upward movement. The strongest interpretation of this claim is that there is no essential difference between upward movement and reconstruction, and the theory of grammar should be symmetrical in the sense that it treats the two phenomena in the same manner. However, there is no straightforward way to entertain the symmetrical grammar under the standard derivational theory, which involves an inherent asymmetry in that it postulate the derivational component to deal with upward movement and the LF representation/component to accommodate reconstruction. In order to obtain the symmetrical grammar, the standard derivational theory has to be modified in such a way that one of the two operations is reduced to the other. There are two strategies to take. One is to reduce reconstruction to movement, where movement can be regarded as either literal lowering at LF (Boeckx (2001), Chomsky (1995), and May (1985)) or PF-movement (Sauerland and Elbourne (2002)). The resulting theory will have strengthened the derivational character. The other is to propose that there is no movement and there exists a single level of representation that bears all syntactic relations expressed by upward movement and reconstruction (Brody (1995, 1999, 2002), cf. Rizzi (1986)). This strategy will lead us to a non-derivational/representational theory. I will demonstrate that the minimality condition on reconstruction can be built into the representational theory much easier than the derivational theory, thereby giving support to the representational theory. In the main discussion, I will compare the representational theory with the modified derivational theory armed with a lowering operation, and defer critiques on Sauerland and Elbourne's theory to section 5.

This paper is organized in the following way. Section 2 establishes the empirical basis for the symmetrical grammar by demonstrating that reconstruction obeys a minimality condition on a par with upward movement, which I will refer to as the Minimality Condition on Reconstruction (MCR). We will see that the MCR receives major support from scope and binding facts about double object constructions in English and Japanese. Section 3 is an extension of the MCR to the realm of remnant movement. I will demonstrate that the MCR will enable us to derive the well-known constraint on remnant movement, what is called Müller's Generalization (Müller (1996, 1998)). With the empirical backbone established in the previous sections, section 4 first ponders how the standard derivational theory will look like if the MCR is incorporated into it. The resultant theory will have not a few problems, the most recalcitrant one being that there is no way to capture the similarity between upward movement and reconstruction (and the similarity between the minimality conditions they obey). Thus, the symmetrical view cannot be incarnated under the derivational theory. Then, I will present a representational model in which the distinction between derivational component and LF representation/component is eliminated, and it therefore involves no distinction between upward movement and reconstruction. In this model, all the syntactic relations are expressed by means of chains that are created by one-step mapping operation from lexicon to the interface representation, and the minimality conditions on upward movement and reconstruction are uniformly reinterpreted as the constraints that regulate possible PF and LF pairings, which I will call the Chain Conditions. It will be shown that with the Chain Conditions, the proposed representational theory achieves symmetry in grammar and exceeds any conceivable derivational theory in explanatory adequacy. Section 5 applies the proposed theory to the dative constructions in English and Japanese. In the course of discussion, some part of the proposed system will be fixed. Section 6 concludes the discussion.

2. Minimality Condition on Reconstruction

In order to set up the foundation on which to argue for a representational model of grammar, the first task is to demonstrate that reconstruction obeys a minimality condition, which is formalized in (1).

(1) Minimality Condition on Reconstruction (MCR)
An X-moved element cannot undergo reconstruction across another X-moved element, where X is a variable ranging over the types of movement.

In this section, I will attempt to give empirical support to the MCR. In 2.1, we will take a look at scope facts about the double object construction in English. Bruening (2001) has proposed a quite persuasive account of scope freezing phenomena of this construction, based on the idea that Quantifier Raising obeys Superiority, but a closer inspection spots a loophole in his account, and then I will argue that in order to fill in the loophole, reconstruction of a QRed phrase (i.e., Quantifier Lowering) has to be restrained, as mandated by the MCR. In 2.2, we will turn to the data drawn from Japanese and see that the MCR gains much validity from the scope and binding facts that involve reconstruction of scrambled phrases. We will also see that there is a mirror-image relation between the pattern of reconstruction of scrambled phrases in Japanese and the pattern of object shift in double object constructions in Icelandic. This can be interpreted as evidence that reconstruction and upward movement is two side of the same coin.

2.1. Quantifier Lowering

In the Principles-and-Parameters Approach, it is widely held that some sort of syntactic movement is employed for scope shifting operations such as Quantifer Raising (QR) (e.g., May (1977, 1985)). Recently, the constraints on QR have been deeply discussed. Fox (1995, 2000) proposes a condition called Scope Economy, which states that scope shifting operations may apply only if their application yields otherwise unavailable meaning. Another extremely interesting work is done by Bruening (2001), who argues, on the basis of scope data in English double object constructions like (2), that QR obeys Superiority much like multiple Wh-movement in Bulgarian does, as shown in (3).

(2) John gave some student every book. (some>every, *every>some)

(3) Bulgarian (Rudin (1988: 449))

a. Koj$_i$ kogo$_j$ e t_i vidjal t_j
who whom AUX seen
'Who sees whom?'

b. *Kogo$_j$ koj$_i$ e t_i vidjal t_j
whom who AUX seen

In (3), Superiority forces the two wh-movement paths to cross so that the hierarchical relation between the two wh-phrases will not be altered after movement. (See Kitahara (1997) and Richards (1997, 2001) for technical details about how to deduce the effect of Superiority from a locality condition on feature checking and movement.) Bruening points out that the same holds of QR. Thus, example (2) can have an LF structure in (4a), but not one in (4b). (The VP-internal subject trace will be omitted throughout the paper unless its presence is crucial for discussion.)

(4) a. [$_{IP}$ John [$_{VP}$ some student$_i$ [$_{VP}$ every book$_j$ [$_{VP}$ gave t_i t_j]]]] (some>every)

b. *[$_{IP}$ John [$_{VP}$ every book$_j$ [$_{VP}$ some student$_i$ [$_{VP}$ gave t_i t_j]]]] (every>some)

Even if moving the direct object (DO) *every book* over the indirect object (IO) *some student* via QR changes the truth conditions of the sentence in conformity to Fox's Scope Economy, Superiority disallows the non-local QR of the DO, hence inverse scope is unavailable.

At this point, it is reasonable to ask, concerning example (2), why it is impossible to first apply QR to both IO and DO up to the IP-adjoined position without altering their hierarchical relations, as in (5a), and then apply Quantifier Lowering (QL) to the IO alone, as in (5b), which would yield inverse scope.[1, 2]

(5) a. $[_{IP}$ some student$_i$ $[_{IP}$ every book$_j$ $[_{IP}$ John $[_{VP}$ t_i $[_{VP}$ t_j $[_{VP}$ gave t_i $t_j]]]]]]$

b. *$[_{IP}$ e_i $[_{IP}$ every book$_j$ $[_{IP}$ John $[_{VP}$ <u>some student$_i$</u> $[_{VP}$ t_j $[_{VP}$ gave t_i $t_j]]]]]]$ (every>some)

|---------**Quantifer Lowering**---------/

This derivation obeys Superiority. How do we rule it out? One can resort to Scope Economy, which bans the QR of the two objects to the IP adjoined position since it yields the same meaning as the QR of them to the VP-adjoined position.[3] The hypothetical derivation therefore does not pose a problem to Bruening's Superiority-based account. (In fact, Bruening also attributes the impossibility of reconstructing a QRed phrase to Scope Economy.)

To avoid an objection from Scope Economy, let us consider the example in (6), which contains three scope-bearing elements, the intensional verb *want*, and the two quantified objects of *give*.

(6) John wanted to give a linguist every paper Mary wrote.

(6) does not allow the wide scope reading for universal. However, a hypothetical derivation like the one in (5) that involves QR and QL cannot be ruled out for this example on the grounds of Scope Economy. The two quantified objects can undergo QR either to the lower VP-adjoined position, as in (7a), or to the higher VP-adjoined position, as in (7b).[4]

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[1] For the sake of discussion, I assume with Fox (2000) that QR is a successive cyclic movement. For semantics of the intermediate traces of QR, I will assume that intermediate traces are interpreted as variables (See Heim and Kratzer (1998).). Note that this assumption does not fit well with the syntactic representation in (5a) because it lacks the operators beneath the intermediate traces that bind the variables in the base positions. In what follows, however, with this cautious note in mind, I will stick to simple syntactic representations and pretend that they contain "intermediate" operators. Alternatively, one can ignore intermediate traces for semantic computation.

[2] The trace left by QL has to be ignored for semantic computation.

[3] Here Scope Economy has to be interpreted as a local economy condition, as argued in Fox (2000), which checks whether each instance of scope shifting operations for a given QP changes the truth conditions of a sentence at the stage of the derivation where it applies. On this view, the long-distance QR in (5a) is not sanctioned even if it feeds the subsequent QL operation that yields a different interpretation in the end.

[4] In (7a), both quantified objects take narrow scope under *want*, yielding the *de dicto* reading, according to which John had the desire that he would give any linguist, whoever it was, every paper by Mary. For this reading to be true, John does not have to have met any linguist before in his life and there did not need to be any paper by Mary in the actual world. However, in this scenario, the wide scope reading for the two objects (the *de re* reading) resulting from the LF representation in (7b) is

(7) a. [$_{IP}$ J. [$_{VP}$ wanted to [$_{VP}$ a linguist$_i$ [$_{VP}$ every paper M. wrote$_j$ [$_{VP}$ give t_i t_j]]]]]
(want>a>every)

b. [$_{IP}$ J. [$_{VP}$ a linguist$_i$ [$_{VP}$ every paper M. wrote$_j$ [$_{VP}$ wanted to [$_{VP}$ t_i [$_{VP}$ t_j [$_{VP}$ give t_i t_j]]]]]]]
(a>every>want)

Once (7b) is ruled in, the question arises why the IO alone cannot undergo QL from the higher VP-adjoined position, as shown in (8).

(8) [$_{IP}$ J. [$_{VP}$ e_i [$_{VP}$ every paper M. wrote$_j$ [$_{VP}$ wanted to [$_{VP}$ a linguist$_i$ [$_{VP}$ t_j [$_{VP}$ give t_i t_j]]]]]]]
|------------------**Quantifer Lowering**----------------------/ (every>want>a)

Notice that every QR operation involved in (8) respects Superiority, and the application of QL satisfies Scope Economy since it alters the truth conditions of the sentence. The truth conditional difference between (7b) and (8) is obvious, as the latter would allow not only the *de dicto* interpretation of *a linguist* but also a wide scope reading for universal.[5]

Since example (6) does not have the reading produced by LF representation (8), there must be something else wrong with this derivation. One obvious solution is to stipulate that QL does not exist, but since we cannot a priori either prove or disprove the existence of QL, stipulation had better be avoided (but see section 5.5.). Rather I'd like to suggest that a QRed phrase cannot undergo QL across another QRed phrase as a special case of the MCR given in (1), which seems to be more interesting a possibility if true.

Admittedly, the argument based on English scope facts are inconclusive because QR is a covert operation and QL is as likely to exist as it doesn't. In order to verify the validity of the MCR, we should therefore look at a type of movement, which is overt, which can change scope relations, and which allows reconstruction quite freely. Japanese scrambling best qualifies for these criteria. We will now turn to the data drawn from Japanese.

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false because for it to be true, there had to an actual linguist and a certain set of papers that were all written by Mary.

For a scenario in which only the *de re* reading is true, image that John is a linguist and one day he was cleaning his office and wanted to dispose of every paper by Mary, which was terribly uninteresting. Then, a woman, who was a linguist but not known to John, came to his office and asked for some rough papers. John wished that this woman would bring all of Mary's papers with her. But if he had known that she was also a linguist, he would not give her those papers because she might be a friend of Mary and tell her about his disposal of her papers. In this context, the *de re* reading is true because there was an actual linguist (the woman who came to John's office) and a set of papers by Mary in the actual world, and John had the desire to give her those papers. On the other hand, the *de dicto* reading is false in this scenario because for Mary's papers, John had the desire that he would not give them to any linguist.

[5] The reading produced by LF representation (8) is true in a situation where Mary is a very good psychologist and there are many things for linguists to learn from her papers so that for each of Mary's paper x, there was a linguist y in John's desire-world such that he gives x to y.

2.2. Reconstruction of Scrambled Phrases in Japanese

As is well known, Japanese is a "scope rigid" language in the sense that non-scrambled sentences do not exhibit scope ambiguity, and only surface scope obtains. As (9a) shows, in the non-scrambled structure, the subject unambiguously scopes over the object. However, when the object is scrambled to the left of subject, as in (9b), the object can take wide scope, yet it is still able to take scope under the subject.

(9) a. [$_{Subj}$ Dareka-ga] [$_{Obj}$ daremo-o] sonkeisiteiru (some>every, *every>some)
someone-Nom everyone-Acc admire
'Someone admires everyone.'
b. [$_{Obj}$ Daremo-o] [$_{Subj}$ dareka-ga] t_{Obj} sonkeisiteiru (some>every, every>some)
everyone-Acc someone-Nom admire

Though the availability of a wide scope reading for existential in examples like (9b) is often taken as evidence that scrambled phrases may be freely reconstructed in Japanese, we have to use caution because in a sentence that contains an existentially quantified DP and a universally quantified DP, the set of situations in which the wide scope reading for existential is true is the subset of situations where the wide scope reading for universal is true. In other words, the truth of the wide scope reading for universal entails the truth of the wide scope reading for existential. Therefore, in order to prove that scrambled phrases can be reconstructed in Japanese, we need to look at the case where a reconstructed reading does not obtain as a result of entailment. (10) is a case in point.

(10) a. [$_{Subj}$ Daremo-ga] [$_{Obj}$ dareka-o] sonkeisiteiru (some>every, every>some)
everyone-Nom someone-Acc admire
'Everyone admires someone.'
b. [$_{Obj}$ Dareka-o] [$_{Subj}$ daremo-ga] t_{Obj} sonkeisiteiru (some>every, every>some)
someone-Acc everyone-Nom admire

(10a) contains a universally quantified subject and an existentially quantified object, and the non-scrambled structure shows scope ambiguity in spite of the scope rigidity nature of this language due to entailment. More important a point is that when the object is scrambled in front of the subject, the wide reading for universal is still available, as shown in (10b). Since the truth of the wide scope reading for existential does not entail the truth of the wide scope reading for universal, the availability of wide scope reading for universal in this instance can be taken as genuine evidence that scrambled phrases may undergo reconstruction in Japanese.

With this in mind, let us consider scope data in double object constructions.[6]

(11) a. John-ga [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] syookaisita
John-Nom someone-Dat everyone-Acc introduced
(some>every, *every>some)
'John introduced everyone to someone.'

b. [$_{DO}$ daremo-o] John-ga [$_{IO}$ dareka-ni] t_{DO} syookaisita
everyone-Acc John-Nom someone-Dat introduced
(every>some, some>every)

c. [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] John-ga t_{IO} t_{DO} syookaisita
someone-Dat everyone-Acc John-Nom introduced
(some>every, *every>some)

(11a) shows that in the non-scrambled structure, the IO has to take wide scope over the DO (Hoji (1985)). When the DO is scrambled to the left of the subject as in (11b), the DO can take wide scope as well as narrow scope due to reconstruction or entailment in this case.[7] However, (11c) indicates that when both IO and DO are scrambled without changing their hierarchical relation or linear order, the IO unambiguously takes wide scope just as in non-scrambled structure (11a) (Yatsushiro (1996)). This indicates that in (11c), the scrambled IO alone cannot undergo reconstruction across the scrambled DO so that (11c) will have the same structure as (11b) at LF. Given that scrambled phrases in Japanese can freely undergo reconstruction, as seen in the examples in (10) and note 7, we have to conclude that reconstruction of scrambled phrases obeys the MCR. Consequently, the generalization in (12) obtains.[8]

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[6] Needless to say, the VP internal structure of double object constructions in Japanese, especially the hierarchy between IO and DO, is still open to a lot of debates. See Lee (2004), Miyagawa (1997), Miyagawa and Tsujioka (2004), Matuoka (2003) and Yatsushiro (2003) among many others. Here I will assume the "standard" judgments reported by Hoji (1985) and Yatsushiro (1996). As a matter of fact, the scope judgment given in (11) seems fairly clear and stable.

[7] We can check whether the scrambled DO can undergo reconstruction by examining the interpretation of a structure where the IO is a universally quantified DP and the DO is an existentially quantified DP. Non-scrambled structure (ia) manifests scope ambiguity because the truth of the surface scope reading entails that of the inverse scope reading. However, (ib) also shows scope ambiguity, allowing the wide scope reading for universal, which cannot be a product of entailment. This proves that the scrambled DO can undergo reconstruction beneath the IO.

(i) a. John-ga [$_{IO}$ daremo-ni] [$_{DO}$ dareka-o] syookaisita (every>some, some>every)
John-Nom everyone-Dat someone-Acc introduced
'John introduced someone to everyone.'

b. [$_{DO}$ dareka-o] John-ga [$_{IO}$ daremo-ni] t_{DO} syookaisita (every>some, some>every)
someone-Acc John-Nom everyone-Dat introduced

[8] Sauerland and Elbourne (2002) derive the same generalization from Yatsushiro's data and try to explain it in the standard T-model framework armed with PF-movement. See 5.4 for discussion.

(12) A scrambled phrase cannot undergo reconstruction across another scrambled phrase.

It deserves to note that we can draw a neat analogy between the MCR and the Relativized Minimality effect observed in object shift in double object constructions in Icelandic, which exhibits the following pattern: Either the IO alone or both IO and DO may be shifted as shown in (13b) and (13c), respectively, but the DO alone cannot be shifted because moving the DO across the IO violates Relativized Minimality, as indicated by the ill-formedness of (13d).[9]

(13) Icelandic (Collins and Thráinsson (1996))

a. Ég lána ekki [$_{IO}$ Maríu] [$_{DO}$ bækurar]
   I lend not Maria books
   'I did not lend books to Maria.'

b. Ég lána [$_{IO}$ Maríu] ekki t_{IO} [$_{DO}$ bækurar]
   I lend Maria not books

c. ?Ég lána [$_{IO}$ Maríu] [$_{DO}$ bækurar] ekki t_{IO} t_{DO}
   I lend Maria books not

d. *Ég lána [$_{DO}$ bækurar] ekki [$_{IO}$ Maríu] t_{DO}
   I lend books not Maria

Interestingly, the mirror image to this pattern can be observed in reconstruction of scrambled phrases, which is schematically shown in (14).

(14) [XP [YP ... t_{XP} t_{YP} ...]] (XP and YP are scrambled)

In the structure that involves multiple scrambling as in (14), the outer scrambled phrase XP cannot be reconstructed across the inner scrambled phrase YP (just like the DO cannot be shifted across the IO (see (13d)), but XP can be reconstructed if YP is also reconstructed (just like the DO can be shifted if the IO is also shifted (see (13c)) whereas YP alone can be reconstructed, with XP remaining in the scrambled position (just like the IO alone can be shifted, with the DO staying in situ (see (13b)).

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[9] Here I take the ill-formedness of (13d) as arising from a violation of Relativized Minimality, which is caused by object shift (A-movement) of the DO across the IO (A-position). However, it is equally possible to rule out the example by resorting to the Superiority Condition since the hierarchical relation between IO and DO is not retained after movement. Given that Relativized Minimality and the Superiority Condition can be collapsed into a more general principle that subsumes Shortest Attract and Shortest Move, as is advocated by Richards (1997, 2001), we can draw an analogy between the MCR and either Relativized Minimality or the Superiority Condition.

The data in (15) prove that there is an asymmetry in the availability of reconstruction between the outer scrambled phrase and the inner one exactly in the way it is predicted by the analogy between the MCR and the Relativized Minimality effect on object shift in Icelandic.[10]

(15) a. [$_{Subj}$ Sukunakutomo hito-tu-no gengo-gakka$_i$-ga] [$_{IO}$ soko$_i$-no gakusei-ni]
at.least 1-Cl-Gen linguistics-dept-Nom it-Gen student-Dat
[$_{DO}$ dono bumpoo riron-mo] osieteiru
every grammar theory-Prt teach
(at least 1>every, *every>at least 1)
'At least one linguistics department$_i$ teaches its$_i$ students every theory of grammar.'

b. [$_{DO}$ Dono bumpoo riron-mo] [$_{Subj}$ sukunakutomo hito-tu-no gengo-gakka$_i$-ga]
every grammar theory-Prt at.least 1-Cl-Gen linguistics-dept-Nom
[$_{IO}$ soko$_i$-no gakusei-ni] t_{DO} osieteiru
it-Gen student-Dat teach
(at least 1>every, every>at least 1)

c. [$_{IO}$ Soko$_i$-no gakusei-ni] [$_{DO}$ dono bumpoo riron-mo]
it-Gen student-Dat every grammar theory-Prt
[$_{Subj}$ sukunakutomo hito-tu-no gengo-gakka$_i$-ga] t_{IO} t_{DO} osieteiru
at.least 1-Cl-Gen linguistics-dept-Nom teach
(at least 1>every, ?*every>at least 1)

d. [$_{DO}$ Dono bumpoo riron-mo] [$_{IO}$ soko$_i$-no gakusei-ni]
every grammar theory-Prt it-Gen student-Dat
[$_{Subj}$ sukunakutomo hito-tu-no gengo-gakka$_i$-ga] t_{IO} t_{DO} osieteiru
at.least 1-Cl-Gen linguistics-dept-Nom teach
(at least 1>every, every>at least 1)

In (15a), the existentially quantified subject unambiguously scopes over the universally quantified DO and successfully binds the pronoun *soko* contained within the IO. (15b) indicates that when the DO is scrambled to the left of the subject, universal can take wide scope. However, if the IO is scrambled further to the left of the scrambled DO, as in (15c), it becomes very hard to get a wide scope reading for universal, to which the MCR gives the following explanation: Since the IO contains a bound pronoun, it has to be reconstructed into the c-command domain of the binder under the assumption that pronominal/variable binding takes place at LF; in order for the IO to reconstruct, the DO also has to reconstruct to meet the MCR; consequently, (15c) will have the same structure as (15a) at LF, hence the absence of

[10] Since the relative scope relation at stake in (15) is between subject and DO, the argument given here is independent of the VP internal structure of the construction. The same is true of (16).

wide scope reading for universal. In (15d), on the other hand, where the IO is the inner scrambled phrase, it can undergo reconstruction by itself, and the DO can remain in the scrambled position so that universal can take wide scope.

The data in (16), in which the bound pronoun *soko* is contained within the DO rather than the IO, illustrate the same point.

(16) a. [$_{Subj}$ Ikutuka-no geinoo purodakusyon$_i$-ga] [$_{IO}$ dono terebikyoku-ni-mo]
some-Gen theatrical agency-Nom every TV.station-Dat-Prt
[$_{DO}$ soko$_i$-no sinzin kasyu-o] syookaisita
it-Gen new singer-Acc introduced
(some>every, ?*every>some)
'Some theatrical agency$_i$ introduced its$_i$ new singers to every TV stations.'

b. [$_{IO}$ Dono terebikyoku-ni-mo] [$_{Subj}$ ikutuka-no geinoo purodakusyon$_i$-ga] t_{IO}
every TV.station-Dat-Prt some-Gen theatrical agency-Nom
[$_{DO}$ soko$_i$-no sinzin kasyu-o] syookaisita
it-Gen new singer-Acc introduced
(some>every, every>some)

c. [$_{DO}$ Soko$_i$-no sinzinkasyu-o] [$_{IO}$ dono terebikyoku-ni-mo]
it-Gen new singer-Acc every TV.station-Dat-Prt
[$_{Subj}$ ikutuka-no geinoo purodakusyon$_i$-ga] t_{IO} t_{DO} syookaisita
some-Gen theatrical agency-Nom introduced
(some>every, ?*every>some)

d. [$_{IO}$ Dono terebikyoku-ni-mo] [$_{DO}$ soko$_i$-no sinzinkasyu-o]
every TV.station-Dat-Prt it-Gen new singer-Acc
[$_{Subj}$ ikutuka-no geinoo purodakusyon$_i$-ga] t_{IO} t_{DO} syookaisita
some-Gen theatrical agency-Nom introduced
(some>every, every>some)

(16a) is a non-scrambled structure where the existentially quantified subject (almost) unambiguously takes wide scope and binds the bound pronoun contained within the DO. (16b) shows that scrambling of the IO gives wide scope to universal. However, when the DO is scrambled to the left of the scrambled IO, as in (16c), the wide scope reading for universal becomes much harder to get than in (16b). This is because the DO that contains the bound pronoun has to reconstruct beneath the subject, and the MCR dictates that in order for the DO to reconstruct, the IO reconstruct too. As a result, the IO will not c-command the subject at the end point of LF in (16c), and the wide reading for universal is rendered unavailable. However, when the DO shows up to the right of the IO as in (16d), the DO can reconstruct by itself, and the IO may remain in the surface position at LF, giving rise to the wide scope reading for universal.[11]

We have seen that a scrambled phrase cannot undergo reconstruction across another scrambled phrase, as predicted by the MCR. We will now see that the MCR makes another prediction: Given the schematic structure in (17), where the outer element XP has been moved by scrambling and the inner element YP has undergone a type of movement other than scrambling, XP can undergo reconstruction across YP, irrespective of whether YP reconstructs or not.

(17) [XP [YP ... t_{XP} t_{YP} ...]] (XP is scrambled; YP is moved by non-scrambling.)

The examples in (18) bear out the prediction.

(18) a. *[$_{Subj}$ Soitu$_i$-no maneejaa-ga] [$_{IO}$ ikutuka-no terebikyoku-ni]
her-Gen manager-Nom some-Gen TV.station-Dat
[$_{DO}$ hotondo-no sinzin kasyu$_i$-o] syookaisita
most-Gen new singer-Acc introduced
'Her$_i$ manger introduced most new singers$_i$ to some TV stations.'

b. [$_{Subj(DO)}$ Hotondo-no sinzin kasyu$_i$-ga] [$_{Agt}$ soitu$_i$-no maneejaa-niyotte]
most-Gen new singer-Nom her-Gen manager-by
[$_{IO}$ ikutuka-no terebikyoku-ni] $t_{Subj(DO)}$ syookaisa-reta
some-Gen TV.station-Dat introduced-Pass
(most>some, some>most)
'Most new signers$_i$ were introduced to some TV stations by her$_i$ manger.'

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[11] To make analogy between reconstruction and Icelandic object complete, let me add a case in which no reconstruction takes place. Consider (i).
(i) [$_{IO}$ Dono gakusei-ni-mo] [$_{DO}$ sukunakutomo hito-tu-no bunpoo riron$_i$-o]
every student-Dat-Prt at.least 1-Cl-Gen grammar theory
[$_{Subj}$ so$_i$-no senmonka-ga] t_{IO} t_{DO} osieteiru
it-Gen expertise-Nom teach
(every>at least 1, at least 1>every)
'(Lit) To every student, at least one theory of grammar$_i$, its expertise is teaching.'
In (i), both IO and DO are scrambled, and the DO binds a variable *so* contained within the subject. (If the DO is not scrambled, the bound reading is unavailable.) Notice that the example allows a wide reading for universal. The scope fact indicates that the scrambled phrases can remain in their surface positions. This is because the other structure in which universal can take wide scope is the one where both scrambled phrases are reconstructed but that structure does not yield the bound reading.

c. [$_{IO}$ Ikutuka-no terebikyoku-ni] [$_{Subj(DO)}$ hotondo-no sinjin kasyu$_i$-ga]
some-Gen TV.station-Dat most-Gen new singer-Nom
[$_{Agt}$ soitu$_i$-no maneejaa-niyotte] t_{IO} $t_{Subj(DO)}$ syookaisa-reta
her-Gen manager-by introduced-Pass
(most>some, some>most)

(18a) is ungrammatical under the bound reading of *soitsu* contained within the subject because the bound pronoun is outside the c-command domain of its binder, i.e., the direct object. (18b) shows that the bound reading is made available if the structure is passivized. As a result of passivization, the DO is promoted up to the subject position and gets a nominative Case marker, and the external argument is demoted down to the postpositional agent phrase. In this instance, the subject can take scope over the IO, and the vice versa. With this in mind, let us examine (18c), where the IO is scrambled to the left of the derived subject. This is a case of the schematic structure given in (17). Witness that this example allows the wide scope reading for *hotondo* "most" without destroying the bound reading. This means that the scrambled IO can undergo reconstruction, with the subject staying in the surface position. If the MCR required that in order for the scrambled IO to reconstruct, the A-moved subject reconstruct as well, then the wide reading for *most* would wrongly be predicted to be incompatible with the bound reading. Therefore, we can draw the conclusion that the MCR applies to the reconstruction of one element across another only when both elements have been moved by the same type of movement. Again, we can find an analogue of this in the domain of upward movement: Different types of movements do not compete for a minimality condition. Thus, it is possible for wh-movement to move across another A-moved element.

(19) What$_i$ does John$_j$ seem t_j to have lost t_i

To summarize, reconstruction of scrambled phrases reveals a mirror-image pattern to object shift in Icelandic double object constructions. In the case of reconstruction, an outer scrambled phrase cannot undergo reconstruction unless an inner scrambled phrase also reconstructs. In the case of object shift, a lower phrase (DO) cannot be shifted unless a higher phrase (IO) is also shifted. We have also seen that a scrambled phrase may undergo reconstruction across another phrase if the latter has been moved by a different kind of movement than scrambling, just like Wh-movement can move across another A-moved element. These observations not only lend much validity to the MCR per se but also suggest that the MCR and the minimality conditions on upward movement should follow from some common principle. This in turn suggests that the theory of grammar should deal with upward movement and reconstruction in a uniform way. Now we have established some foundations on which to argue for a representational theory. But before presenting a new model of grammar, I would like to demonstrate that the MCR gains further support from the realm of remnant movement. I will allocate section 3 for this purpose and turn to the main proposal of this paper in section 4.

3. Remnant Movement

3.1. *Deriving Müller's Generalization*

In this section, I will demonstrate that the MCR has another advantage in the analysis of remnant movement: It enables us to derive a widely held constraint on remnant movement known as Müller's Generalization given in (20).

(20) Müller's Generalization:
A configuration "$[_{YP}\ldots t_{XP}..]\ldots XP\ldots t_{YP}$" is allowed only if XP and YP are moved by a different movement rule.

As is shown by his seminal works such as Müller (1996, 1998), this generalization holds of a reasonable range of cases, especially scrambling in German. (21) exemplify a typical contrast that the generalization is designed to capture.

(21) German (Müller 1996)
a. *dass $[_{VP}$ t_{Obj} gelesen] $[_{Obj}$ das Buch] keiner t_{VP} hat
that read the book no one has
'That no one has read the book.'
b. $[_{VP}$ t_{Obj} gelesen] hat $[_{Obj}$ dass Buch] keiner t_{VP}
read has the book no one
'None has read the book.'

(21a) is derived first by scrambling of the object *dass Buch* "the book" out of the VP, which renders the VP a remnant, and then by scrambling of that remnant. Since both the remnant (VP) and the antecedent of the unbound trace (*dass Buch*) have been moved by scrambling, the resulting structure violates the generalization. On the other hand, the structure in (21b) satisfies the generalization because it is derived first by scrambling of *dass Buch* "the book" out of the VP, and then by topicalization of the remnant VP.

Japanese scrambling is no exception to Müller's generalization, as illustrated in (22).

(22) a. John-ga Mary-ni [$_{CP}$ Taro-ga [$_{Obj}$ Hanako-o] nagutta to] itta
John-Nom Mary-Dat Taro-Nom Hanako-Acc hit Comp said
'John said to Mary that Taro hit Hanako.'
b. [$_{Obj}$ Hanako-o] John-ga Mary-ni [$_{CP}$ Taro-ga t_{Obj} nagutta to] itta
Hanako-Acc John-Nom Mary-Dat Taro-Nom hit Comp said
c. [$_{CP}$ Taro-ga [$_{Obj}$ Hanako-o] nagutta to] John-ga Mary-ni t_{CP} itta
Taro-Nom Hanako-Acc hit Comp John-Nom Mary-Dat said
d. *[$_{CP}$ Taro-ga t_{Obj} nagutta to] [$_{Obj}$ Hanako-o] John-ga Mary-ni t_{CP} itta
Taro-Nom hit Comp Hanako-Acc John-Nom Mary-Dat said

(22a) is a non-scrambled structure, from which it is possible to scramble either the embedded object *Hanako-o* "Hanako-Acc," as in (22b), or the embedded clause, as in (22c). However, it is impossible to apply these two instances of scrambling at a time, which produces the ill-formed structure given in (22d). This structure is derived first by applying long-distance scrambling to the embedded object, which turns the embedded clause into a remnant, and then by applying scrambling to that remnant. The outcome violates Müller's Generalization.

Now a deeper question should be addressed: Why does Müller's Generalization hold? A traditional account proposed in generative syntax on Japanese (e.g., Saito (1985, 1989)) for the ill-formedness of structures like (22d) is that scrambling of a remnant yields a structure that violates the Proper Binding Condition (PBC) given in (23).

(23) Proper Binding Condition (To be replaced):
Traces must be bound at S-Structure. (Fiengo (1977), Saito (1989))

There are two problems with a PBC-based account, however. First, although the PBC correctly rules out example (22d), it incorrectly rules out a well-formed instance of remnant movement like (21b) as well. This problem has not been noted in the literature on Japanese syntax until recently (Hiraiwa (2002), Kuno (2001, 2002), Takahashi (2001)) because a grammatical case of remnant movement was not found in this language. In fact, Japanese has a well-formed instance of remnant movement. First, consider the data in (24).

(24) a. John-ga [$_{CP}$ [$_{Subj}$ Hanako-o] kasikoi to] omotteiru
John-Nom Hanako-Acc intelligent Comp consider
'John considers that Hanako is intelligent.'
b. [$_{Subj}$ Hanako-o] John-ga [$_{CP}$ t_{Subj} kasikoi to] omotteiru
Hanako-Acc John-Nom intelligent Comp consider
c. [$_{CP}$ [$_{Subj}$ Hanako-o] kasikoi to] John-ga t_{CP} omotteiru
Hanako-Acc intelligent Comp John-Nom consider

d. ?*[$_{CP}$ t_{Subj} kasikoi to] [$_{Subj}$ Hanako-o] John-ga t_{CP} omotteiru
intelligent Comp Hanako-Acc John-Nom consider

(24a) represents the non-scrambled structure of an Exceptional Case Marking (ECM) construction in Japanese, in which the downstairs subject *Hanako-o* "Hanako-Acc" is assigned an Accusative Case from the matrix verb. As shown in (24b-c), either the ECM subject or the embedded clause can be scrambled. But it is impossible to apply these two instances of scrambling at once as is indicated by the degraded status of (24d), where the outer scrambled CP is a remnant that contains an unbound trace of the scrambled ECM subject. This structure violates Müller's Generalization and can also be ruled out by the PBC.

Let us now consider the examples in (25).

(25) a. [$_{Subj}$ Hanako-ga] John-niyotte [$_{CP}$ t_{Subj} kasikoi to] omowareteiru
Hanako-Nom John-by intelligent Comp consider.Pass
'(Lit) Hanako is considered by John that (she) is intelligent'

b. [$_{CP}$ t_{Subj} kasikoi to] [$_{Subj}$ Hanako-ga] John-niyotte t_{CP} omowareteiru
intelligent Comp Hanako-Nom John-by consider.Pass

(25a) is a passive counterpart of (24a), in which the downstairs subject has undergone A-movement into the upstairs subject position and made the lower clause a remnant. Notice that (25b) indicates that the remnant CP can be scrambled to the left of the A-moved subject. The structure meets Müller's Generalization and is grammatical, but the PBC would incorrectly rule it out. Hence, at one word, the PBC is too strong to derive Müller's Generalization.

The second problem with a PBC-based account is that under the view that Japanese scrambling allows reconstruction freely, it was considered puzzling even in a pre-Minimalist framework why the PBC cannot be satisfied by reconstruction of a remnant at LF. In the Minimalist Program that attempts to eliminate the S-Structure as a level of linguistic representation, the S-Structure character of the PBC is not merely a puzzle but a real problem.

Once it is established that the MCR is in place in grammar, the above two problems with a PBC-based account will disappear. Let us first assume that the PBC is an LF condition.

(26) Proper Binding Condition:
Traces must be bound at LF.

This eliminates the second problem straightforwardly. Then, how do we account for the ill-formedness of structures like (21a) and (22d)? The MCR gives the following answer to this question. Consider (27), which illustrates the structure of (22d).

/-----*Reconstruction-----|

(27) [$_{CP}$ Taro-Nom t_{Obj} hitComp] [$_{Obj}$ Hanako-Acc] John-Nom Mary-Dat t_{CP} said

|---------------------------*Reconstruction-------------------------/

Given that the PBC is an LF condition, it follows that the remnant CP has to undergo reconstruction to satisfy the condition at LF. The MCR dictates that in order for the outer scrambled element (the remnant CP) to reconstruct across the inner scrambled element (Hanako-Acc), the latter also reconstruct. However, the inner scrambled element has no place to reconstruct to because its launching site is contained in the outer scrambled element and there is no c-command relation between the inner scrambled phrase and its launching site. Reconstruction of the inner scrambled phrase into its original position counts as an illicit sideward movement, and reconstruction of the outer scrambled phrase across the inner one violates the MCR. If no reconstruction takes place, the PBC is violated. Hence, there is no way out, and this is why it is impossible to apply scrambling to a remnant that contains a trace left by another instance of scrambling.

Then, how do we rule in well-formed instances of remnant movement such as (21b) and (25b)? The answer is that because the remnant and the antecedent of the unbound trace have been movement by a different movement, the former can be reconstructed across the latter without violating the MCR. Recall that the MCR restrains reconstruction of one element across another only if both have been moved by the same type of movement, as we saw in the previous section based on the data in (18). (28) illustrates the LF reconstruction process of example (25b).

(28) [$_{CP}$ t_{Subj} intelligent Comp] [$_{Subj}$ Hanako-Nom] John-by t_{CP} consider.Pass

|-----------------✓Reconstruction----------------/

The scrambled CP can be reconstructed across the A-moved subject so as to meet the PBC.

The combination of the PBC as an LF condition with the MCR correctly distinguishes between the ill-formed instances of remnant movement and the well-formed ones. This in effect derives Müller's Generalization, repeated in (29).

(29) Müller's Generalization:

A configuration "[$_{YP}$...t_{XP}..]...XP...t_{YP}" is allowed only if XP and YP are moved by a different movement rule.

The PBC mandates that all kinds of remnants (YP) undergo reconstruction across the binder of the unbound trace (XP). However, when YP and XP have been moved by the same type of movement, XP is forced to undergo reconstruction into YP by virtue of the MCR, which necessarily results in an illicit sideward movement. Therefore, in order for reconstruction of YP to be exercised successfully, YP and XP must have been moved by a different movement rule, in which case the MCR does not apply to the reconstruction process. Since Müller's Generalization can be deduced from the MCR in tandem with the PBC, to the extent that the generalization is maintainable, it can be interpreted as evidence for the MCR.

3.2. A Competing Proposal

It is worth noting that Kitahara (1997), Koizumi (1994), Sauerland (1999), and Takano (1994) have made a proposal that is comparable with the present one in deriving Müller's Generalization (cf. Hiraiwa (2002), Cecchetto (to appear)). Roughly speaking, they propose, assuming the framework presented by Chomsky (1993, 1995), that Müller's Generalization can be deduced from a minimality condition on upward movement, a version of which is given (30).

(30) XP can move to the Specifier of F only if XP is the closest movable element to the Specifier of F. XP is not the closest movable element to the Specifier of F if there is YP that is movable to the Specifier of F and YP either dominates or c-commands XP.

Let us take a brief look at their proposal using the schemata in (31).

(31) a. $[_{FP1}$ XP F_1 … $[_{YP}$…t_{XP}…]]
b. $[_{FP2}$ $[_{YP}$…t_{XP}…] F_2 …$[_{FP1}$ XP F_1 …t_{YP}]

When the remnant (YP) and the antecedent of the unbound trace (XP) are moved by the same type of movement (which means that YP and XP compete for the Specifier position of the same head), the minimality condition in (30) is violated twice. The first violation is caused at the stage in (31a), where XP moves out of YP to the Spec-F_1 in spite of the presence of YP that dominates XP and thus is a closer movable element to the Spec-F_1.[12] The second

[12] This is dubious because in Japanese (but not in German) it is possible to apply scrambling to an element contained within another scrambled element.
(i) Hanako-o_j John-wa [Taro-ga t_j nagutta koto-o]$_i$ [Mary-ga t_i sirani to] omotteiru
Hanako-Acc John-Top Taro-Nom hit fact-Acc Mary-Nom not-know C think
'John thinks that Mary does not know that Taro hit Hanako.'
(ii) German (Sauerland (1999: 180))
*weil [den Ball]$_i$ vergeblich [der Susi t_i zu geben]$_j$ die Kazuko t_j versucht hat
since the ball unsuccessfully the Susi to give the Kazuko tried has
'Since Kazuko has unsuccessfully tried to give the ball to Susi.'
Sauerland (1999) also notices this difference and suggests that a scrambling-inducing feature in Japanese is deleted after scrambling takes place whereas one in German scrambling will remain so that

violation occurs in the stage in (31b), in which YP moves over XP to the Spec-F_2, but this time XP is closer to the Spec-F_2 because XP c-commands YP. The two violations of the minimality condition degrade the structure severely. This explains why XP and YP must be moved by a different movement rule. In that case, they do not compete for the landing site in either derivational stage. As a consequence, Müller's Generalization is derived.

Their proposal is the opposite to the present one in that Müller's Generalization is derived from the minimality condition on upward movement rather than the one on reconstruction. At first sight, these two proposals may seem indistinguishable from each other, but it is not the case. Considering that the vast majority of evidence for Müller's Generalization comes from the scrambling data, it is necessary for them to verify the assumption that scrambling obeys a minimality condition on a par with normal sorts of upward movement. However, there is no compelling evidence in favor the assumption that underlies their proposal. Rather, counterevidence is much easier to find. Examples (32) are constructed on the basis of Fukui and Saito's (1998) data, which show that scrambling is not sensitive to a minimality condition.

(32) a. John-ga Hanako-ni [$_{CP}$ Taro-ga nihon-e kaetta to] itta
John-Nom Hanako-Dat Taro-Nom Japan-to went.back Comp said
'John said to Hanako that Taro had gone back to Japan.'
b. Hanako-ni$_i$ [$_{CP}$ Taro-ga nihon-e kaetta to] John-ga t_i t_{CP} itta
Hanako-Dat Taro-Nom Japan-to went.back Comp John-Nom said
c. [$_{CP}$ Taro-ga nihon-e kaetta to] Hanako-ni$_i$ John-ga t_i t_{CP} itta
Taro-Nom Japan-to went.back Comp Hanako-Dat John-Nom said

(32a) is a non-scrambled structure, and the other two examples show that both the matrix argument *Hanako-ni* "Hanako-Dat" and the embedded clause can be scrambled in either order. If scrambling obeyed a minimality condition like the one in (30), one of the scrambled structures would wrongly be ruled out. It is thus reasonable to conclude that scrambling does

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a scrambled element continues to be visible to further scrambling, thereby blocking scrambling out of it. Sauerland tries to motivate this speculation, drawing on the fact that German scrambling always shows some semantic effects such as scope shift and specific interpretation of indefinites, unlike Japanese scrambling. However, this speculation is falsified by Hindi scrambling. As is pointed out by Dayal (2003), Hindi scrambling also manifests some semantic effects akin to ones observable in German, yet is able to dislocate an element contained in another scrambled phrase, much like Japanese scrambling.

(iii) Hindi (p.c. Veneeta Dayal)
[yeh kitaab]$_i$ ram soch-taa hai [ki [t_i parh-nii]$_j$ shama-ne t_j chaah-ii]
this book Ram think-Hab be.Prs. that read-Inf Shama-Erg want-Pfv
'Ram thinks that Shama likes Mona.'

not obey a minimality condition.[13] This means that the rival proposal has no independent grounds for explaining the core cases covered by the generalization. On the other hand, my proposal is built upon independent evidence that reconstruction of a scrambled phrase obeys the MCR. It is therefore clear that my proposal is superior to theirs as far as the core scrambling data are concerned.

4. Derivational Theory vs. Representational Theory

I have so far argued that reconstruction obeys a minimality condition just like upward movement, which is formulated as the Minimality Condition on Reconstruction reproduced in (33).

(33) Minimality Condition on Reconstruction (MCR)
An X-moved element cannot undergo reconstruction across another X-moved element, where X is a variable ranging over the types of movements.

Let us now consider what implications the MCR has on the theory of grammar. As we saw in section 2, the MCR exhibits the mirror image of Relativized Minimality (or Superiority (see note 9)). This implies that the sensitivity to a minimality condition is not the hallmark of upward movement. More strongly, we might be able to say that there is no essential difference between upward movement and reconstruction, the only difference being the directionality of movement. If so, the theory of grammar should be symmetric in the sense that it treats upward movement and reconstruction in the same manner, and any theory that is not so should be modified accordingly.

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[13] Sauerland's (1999) argues that cases like (32) do not necessarily argue against the sensitivity of scrambling to a minimality condition. He argues that violation of the minimality condition can be avoided by assuming that two scrambled phrases first form multiple specifiers from which either of the two undergoes further scrambling, with the aid of an ancillary assumption that the elements in the specifiers of the same head are equidistant from outside. However, this solution seems to void his explanation of Müller's Generalization because it will incorrectly legitimize the derivation illustrated in (i), where the XP is first scrambled to the Spec-FP1, making YP a remnant (ia), then the remnant YP is scrambled to the inner Spec-FP1, which render XP and YP equidistant from a higher head (ib), and finally YP is scrambled to the Spec-FP2 (ic).

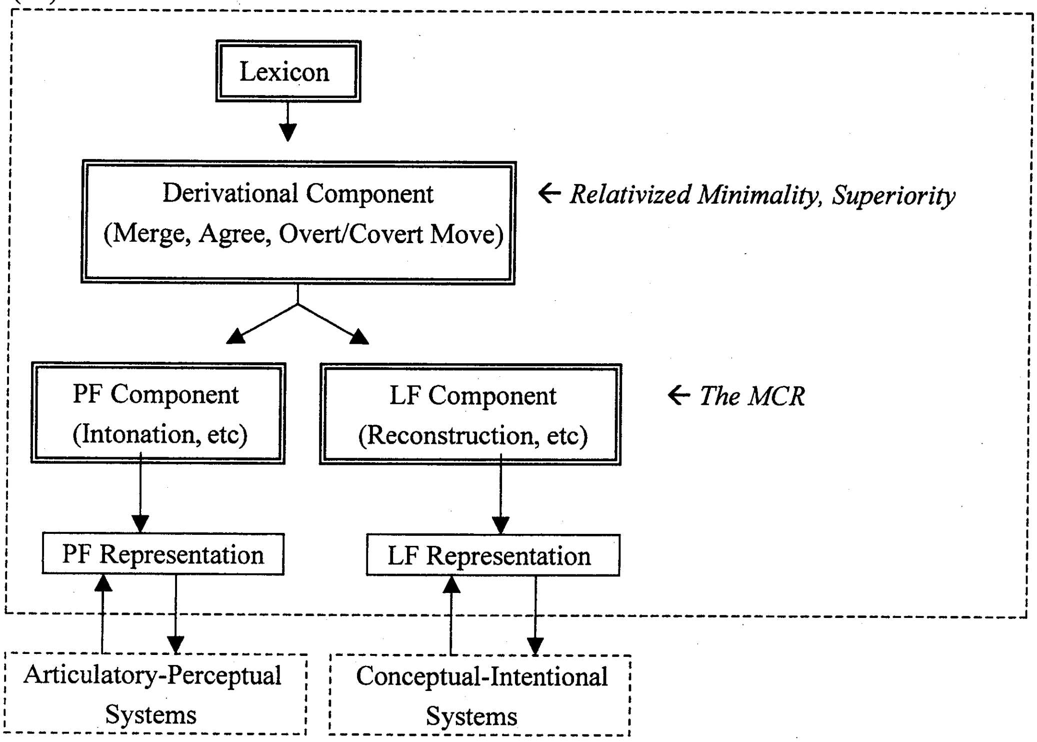
(i) a. $[_{FP1}$ XP F_1 … $[_{YP}$…t_{XP}…]]
b. $[_{FP1}$ XP $[_{FP1}$ $[_{YP}$…t_{XP}…] F_1 …t_{YP}]]
c. $[_{FP2}$ $[_{YP}$…t_{XP}…] F_2 …$[_{FP1}$ XP $[_{FP1}$ t_{YP} F_1 …t_{YP}]]]

There is nothing wrong with this derivation. Hence, Sauerland loses his explanation.

4.1. Deficiencies of a Derivational Theory

Let us see what the standard derivational theory of grammar such as the one proposed by Chomsky (1995) and his subsequent works will look like if the MCR is incorporated into it. The resulting theory would be something like the one depicted in (34).

(34)



In this model, derivation starts from the lexical insertion of lexical items into the derivational component, where syntactic objects are created by the operations, Merge, Agree and Move. These operations are regulated by the minimality conditions such as Relativized Minimality and Superiority. Then, the outputs of the derivational component are transferred to PF and LF components as their inputs. Under the assumption that reconstruction takes place at LF, the MCR has to be stated there. I will be agnostic about the nature of the PF component, which can be taken as either a derivational or a non-derivational component.

There are several points to note as regards this architecture of grammar. First, in order to capture the mirror-image relation between the MCR and Relativized Minimality/Superiority, reconstruction has to be viewed as a lowering operation that takes place in the LF component, rather than as a free (or arbitrary) deletion of a higher copy in the LF representation.[14] As a bad consequence, this resurrects an old view on reconstruction and destroys the advantage that the Copy Theory of movement achieves in implementing reconstruction. (Also note that it is unclear how to reconcile lowering with the Copy Theory of movement.)

Second, a more serious technical problem arises with this model. Bošcovic (1997, 1998), Chomsky (1993, 1995), Kitahara (1997), Richards (1997, 2001) and others have attempted to motivate a general principle that derives the minimality conditions on upward movement. The general principles proposed by these authors are stated in the form of a locality condition on the establishment of feature-checking and movement relations between Attractor (Probe) and Attractee (Goal). However, the MCR cannot be derived from the same general principle unless it is assumed (contra the standard assumption) that reconstruction takes place for the purpose of feature-checking. The cost of this non-standard assumption is that it would loosen the rigidity of the Probe-Goal system (or its predecessors/equivalents) of Chomsky (2000, 2001a, 2001b), under which both Probe and Goal are heads and the former has to c-command the latter. If a to-be-reconstructed phrase were regarded as a Probe, it would entail that not only a head but also a maximal projection could be a Probe, and if the base position of a to-be-reconstructed phrase were taken as a Probe, it would entail that Probe would not have to c-command the Goal. It seems, however, that neither of these entailments can be defended on independent grounds.

Third, even if we could discover a better principle that can subsume both the MCR and the minimality conditions on upward movement, that principle will have to be stated redundantly both in the derivational component and in the LF component because two different components cannot comprise one and the same principle by virtue of the modularity. As long as one envisages a derivational model that posits a derivational component to deal with upward movement and an LF component to accommodate reconstruction, the similarity between the MCR and Relativized Minimality/Superiority can be taken as nothing but an accident.

Still, one could conceive a derivational model in which there is no LF component and reconstruction (=lowering) takes place during derivation.[15] If it is feasible to maintain such a

[14] Boeckx (2001) has reached a similar conclusion based on the observation that A-movement reconstruction obeys a certain minimality condition. However, he interprets this conclusion as evidence for a derivational theory. A fuller comparison between his proposal and mine is beyond the scope of this paper. But see note 33.

[15] This is not the derivational model proposed by Epstein et al (1998). They attempt to capture reconstruction effects not by lowering, but by allowing elements to be interpreted before they move. This interpretive mechanism predicts that movement never decreases the number of possible interpretations. The prediction is empirically wrong as indicated by the data given in (15-16). Thus, in the case of (15c) and (16c), it is not clear why scrambling of the phrase containing a bound pronoun nullifies the availability of wide scope reading for universal, which should have been established in the previous stage of derivation in their model.

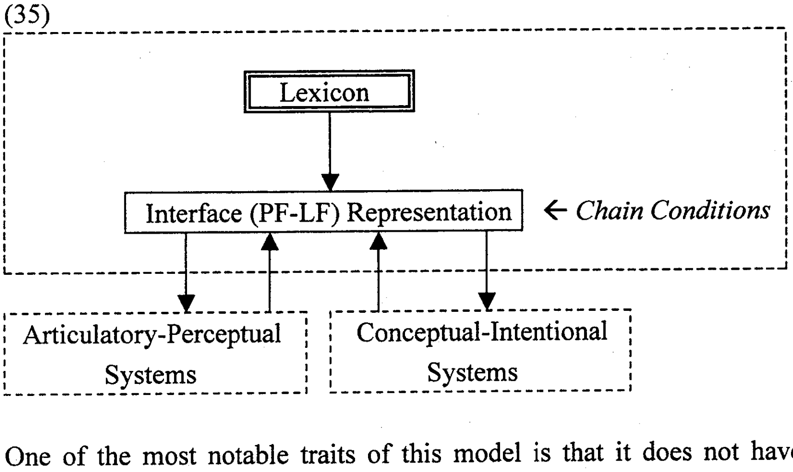
model and find a principle that can derive the minimality conditions on upward movement and reconstruction, the redundancy problem does not arise. However, it seems to me that the model, which attains a stronger derivational character by abandoning an LF component yet allows lowering, is conceptually anomalous because lowering is by nature incompatible with derivation. More specifically, in a theory of grammar that involves only interface levels, the necessity of derivation is motivated by (or could be identified with) the necessity of structure building, and derivation can be defined as a series of applications of structure building operations. Now the question is what criterion has to be met for a given operation to be qualified as a structure building operation. The strongest requirement is the Extension Condition of Chomsky (1993), which initial Merge and most instances of Move satisfy. The weaker requirement is the featural cyclicity of Richards (1997, 2001), which head-movement and the instances of Move that obey the tucking-in condition meet. However, lowering does not satisfy either of the two requirements. Therefore, lowering is least likely to be a structural building operation, and in this sense it is incompatible with a strong derivational model.

All of these problems indicate that the MCR could be incorporated into the derivational theory of grammar only at the price of theoretical elegance and simplicity. This makes us to conclude that the derivational theory cannot be modified in any straightforward manner so as to accomplish the symmetrical grammar.

4.2. Toward a Representational Theory

Now I would like to propose a representational model of grammar, as is depicted in (35).

(35)



One of the most notable traits of this model is that it does not have either a derivational component or an LF component, hence there is no distinction between upward movement and reconstruction. Though there is neither derivational nor LF component in this model, it can express "movement relations" by means of chains. A sentence consists of a set of chains, which are created by one step mapping operation from the lexicon to the interface representations. The interface representations are interpreted by the external systems.[16]

The interface representation of one sentence consists of a pair of PF and LF representations of it plus a chain property of each structural position in it. A PF representation bears phonological information about which member of a chain gets pronunciation, and an LF representation carries semantic information concerning thematic roles, quantifier scope, variable binding relations and so on. A chain property tells us syntactic information such as a movement relation (e.g., "A'-movement relation") or a type of position (e.g., A-position) for each structural position. I will assume that at the interface representation, the chain property plays a role in deciding which chain member receives what LF and PF representations. For example, a chain with a QR-property is interpreted as being assigned a scope interpretation to its head member and a variable interpretation and pronunciation to its tail member. This can be interpreted as an extension of the so-called phonological theory of QR to semantic interpretation. In what follows, this point will be taken for granted, and I will not specify the exact PF/LF rule for each type of movement unless it is crucial to the issue under discussion.

Possible pairings of PF and LF representations are determined by the Chain Conditions that are operative at the interface representation. The Chain Conditions are representational variants of the minimality conditions on upward movement and reconstruction. To anticipate the discussion, the Chain Conditions will block the PF representation for (36), which repeats (2), from being paired with the LF representation in (37b), and the PF representation for (38b), a repetition of (11c), from being paired with the LF representation for (38a), which reproduces (11b). The exact formulations of the Chain Conditions will be given below.

(36) John gave some student every book. (some>every, *every>some)

(37) a. [$_{IP}$ John [$_{VP}$ some student$_i$ [$_{VP}$ every book$_j$ [$_{VP}$ gave t_i t_j]]]] (some>every)

b. [$_{IP}$ John [$_{VP}$ every book$_j$ [$_{VP}$ some student$_i$ [$_{VP}$ gave t_i t_j]]]] (every>some)

(38) a. [$_{DO}$ daremo-o] John-ga [$_{IO}$ dareka-ni] t_{DO} syookaisita
everyone-Acc John-Nom someone-Dat introduced
(every>some, some>every)

[16] The reader can take the interface representation depicted here as basically the same as that of the Single Output Syntax of Bobaljik (1995, 2002). (A similar model has been proposed by Groat and O'Neil (1996) and Pesetsky (1997, 1998).) Note in passing that the interface representation in the present model and in Bobaljik (2002) is different from the Lexico-Logical Form of Brody (1995) in that the former involves covert movement relations such as QR or covert Wh-movement while the latter does not. The latter attempts to capture covert movement effects by positing a covert scope marker that creates a chain-relation with an in-situ quantifier or Wh-phrase. Since empirical support that motivates covert movement (e.g., licensing of ACD) is compelling (Fox (2000, 2002) Kennedy (1997), May (1985), and many others), I will assume that covert movement relations exist.

b. $[_{IO}$ dareka-ni] $[_{DO}$ daremo-o] John-ga t_{IO} t_{DO} syookaisita
someone-Dat everyone-Acc John-Nom introduced
(some>every, *every>some)

The rationale behind the Chain Conditions is the following. As is mentioned in the introduction, it is a fact about human language that an element is quite frequently interpreted in a position where it is not pronounced. Given that a major role of syntax is to provide an optimal bridge between PF and LF, PF-LF mismatches should be maintained as few as possible. The Chain Conditions are a representational device that is meant to achieve this goal by restraining possible pairings of PF and LF representations.[17,18]

Since PF-LF mismatches come in two varieties, there need to be two kinds of Chain Conditions. One is a condition for "partial" mismatch chains and the other a condition for "complete" mismatch chains. In the following discussion, I will continue to use terms such as movement and reconstruction together with representational terms for an expository purpose.

4.2.1. Chain Condition I: Partial Mismatch

Partial mismatches arise in a multiple-membered chain where semantic interpretation obtains in more than one position, but pronunciation targets only one of those positions. This is typical of a chain that bears an upward movement relation, where an element is interpreted in both derived and base positions, but pronounced only in one of the two. For example, in the case of overt Wh-movement, an operator is pronounced in its scope position, but unpronounced in the base position where it is interpreted as a variable, as illustrated in (39).

(39) a. What did John buy t
b. $[_{CP}$ What [did John $[_{VP}$ buy what]]]

PF: /what/	**PF:**
LF: Scope	**LF: vbl**
CH: A'	**CH: A', A**

[17] The standard derivational theory could achieve this goal by restraining possible distance that upward movement can move over. However, this solution is not only indirect but also imperfect because PF-LF mismatches are caused by reconstruction as well. Bounding reconstruction within a derivational theory gives rise to not a few problems, as we saw above.
[18] Brody (1995) has proposed a similar principle called Transparency, according to which an element has to be interpreted in a position where it is pronounced so that LF representations can be inspected and recovered straightforwardly from phonological manifestations. Though Transparency shares much spirit with the Chain Conditions, it seems too strong to maintain in light of reconstruction phenomena.

A simplified interface representation of (39a) is given in (39b).[19] The PF slot indicates which member of the chain is pronounced. The spelling of a word is used as a pseudo-phonemic representation. Thus, /what/ on the chain-head member of the Wh-phrase means that *what* is pronounced in the chain-head position, Spec-CP. The LF slot shows what interpretation is assigned to that chain-member. In the present case, the chain-head is interpreted as a scope position, and the chain-tail as a variable position. The CH slot designates what movement (chain)/position property is borne by the chain of which that position is a member. Here both chain-head and chain-tail members carry an A'-movement (A'-chain) property, and the chain-tail member an A-position property as well because it occupies an A-position and constitutes a one-membered A-chain.

Covert QR exemplifies another instance of partial mismatch chains.

(40) a. John loves everybody

b. John$_i$ [$_{VP}$ everybody [$_{VP}$ t_i loves everybody]]

PF:	**PF: /everybody/**
LF: Scope	**LF: vbl**
CH: QR	**CH: QR, A**

As shown in (40b), *everybody* is interpreted in two positions of the chain, the VP-adjoined position (scope) and the base position (variable), but pronounced only in the latter. Both chain-members bear a QR-chain property, and the chain-tail member an A-position property as well.

Partial mismatch chains are prevalent in human language, but their distribution is not free, being conditioned by the presence of other partial mismatch chains with the same movement (chain) property. I propose that partial mismatch chains obey the Chain Condition I.

(41) Chain Condition I (To be revised):

At the interface representation, the partial mismatch chain X cannot be intervened by an entire chain Y that bears the same chain property as X.

The predicate "be-intervened-by-an-entire-chain" is defined as follows.

[19] The linking notation given in the interface representation is not a theoretical substance, but merely a convention to make the chain links visible.

(42) The chain X is intervened by an entire chain Y iff the head member of X c-commands every chain member of Y and every chain member of Y c-commands the tail-member of X.[20]

Given the Chain Condition I, we can derive the effect of the Superiority Condition. Recall that Superiority allows example (36), which is repeated in (43), to have only the surface scope reading, by forcing the movement paths of IO and DO to cross so that the hierarchical relations between them will be retained after the application of QR.

(43) John gave some student every book. (some>every, *every>some)

I will demonstrate that the Chain Condition I can also explain this scope fact.

In the case of surface scope reading, (43) has an interface representation shown in (44).

[20] It is well known that Superiority does not prohibit one Wh-phrase from moving across another if no c-command relation obtains between them. Huang (1982) points out the following contrasts.

(i) a. *What did who buy t
 b. What did people from where buy t
 c. *Who did what please t
 d. Who did pictures of who please t

However, Aoun and Li (2003) observe that in Lebanese Arabic, superiority violations arise even if there is no c-command relation between two Wh-phrases. A typical example is shown in (ii), where a Wh-phrase is moved out of the complement clause of the matrix verb across an adjunct clause that contains an in-situ Wh-phrase. The extraction site of the Wh-phrase is occupied by a resumptive pronoun in example (ii), but Aoun and Li (p. 231) note that it can be a true gap. (Note that "?" in the example stands for the letters that could not be printed correctly in the fonts used in this paper. For precise orthography, I refer the reader to the original source.)

(ii) Lebanese Arabic (Aoun and Li (2003: 20, (32b)))
 *miiin fakkarto [la?inno l-m?allme ħikət ma? miin]
 who thought.2p because the-teachter.FS spoke.3FS with who
 [?ənno l-mudiira ħa-təšħat-o]
 that the-principlal.FS will-3FS.expel-him
 'Who$_i$ did you think because the teacher spoke with whom that the principal would expel him$_i$?

If this data shows the nature of Superiority more truthfully than the English data, then it may turn out that the intervention should be defined on the basis of precedence, rather than c-command. As a matter of fact, this might be desirable for the representational approach advocated here because the relevance of c-command does not readily follow from the rationale for the Chain Conditions given above. Note in passing that Aoun and Li interpret the Lebanese Arabic data as evidence that grammar has to make use of a representational device.

(44) $[_{IP}$ John $[_{VP}$ some student $[_{VP}$ every book $[_{VP}$ gave some student every book]]]]

PF:	**PF:**	**PF: /some student/**	**PF: /every book/**
LF: Scope	**LF: Scope**	**LF: vbl**	**LF: vbl**
CH: QR	**CH: QR**	**CH: QR, A**	**CH: QR, A**

In this representation, both IO and DO form a QR-chain, without altering their hierarchical relation. Since QR-chains are partial mismatch chains, both chains have to obey the Chain Condition I, and they do because neither of them is intervened by any entire chain with a QR-property. Since the scope position of the IO c-commands that of the DO, this interface representation produces the surface scope reading through normal semantic calculation. Now examine the other interface representation of example (43).

(45) *$[_{IP}$ John $[_{VP}$ every book $[_{VP}$ some student $[_{VP}$ gave some student every book]]]]

PF:	**PF:**	**PF: /some student/**	**PF: /every book/**
LF: Scope	**LF: Scope**	**LF: vbl**	**LF: vbl**
CH: QR	**CH: QR**	**CH: QR, A**	**CH: QR, A**

Here too, both IO and DO form a QR-chain, but this time they have altered their hierarchical relation. If this representation were allowable, (43) would yield inverse scope. However, it is not the case because the partial mismatch chain of the DO violates the Chain Condition I as it is intervened by the entire chain of IO with a QR-property. This way, the Chain Condition I correctly accounts for the fact that (43) allows only the surface scope reading.

The Chain Condition I also explains why the Wh-movement paths have to cross in multiple Wh-fronting structures in Bulgarian, as seen in (3), which is repeated in (46).

(46) Bulgarian (Rudin (1988: 449))

a. Koj$_i$ kogo$_j$ e t_i vidjal t_j
who whom AUX seen
'Who sees whom?'

b. *Kogo$_j$ koj$_i$ e t_i vidjal t_j
whom who AUX seen

The interface representations of (46a) and (46b) are illustrated in (47) and (48), respectively.

(47) $[_{CP}$ Koj $[_{CP}$ kogo e $[_{IP}$ koj vidjal kogo]]]

PF: /koj/	**PF: /kogo/**	**PF:**	**PF:**
LF: Scope	**LF: Scope**	**LF: vbl**	**LF: vbl**
CH: A'	**CH: A'**	**CH: A', A**	**CH: A', A**

In (47), the two Wh-phrases have created a partial mismatch chain with an A'-movement property and both chains satisfy the Chain Condition I because neither of them is intervened by any entire chain with an A'-movement property.

(48) *$[_{CP}$ Kogo $[_{CP}$ koj e $[_{IP}$ koj vidjal kogo]]]

PF: /kogo/	**PF: /koj/**	**PF:**	**PF:**
LF: Scope	**LF: Scope**	**LF: vbl**	**LF: vbl**
CH: A'	**CH: A'**	**CH: A', A**	**CH: A', A**

On the other hand, the interface representation in (48) violates the Chain Condition I because the partial mismatch A'-chain of *kogo* "whom" is intervened by the entire A'-chain of *koi* "who," hence the contrast in (46).

It should by now be clear that the Chain Condition I can account for Relativized Minimality (or Superiority) effect exhibited by Icelandic object shift, as seen in (13), repeated here as (49).

(49) Icelandic (Collins and Thráinsson (1996))

a. Ég lána ekki $[_{IO}$ Maríu] $[_{DO}$ bækurar]
   I lend not Maria books
   'I did not lend books to Maria.'

b. Ég lána $[_{IO}$ Maríu] ekki t_{IO} $[_{DO}$ bækurar]
   I lend Maria not books

c. ?Ég lána $[_{IO}$ Maríu] $[_{DO}$ bækurar] ekki t_{IO} t_{DO}
   I lend Maria books not

d. *Ég lána $[_{DO}$ bækurar] ekki $[_{IO}$ Maríu] t_{DO}
   I lend books not Maria

Let us assume that object shift is an instance of A-movement and creates a partial mismatch chain. Then, ungrammatical instance (49d) can be analyzed as having an interface representation like the one shown in (50).

(50) *Ég lána [$_{DO}$ bækurar] ekki [$_{IO}$ Maríu] [$_{DO}$ bækurar]

PF: /bækurar/	**PF: /Maríu/**	**PF:**
LF: Int	**LF: θ**	**LF: θ**
CH: A	**CH: A**	**CH: A**

In the partial mismatch chain of the DO, the chain-head member gets pronunciation and is assigned some special interpretation such as specificity, definiteness, topic or focus, which I represent as "Int" after Chomsky (2001a). The chain-tail member is unpronounced and obtains a thematic role. This partial mismatch chain violates the Chain Condition I because it is intervened by the IO that occupies an A-position and hence constitutes a single-membered A-chain. On this account, the well-formedness of (49b) and (49c) is trivial as they involve no nesting chains.

So far we have seen that both the Superiority Condition (and Relativized Minimality) and the Chain Condition I enable us to explain, in a different manner, why the generalization holds that the chain paths created by multiple applications of the same type of movement have to cross. At this point, we can say the Chain Condition I has the ability to substitute for the Superiority Condition. At the same time, however, we have to address the question which of the two conditions is explanatorily more adequate. This question is hard to answer on the grounds of constraints on upward movement because a derivational constraint can be more or less easily translated into a representational one, and the vice versa. However, we may be able to find an answer in the realm of reconstruction because as is pointed out in 4.1, the MCR cannot be incorporated into a derivational theory without losing much of its explanatory force. Therefore, if (or to the extent that) the leading idea underlying the Chain Conditions that PF-LF mismatches should be minimized can be extended to derive the MCR successfully, we will be entitled to say that the representational theory is explanatorily more adequate than any derivational theory conceivable.

4.2.2. Chain Condition II: Complete Mismatch

In addition to partial mismatches, there is another kind of mismatch, which I will refer to as complete mismatches. Complete mismatches show up in a multiple-membered chain where no single member obtains both pronunciation and semantic interpretation. Such chains typically result from reconstruction. Consider (51), a repetition of (10).

(51) a. [$_{Subj}$ Daremo-ga] [$_{Obj}$ dareka-o] sonkeisiteiru (some>every, every>some)
everyone-Nom someone-Acc admire
'Everyone admires someone.'

b. [$_{Obj}$ Dareka-o] [$_{Subj}$ daremo-ga] t_{Obj} sonkeisiteiru (some>every, every>some)
someone-Acc everyone-Nom admire

In section 2, we took the availability of wide scope reading for universal in scrambled structure (51b) as evidence that the scrambled object can undergo reconstruction. This means that in the chain of the scrambled object, the chain-head member gets pronunciation but no semantic interpretation. Thus, the interface representation of (51b) in the case of reconstructed reading will be as follows.

(52) [$_{Obj}$ someone-Acc] [$_{Subj}$ everyone-Nom] [$_{Obj}$ someone-Acc] admire (every>some)

PF: /dareka-o/	**PF: /daremo-ga/**	**PF:**
LF:	**LF: QP**	**LF: QP**
CH: SCR	**CH: A**	**CH: SCR, A**

In this representation, the SCR-chain of the object constitutes a complete mismatch chain because neither of the two chain-members receives both PF and LF interpretation. Note that I will leave open the exact status of quantifiers in Japanese and assume that they can be interpreted in the object position through type-shifting.[21] In the present case, the object quantifer is assigned type <<e, et>, et> and takes the transitive verb as its semantic argument. When the object quantifer is interpreted in the scrambled position, it can be interpreted as a generalized quantifer of type <et, t>. In the following interface representations, I will use "QP" in the LF slot sloppily both for a moved quantifier and an in-situ quantifer to indicate a scope position.

We have seen much evidence that reconstruction obeys the MCR. Given the concept of complete mismatch chains, we can view the MCR as a representational constraint on the distribution of such chains. So I propose that complete mismatch chains obey the Chain Condition II.

[21] This assumption is not a logical necessity. One can assume that the reconstructed object quantifer undergoes QR to the VP-adjoined position with the proviso that subjects do not reconstruct, or subjects do not undergo A-movement into Spec-TP in Japanese (Fukui (1986), Kuroda (1988)).

(53) Chain Condition II:

At the interface representation, the complete mismatch chain X cannot be intervened by a chain-member y (of the chain Y) that contains both PF and LF features and bears the same chain property as X.

The predicate "be-intervened-by-a-chain-member" is defined as in (54).

(54) The chain X is intervened by a chain member y (of the chain Y) iff the head member of X c-commands y and y c-commands the tail member of X.

Now I will demonstrate that the Chain Condition II can derive the effect of the MCR by showing that it can account for the scope data in (11), reproduced as (55), which give initial support to the MCR.

(55) a. John-ga [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] syookaisita
John-Nom someone-Dat everyone-Acc introduced]
(some>every, *every>some)
'John introduced everyone to someone.'

b. [$_{DO}$ daremo-o] John-ga [$_{IO}$ dareka-ni] t_{DO} syookaisita
everyone-Acc John-Nom someone-Dat introduced
(every>some, some>every)

c. [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] John-ga t_{IO} t_{DO} syookaisita
someone-Dat everyone-Acc John-Nom introduced
(some>every, *every>some)

To recap the point, in the non-scrambled structure, the IO unambiguously takes scope over the DO, as in (55a). When the DO is scrambled to the left of the subject, the DO can take wide scope as well as narrow scope, as in (55b). However, when both IO and DO are scrambled without changing their hierarchical relation and linear order as in (55c), the scope ambiguity disappears, and the IO has to take wide scope just as in the non-scrambled structure. This indicates that in (55c), the scrambled IO alone cannot reconstruct so as to fall under the scope of the scrambled DO. The MCR is proposed to account for this sort of restriction on reconstruction.

Let us now examine the interface representation illustrated in (56) that would obtain if the IO alone could reconstruct in (55c) in violation of the MCR.

(56) *IO Reconstructed*

*[$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom [$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] introduced

PF: /dareka-ni/	**PF: /daremo-o/**	**PF:**	**PF:**
LF:	**LF: QP**	**LF: QP**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

On the representational framework proposed here, that the IO is reconstructed means that it is pronounced in the chain-head position while it is interpreted solely in the chain-tail position. Thus, the SCR-chain of the IO is an instance of complete mismatch chain and has to meet the Chain Condition II. However, it fails to do so because it is intervened by the chain-head member of the SCR-chain made up by the DO that contains both PF and LF features. (The DO is pronounced in the chain-head position; it is also interpreted there as a generalized quantifer and takes scope, binding a variable in the chain-tail position.) Since this representation violates the Chain Condition II, example (55c) does not have a wide scope reading for universal.

For the sake of completeness, let us consider the other interface representations. There are three logically possible interface representations: No reconstruction takes place, the DO alone reconstructs, and both IO and DO reconstruct as shown in (57-59), respectively. Each of them satisfies the Chain Conditions and gives rise to a wide reading for existential.[22]

(57) *No Reconstruction*

[$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom [$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] introduced

PF: /dareka-ni/	**PF: /daremo-o/**	**PF:**	**PF:**
LF: QP	**LF: QP**	**LF: vbl**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

In this representation, both IO and DO have formed a partial mismatch chain. In both chains, the chain-head member is interpreted as a scope position and gets pronunciation whereas the chain-tail member is interpreted as a variable and unpronounced. These two chains satisfy the Chain Condition I because of neither of them is intervened by any entire chain of the relevant

[22] The necessity of these three interface representations has been proved in section 2. See note 11 for (57), (16d) for (58), and (15c) for (59).

kind. Since the scope position of the IO c-commands that of the DO, this representation yields surface scope.

(58) *DO Reconstructed*

[$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom [$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] introduced

PF: /dareka-ni/	**PF: /daremo-o/**	**PF:**	**PF:**
LF: QP	**LF:**	**LF: vbl**	**LF: QP**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

Here too, the IO has formed a partial mismatch chain, and this chain satisfies the Chain Condition I. On the other hand, the DO is reconstructed, which means that it constitutes a complete mismatch chain that has to obey the Chain Condition II. Notice that the chain of the DO is intervened by the chain-tail member of the IO, but the Chain Condition II is not violated because the intervener lacks a PF feature. This representation also produces the surface scope reading.

(59) *IO and DO Reconstructed*

[$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom [$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] introduced

PF: /dareka-ni/	**PF: /daremo-o/**	**PF:**	**PF:**
LF:	**LF:**	**LF: QP**	**LF: QP**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

This interface representation results when both IO and DO are reconstructed so that they form complete mismatch chains. Both chains have to satisfy the Chain Condition II, and they do so trivially because neither of them contains any member that contains both PF and LF features. Again, the surface scope reading obtains.

The Chain Condition II derives the MCR as well as correctly rules in the other representations/derivations that the MCR also rules in. It should be emphasized that the Condition II is subsumed, together with the Chain Condition I, under the idea that PF-LF mismatches should be kept as few as possible. To put it differently, the proposed representational model makes it possible to unify the two Chain Conditions under the same general principle. The unification of the Chain Conditions in turn enables the representational theory to treat upward movement and reconstruction in essentially the same manner. On the other hand, in derivational models, unification of Superiority/Relativized Minimality and the

MCR cannot be attained in any straightforward way. Therefore, we can conclude that the representational theory achieves the symmetric grammar and exceeds derivational theories in explanatory adequacy.[23]

5. Scope Ambiguity in Dative Constructions

The lack of inverse scope in double object constructions provides major evidence for Bruening's (2001) claim that QR obeys Superiority. However, the scope ambiguity in dative constructions like (60) poses a non-trivial problem to it.

(60) John gave some book to every student. (some>every, every>some)

Bruening has left the problem rather open, merely suggesting two possible solutions. In this section, first I will briefly go over his two solutions and point out a problem with both of them. Then, I will show that one of the solutions in fact matches very well with the representational model proposed in the previous section so that I will present an alternative based on that solution. I will also discuss "dative constructions" in Japanese in 5.3, which will be followed by a critical review of Sauerland and Elbourne (2002) and some speculation about a certain parsimony principle of the interface representation.

5.1. Bruening's Solutions

5.1.1. Solution #1: Mutual C-Command Between the Theme DP and the Goal PP

In order to explain away the problem, Bruening (2001: 263-266) tries to establish that dative constructions have a structure in which the theme argument and the goal argument

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[23] We have seen that the Chain Condition I applies to syntactic relations expressing upward movement (i.e., partial mismatch chains) as a representational variant of the Superiority Condition/Relativized Minimality while the Chain Condition II regulates syntactic relations corresponding to reconstruction (i.e., complete mismatch chains) as a representational counterpart of the MCR. It should be noted, however, there is no logical relation between the type of the syntactic relation expressed by a chain and the Chain Condition that regulate it. More concretely, it is conceivable, for example, that the Chain Condition II restrains the chain that expresses an upward movement relation. Head-movement is the case in point under the assumption that heads such as verbs, modals, and tense operators are always interpreted in their base position. Thus, it is predicted that head-movement cannot create a chain across another head. This is exactly what is captured by the head-movement constraint of Travis (1984). The fact that reconstruction and head-movement obeys the same condition supports the view that there is no difference between reconstruction and upward movement.

c-command each other, and therefore Superiority permits either of them to undergo QR first.[24] Thus, structure (60) is able to be mapped into two distinct LF representations.[25]

(61) a. John [$_{VP}$ some book$_i$ [$_{VP}$ to every student$_j$ [$_{VP}$ gave t_i t_j]]] (some>every)
b. John [$_{VP}$ to every student$_j$ [$_{VP}$ some book$_i$ [$_{VP}$ gave t_i t_j]]] (every>some)

Empirical support for this approach comes from the observation that Superiority does not hold between the theme DP and the goal PP in multiple questions.

(62) Bruening (2001: 264)
a. What$_i$ did you send t_i to who
b. ?To who(m) did you send what t_i
c. *Who did you send what to t_i (cf. Who$_i$ did you send the book to t_i)

Since the theme DP and the goal PP c-command each other, either one can undergo Wh-movement, as in (62a-b). But since the theme DP asymmetrically c-commands into the goal PP, Superiority does not allow the prepositional object to undergo Wh-movement, standing the preposition, as shown in (62c).

In an attempt to accommodate the structure in which the theme argument and the goal argument c-command each other, Bruening makes two suggestions. One is that the dative construction has a structure drawn in (63) (adopting the small clause analyses of Stowell (1981) and Kayne (1984)), in which the theme DP is generated in the Specifier of goal PP, and either the DP or the P' can move. The other is that the construction has a ternary-branching structure, as shown in (64).

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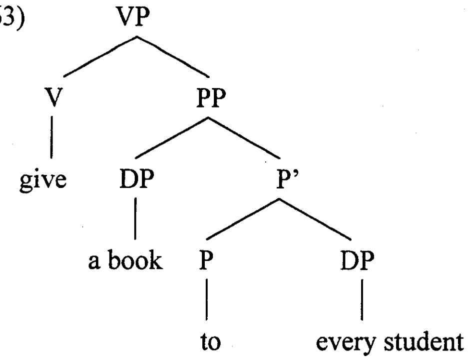
24 Here we need to adjust our informal understanding of Superiority to a little more sophisticated version. So far we have pretended that Superiority mandates that two movement paths cross. From now on, let us take it to mean that if there is more than one element that can potentially move, the highest one moves first, and if further movement is still possible or necessary, the lower one moves next and tucks-in beneath the firstly moved element. See Richards (1997, 2001) for technical details.

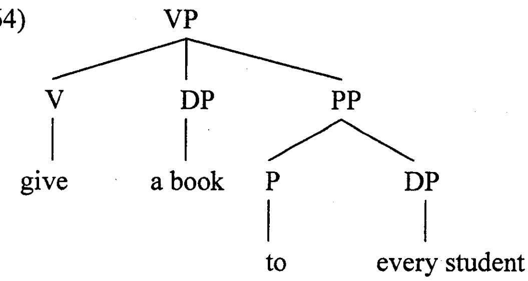
25 It should be in principle possible for the prepositional object alone to undergo QR in the case of surface scope reading. Thus, beside (61a), (60) should have another LF representation (i) for surface scope. Indeed, this LF representation is needed, as we will see below.

(i) John [$_{VP}$ some book$_i$ [$_{VP}$ every student$_j$ [$_{VP}$ gave t_i to t_j]]] (some>every)

(63)



(64)



Of course, before we accept either one of these phrase structures, empirical justification is needed for their anomalous features such as the movability of bar-level projection as regards the former and the validity of a ternary-branching structure involved in the latter.

Even if we accept one of these phrase structures or their equivalents, there is a reason to believe that the proposed solution is not maintainable. First consider (65).

(65) Bruening (2001: 240)

a. Ozzy gave someone everything. (some>every, *every>some)

b. Ozzy gave someone everything that Belinda did. (some>every, *every>some)

Bruening shows that in double object constructions, the second argument can be modified by a relative clause that involves Antecedent-Contained Deletion (ACD), but the attachment of ACD does not change scope possibilities, as shown in (65b). He interprets this fact as an indication that the quantified objects of double-object-taking verbs can undergo QR out of VP in such a way that they obey Superiority. As a result of QR, (65b) will have an LF structure like the one in (66). (Strikeout stands for deletion.)

(66) Ozzy

[$_{VP}$ someone$_i$ [$_{VP}$ [$_{DP}$ everything [$_{CP}$ Op$_y$ [$_{TP}$ Belinda did [$_{VP}$ someone$_x$ [$_{VP}$ ~~give t_x t_y~~]]]]]]$_j$ [$_{VP}$ gave t_i t_j]]]

In (66), the two quantified objects of the matrix verb *gave* are QRed to the VP-adjoined position without changing their hierarchical relation, and within the relative clause, the IO *someone* is QRed and a null operator is moved to Spec-CP from the base position of the DO. Now that the matrix VP and the VP inside the relative clause are rendered semantically identical, the latter can be deleted. The lack of inverse scope in (65b) teaches us that the QR operations that are required to resolve ACD also obeys Superiority.

With this lesson in mind, let us now consider (67).

(67) a. John gave some book to every student. (some>every, every>some)
  b. ?John gave some book to every student to whom Mary did. (every>some)

(67b) shows that a relative clause with ACD can be attached to the goal argument in a dative construction and that the modified goal argument can take wide scope. This is not surprising at all given that dative constructions manifest scope ambiguity between the two objects in the first place. In order to account for this apparent exception to Superiority, Bruening suggests that in dative constructions, the goal PP (or P') can undergo QR first, followed by QR of the theme DP. Thus, in the case of inverse scope, (67b) will have an LF representation like (68).

(68) John $[_{VP}$ $[_{PP}$ to every student $[_{CP}$ to-whom$_y$ $[_{TP}$ Mary did $[_{VP}$ some book$_x$ $[_{VP}$ ~~give t_x t_y~~$]]]]]_j$
$[_{VP}$ some book$_i$ $[_{VP}$ gave t_i $t_j]]]$

In the matrix clause, the modified goal PP and the theme DP are QRed to the VP-adjoined position. Meanwhile, in the relative clause, the theme DP is QRed and the relative operator undergoes A'-movement into Spec-CP together with the preposition. In the resulting representation, the matrix VP and the VP within the relative clause are semantically identical. Hence, deletion is licensed.

Turning now to a crucial prediction, let us consider what will happen if the relative operator does not pied-pipe the preposition in the minimal pair of LF representation (68). In that case the preposition remains within the deletion site, so that the prepositional object, not the whole PP, must undergo QR in the matrix clause in order to create a semantically identical VP. In this situation, it is predicted that only surface scope would be available because Superiority would force the theme DP to undergo QR prior to the prepositional object since the former asymmetrically c-commands the latter. (This is the same logic that explains why the prepositional object cannot undergo Wh-movement across the theme Wh-phrase, as seen in (62c).) However, this prediction is false.

(69) John gave some book to every student (that) Mary did. (every>some)

In (69), the relative operator moves without pied-piping the preposition, but inverse scope is perfectly available.[26] This example needs an LF representation like the one shown in (70), in which the prepositional object has been QRed over the theme argument in violation of Superiority.

(70) John [$_{VP}$ [$_{DP}$ every student [$_{CP}$ Op$_y$ [$_{TP}$ Mary did [$_{VP}$ some book$_x$ [$_{VP}$ ~~give t_x to t_y~~]]]]]$_j$
[$_{VP}$ some book$_i$ [$_{VP}$ gave t_i to t_j]]]

If Superiority forced the PP to move, we would obtain a representation like (71).

(71) John [$_{VP}$ [$_{PP}$ to every student [$_{CP}$ Op$_y$ [$_{TP}$ Mary did [$_{VP}$ some book$_x$ [$_{VP}$ ~~give t_x to t_y~~]]]]]$_j$
[$_{VP}$ some book$_i$ [$_{VP}$ gave t_i t_j]]]

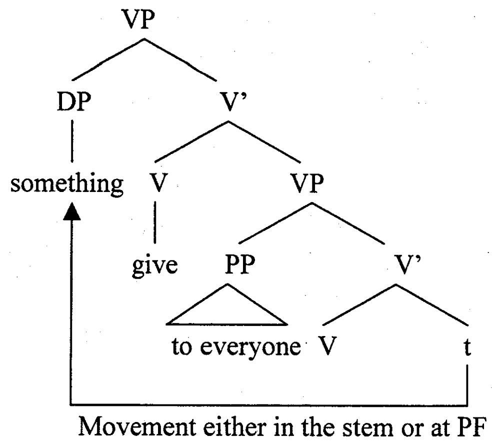
In this representation, however, the ACD cannot be resolved because the matrix VP and the VP inside the relative clause are not semantically identical if the preposition has any meaning at all. Unless it is proved that the preposition *to* is meaningless, the availability of inverse scope in (69) undermines Bruening's first solution considerably.

5.1.2. Solution #2: PF-Movement of the Theme DP

Bruening (2001: 266-67) has suggested another solution to the scope ambiguity puzzle of the dative construction. The solution is the combination of Pesetsky (1995) and Takano's (1998) proposal that dative constructions involve a movement of the theme DP across the goal PP and Sauerland and Elbourne's (2002) idea that some movement can take place at PF. Thus, he gives the VP *give something to everyone* the structure depicted in (72). (The process of verb movement omitted.)

[26] Bruening (2001: 241) also points out a parallel case.
(i) Derrick gave an album she$_i$'d recorded to every guitarist$_i$ Nigel did. (every>a)
This example further confirms the availability of inverse scope by showing that the goal argument can bind a pronoun contained in the relative clause attached to the theme argument. He shows that in double object constructions, this kind of backward binding is impossible.
(ii) *Nigel gave a critic who'd reviewed it$_i$ every record$_i$ Derrick did.

(72)



In this structure, the theme is base generated in the complement position of the lower VP and moves into the Specifier of the higher VP. This movement can take place either at syntax or at PF under the model presented by Sauerland and Elbourne. Their model is otherwise the same as the standard T-model. (They call movement in syntax "stem movement" because it takes place before derivation branches into PF and LF.)

Given these assumptions, the scope ambiguity puzzle is solved in the following way. When the theme undergoes stem movement, it will occupy a position higher than the goal in the input structure to QR. Hence, Superiority dictates that the theme undergo QR first, giving rise to surface scope. On the other hand, when the theme moves in PF, it stays in the complement of the lower VP at the point of derivation when QR applies because PF movement takes place in the PF branch and its effect cannot be detected in the input structure to QR. In this case, Superiority forces the goal to undergo QR first, which results in inverse scope.

Though the second solution works technically, the ingredients of it, Sauerland and Elbourne's proposal, is not without problems. Their model crucially involves movement both in the stem and in the PF branch, and they argue that all movements, stem or PF, obey general constraints on movement such as Superiority and the ban on sideward movement. In order to capture the similarities between the two types of movement, Sauerland and Elbourne (2002: 313) speculate that the general constraints on movement apply to some intermediate representations. Given the architecture of the grammar they defend, the intermediate representation has to be placed in the PF branch in which the result of the stem and PF movement can be inspected.

So far so good.[27] However, the placement of the intermediate representation at the PF branch entails that LF movement does not necessarily obey the same general constraints that

[27] Let me put aside the oddity that may arise from the presence of the same movement operation in two different components. A similar point is noted by Boeckx (2001), who criticizes Sauerland and

hold of the stem and PF movement. This entailment is wrong, however. We know that LF movement such as QR obeys the same minimality condition that applies to multiple overt Wh-movement in Bulgarian. If we attempt to incorporate the commonality between LF movement and the stem/PF movement into their model, we will end up with a model in which the common conditions are stated redundantly in the intermediate representation and in the LF branch. This situation is reminiscent of the difficulties that derivational theories are confronted with when one tries to build the MCR into them. This conceptual problem is serious enough to abandon Sauerland and Elbourne's proposal (see note 13 and section 5.4 for other problems with their approach). Consequently, Bruening's second solution cannot be maintained as it is.

5.2. A Representational Alternative

Now I will present an alternative account of the scope ambiguity in dative constructions in the representational framework developed in section 4. The alternative is based on the gist of Bruening's second solution that the theme DP of the dative construction moves from the base position to its surface position across the goal argument and QR can apply to either position. So I will also adopt (72) for the VP-internal structure of dative constructions, but I will not make use of Sauerland and Elbourne's (2002) PF movement (see note 31). Hence the alternative is free from the conceptual problems that Bruening's solution inherits from their model. Bruening has to rely on PF movement in order to allow for the possibility that QR can apply to the base position of the theme, past its surface position because derivational theories normally force movement to target the highest member of a chain that is visible in syntax. Though this derivational constraint is often assumed implicitly, we can possibly derive it from Superiority provided that it applies chain-internally. Thus, moving at PF is the only way for the theme DP to appear in its surface position without creating a chain in syntax so that QR can apply to its base position. On the other hand, the representational theory permits QR to apply to the base position of the theme DP, past its surface position (to put it in representational terms, a QR-chain can originate from the chain-tail member of the theme DP) because the representational variant of the Superiority Condition, the Chain Condition I, regulates the relation between chains, rather than the relation among chain members. Later, we will see this point in great detail. In what follows, I will start with an interface representation for surface scope, and then turn to one for inverse scope.

Let us first examine an interface representation of example (73) when it yields a surface scope reading.

Elbourne's proposal on the grounds that PF movement, if it ever exists, should be limited to head movement.

(73) John gave something to everyone. (some>every, every>some)

(74) J. [$_{VP}$ something[$_{VP}$ everyone [$_{VP}$ gave something [$_{VP}$ to everyone something]]]

PF:	**PF:**	**PF: /something/**	**PF: /everyone/**	**PF:**
LF: Scope	**LF: Scope**	**LF: vbl**	**LF: vbl**	**LF: vbl**
CH: QR	**CH: QR**	**CH: QR, A**	**CH: QR, A**	**CH: A**

Here I assume that the type of movement the theme DP undergoes is A-movement. In (74), the theme DP *something* is generated in a position lower than the goal PP and undergoes A-movement across it. Then, from the landing site of A-movement, the theme DP is further QRed to the VP-adjoined position, thus creating two instances of mismatch chains, one with an A-movement property and the other with a QR-property.[28] In the meantime, the goal argument *everyone* has formed a partial mismatch chain with a QR property, in which the head member is interpreted as a scope position while the tail member is interpreted as a variable and a pronunciation site.

As regards the two instances of QR-chains, they clearly satisfy the Chain Condition I because neither chain is intervened by any entire chain with a QR-property. On the other hand, there is some worry about the partial mismatch A-chain of *someone* because seemingly there is an intervening A-position occupied by *everyone*, which constitutes a one-membered A-chain.

Two ways to relieve the worry come to mind. One is to say that the type of movement that permutes the goal-theme order is not A-movement, but something else. (In this connection, Takano (1998) claims that it is scrambling.) If so, the partial mismatch chain will have a different movement property than the apparent intervener and thus satisfy the Chain Condition I vacuously. The other way is to say that the intervention does not occur because *everyone* is embedded inside the PP and thus does not c-command the tail member of the

[28] I assume as usual that the theta position of the theme DP is the tail position of the A-chain. This raises a question what semantic import the theme will obtain at the landing site of A-movement. Since it is not a clause-denoting node (unless the subject is base generated in a position lower than the surface position of the theme DP), A-movement cannot create a predicate of type <e,t> with which the A-moved theme is semantically composed. This means that dative constructions are uninterpretable, contrary to fact. Thus, in order to ensure interpretability, we need to assume that the theme DP undergoes further movement to a clause-denoting node. In the present case, because the theme DP is a quantifer, it can undergo QR to the VP-adjoined position, leaving a variable of type e at the head-member of the A-chain, which makes the structure interpretable. Remember the caution mentioned note 1. The interface representation in (74) involves an invisible intermediate operator beneath the head member of the A-chain that binds the variable in the chain-tail position. Another way to interpret dative constructions is to assume that the theme DP undergoes reconstruction. Later we will see that this option is employed in the case of inverse scope (see note 31).

A-chain, hence failing to be an intervener.[29] Indeed, there is a piece of evidence that an A-position inside a PP does not trigger an intervention (Relativized Minimality) effect for A-movement that crosses it, at least, in English.[30]

(75) John$_i$ seems to Mary [t$_i$ to be intelligent]

One way or another, we can rule in the interface representation in (74), from which surface scope results.

Let us now consider an interface representation that yields the inverse scope reading for example (73).

(76) J. [$_{VP}$ everyone [$_{VP}$ something [$_{VP}$ gave something [$_{VP}$ to everyone something]]]

	everyone	something	something	everyone	something
	PF:	**PF:**	**PF: /something/**	**PF: /everyone/**	**PF: /something/**
	LF: Scope	**LF: Scope**	**LF:**	**LF: vbl**	**LF: vbl**
	CH: QR	**CH: QR**	**CH: A**	**CH: QR, A**	**CH: A, QR**

One of the most remarkable features of this representation is that the theme DP *something* has formed a complete mismatch A-chain and a partial mismatch QR-chain, with the chain-tail members of both chains originating from the same position. To put it in derivational terms, both A-movement and QR have targeted the base position of the theme DP. This is generally considered impossible under the standard derivational model that has strict order of operations. To derive this constraint, we can give the following reasoning. Suppose Superiority is applicable chain-internally and mandates that movement always target the highest member of a chain. Then, it follows that two movements cannot apply to the same position because Superiority forces the second movement to apply to the position derived by the first

[29] Recall the definition of the predicate "be-intervened-by-an-entire-chain" of the Chain Condition I given in (42). It is defined in such a way that every chain member of an intervener has to c-command the chain-tail member of a partial mismatch chain. But see note 20.

[30] Interestingly, raising and dative constructions have some properties in common. For example, both constructions show a certain connectivity effect and are immune to strong crossover. (The judgment of (ic,d) is my interpretation of Hornstein's comment on these examples.)

(i) a. ??I gave his$_i$ check to every worker$_i$. (Pesetsky (1995: 126))
b. Sue showed each other's friends to John and Mary. (ibid., 222)
c. ??His$_i$ beautiful portrait seems to everybody$_i$ to be on sale. (Hornstein (1998: 119))
d. A beautiful picture of his$_i$ mother seems to everybody$_i$ to be on sale. (ibid.)

(ii) a. Mary introduced John$_i$ to himself$_i$.
b. John$_i$ seems to himself$_i$ to be intelligent.

movement. On the other hand, under the present representational model, where there is no sequential order of operations, and the representational counterpart of Superiority, namely Chain Condition I, applies to relations between chains, rather than chain-internally, two movement relations can perfectly start out from one and the same position.[31]

Another remarkable point is that there are two positions where the theme DP *something* has the PF feature, in the head member of the A-chain and in the tail member of the QR-chain. This means that the theme DP has conflicting instructions for pronunciation. The conflict arises because at the interface, A-chains are interpreted as being assigned a PF-feature on the highest member of the chain while QR-chains are interpreted as being assigned a PF-feature on the lowest member of the chain.[32] In reality, however, the theme DP is pronounced in the head position of the A-chain. Thus, in order to obtain the correct phonological realization, we need the following convention.

(77) Pronunciation Convention

When a single lexical element has formed two (or more) chains and the PF representations of those chains bear a PF feature in different positions, the PF feature borne by the highest chain member is interpreted by the Articulatory-Perceptual Systems, the other PF feature(s) being ignored.

Given this convention, we can make sure that the theme DP is pronounced in the head position of the A-chain, not in the tail position of the QR-chain.

Note that this convention is not so ad hoc as it may first seem. In practice, every theory of chain pronunciation proposed by the researchers named in note 32 needs this kind of

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[31] The theme DP should not get any interpretation in the head position of the A-chain because this position is neither a theta position nor a position where an open predicate of type <e,t> can be created to which the A-moved theme is functionally applied (see note 28). QR from this position is not an option either because QR has applied to its chain-tail member. If QR applied to the theme DP in the head position of the A-chain as well, the structure would be uninterpretable. Furthermore, since the theme DP cannot undergo QR from the surface position in the present case, this position cannot be interpreted as a variable site. (Even if it could, the variable would not be bound by the QRed theme under the standard framework of semantics (cf. Heim and Kratzer (1998)) or violates the Bijection Principle (cf. Koopman and Sportiche (1982)) As a consequence, the theme DP should be interpreted solely in its base position, thus forming a complete mismatch chain. In effect, this means that I also make use of PF movement, of which a complete mismatch chain is a representational counterpart. However, it should be noted that the present alternative does not require PF movement per se, and the necessity of the complete mismatch chain is motivated by independent semantic considerations as given above and therefore has nothing to do with the formation of two chains from a single position. This is why I proclaimed at the outset of this subsection that the representational alternative would not adopt Sauerland and Elbourne's PF movement hypothesis.

[32] The idea that each movement is associated with a specific phonological rule as to which chain member to pronounce has been proposed by Brody (1995), Bobaljik (1995, 2001), Groat and O'Neil (1996) and Pesetsky (1997, 1998, 2000).

convention. Also note that the convention is needed for more run-of-the-mill cases. For instance, take (78).

(78) $[_{CP}$ Which man do $[_{TP}$ you think $[_{CP}$ t_i $[_{TP}$ t_i was arrested t_i by the police yesterday]]]]

In this structure, *which man* has formed an A-chain and an A'-chain, and thus should receive conflicting instructions for pronunciation. At the interface, *which man* is assigned PF features in two different positions, i.e., in the chain-head position of the A-chain (Spec-TP of the embedded clause) and in the chain-head position of the A'-chain (Spec-CP of the matrix clause). The Pronunciation Convention untangles this conflict by choosing the PF feature borne by the higher chain-member, which is the head member of the A'-chain. Consequently, we obtain the correct phonological manifestation for (78).

Retuning to the interface representation in (76), let us check whether all the chains involved there satisfy the Chain Conditions. First of all, it is clear that the two partial mismatch QR-chains formed by the two quantified objects meet the Chain Condition I because neither chain is intervened by any entire chain with a QR-property. What is not so clear is, however, whether or not the complete mismatch A-chain of the theme DP satisfies the Chain Condition II in the presence of the apparent intervener, *everything*, which is the sole member of the A-chain, bearing both LF and PF features. Here too, we can sanction this complete mismatch chain by assuming either that the theme DP has undergone a type of movement other than A-movement or that the intervention is an illusion because *everything*, being embedded inside the PP, does not c-command the tail member of the complete mismatch chain and does not qualify as an intervener, according to the definition of "to-be-intervened-by-a-chain-member" given in (54). Either way, we can rule in the interface representation in (76), which yields inverse scope.[33] Eventually, the scope puzzle of dative constructions is solved.

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[33] It should be noted that when it comes to reconstruction, an analogy with raising constructions turns out less transparent. Boeckx (2001) points out that the raised subject cannot undergo scope reconstruction if the intervening experiencer phrase is a quantifier.

(i) Boeckx (2001: 532)

a. A red car seems to me to be parked at the corner.
(=It seems to me that there is a car at the corner.)

b. A red car seems to every driver to be parked at the corner.
(*It seems to every driver that there is a car at the corner.)

In representational terms, this means that a complete mismatch A-chain of a quantifer can be formed across an A-position inside PP only if that position is occupied by a non-quantifer. In order to account for the restriction on A-movement reconstruction, Boeckx proposes to the effect that reconstruction of a phrase X across Y is impossible if X and Y are of the same class. If this is correct, the complete mismatch chain of the theme DP in (76) cannot be ruled in, irrespective of what movement property it bears. However, it seems premature to accept Boeckx's proposal, especially in light of the counterevidence that in Japanese, a scrambled quantifier can perfectly undergo reconstruction across another quantifer (see (10), (18)). For this reason, I will not take the impossibility of A-movement

This is a representational alternative to Bruening's second solution. The most significant feature of the alternative is that a QR-chain can originate from the base position of the theme DP without resorting to Sauerland and Elbourne's PF movement hypothesis. The obvious advantage of this rework is that it is free from the problems that haunt Sauerland and Elbourne's model on which Bruening's solution crucially depends. This advantage gives us the right to say that the representational alternative deserves to replace Burning's original. Finally, it should be emphasized that since the alternative can be formulated only in the representational model that allows two movement relations to start out from a single position, to the extent it is more successful than other conceivable derivational solutions to the scope ambiguity puzzle of dative constructions, it can be interpreted as substantial evidence in favor of the present representational theory.

5.3. "Dative Constructions" in Japanese

Let us now turn to "dative constructions" in Japanese. By "dative constructions" I mean a variant of double object constructions in which the DO precedes the IO but follows the subject, as shown in (79). To the best of my knowledge, Hoji (1985) is the first who observed that dative constructions exhibit scope ambiguity between the two objects unlike double object constructions as seen in (11a), reproduced below as (80).

(79) *Dative Construction*
John-ga [$_{DO}$ dareka-o] [$_{IO}$ daremo-ni] t_{DO} syookaisita
John-Nom someone-Acc everyone-Acc introduced
(some>every, every>some)
'John introduced someone to everyone.'

(80) *Double Object Construction*
John-ga [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] syookaisita
John-Nom someone-Dat everyone-Acc introduced
(some>every, *every>some)
'John introduced everyone to someone.'

It is widely held that scrambling is responsible for the VP-internal permutation between the two objects (Saito (1985), Tada (1990), Takano (1998), Yatsushiro (2003) among many others). However, it is not entirely clear whether the VP-internal permutation is an instance of the general unbounded scrambling rule that subsumes the IP-adjunction scrambling we have

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reconstruction in (ib) as a fatal problem to the representational alternative. This issue needs further research.

concentrated on. Actually, for the success of the following discussion, we need to assume that the VP-internal permutation and the IP-adjunction scrambling are of a different type of movement. In the next few paragraphs, I will justify this assumption by a reduction to absurdity. That is, if we are given the preface that Japanese scrambling is an unbounded movement rule, and moreover if we assume that the VP-internal permutation is a special case of scrambling, then it follows that VP can always be a landing site of scrambling. Thus, if we can falsify this consequent, we can prove the assumption that the VP-internal permutation is a case of scrambling to be false. This in turn proves that the VP-internal permutation and the IP-adjunction scrambling do not fall together under the same general scrambling rule.

Prima facie evidence that VP-internal permutation is not an instance of scrambling comes from Miyagawa's (1986) observation on restructuring phenomena in Japanese. Though the exact mechanism of restructuring is far from being clear, it suffices for the present purpose to understand it to be a process by which two sequential verbs that are projecting their own VP are collapsed into one verb, and the VP boundary disappears accordingly. This is visualized in (81).

(81) [$_{VP1}$ ...XP... [$_{VP2}$ ...YP...V$_2$] V$_1$] → [$_{VP1}$ ...XP ...YP...**V$_2$-V$_1$**]

We will see that the linear order between an element inside VP1 and one inside VP2 (e.g., XP and YP) can be permuted only when restructuring has taken place.

With this in mind, let us consider (82).

(82) a. John-ga [$_{VP1}$ zitensya-de Kanda-ni [$_{VP2}$ [$_{Obj}$ sono hon-o] kai-ni] itta]
John-Nom bicycle-by Kanda-to that book-Acc buy-to went
'John went to Kanda to buy that book.'

b. John-ga [$_{VP1}$ zitensya-de Kanda-ni [$_{Obj}$ sono hon-o] **kai-ni-itta**]
John-Nom bicycle-by Kanda-to that book-Acc buy-to went

c. John-ga [$_{VP1}$ zitensya-de [$_{Obj}$ sono hon-o] Kanda-ni t_{Obj} **kai-ni-itta**]
John-Nom bicycle-by that book-Acc Kanda-to buy-to went

d. John-ga [$_{VP1}$ [$_{Obj}$ sono hon-o] zitensya-de Kanda-ni t_{Obj} **kai-ni-itta**]
John-Nom that book-Acc bicycle-by Kanda-to buy-to went

In Japanese, verbs such as *ik* "go" and *kur* "come" are typical verbs that trigger a restructuring. Example (82a), which contains the past form of *ik* "go" as the head of VP1, represents a structure where restructuring has not taken place yet. When restructuring occurs, the infinitival head of the VP2, *kai-ni* "buy-to," is fused with the restructuring verb so that the VP boundary disappears syntactically, as shown in (82b). Once restructuring has taken place, *sono hon-o* "book-Acc," which is originally the internal argument of VP2, can show up anywhere within the VP1, as shown in (82c,d). However, if restructuring is blocked, the VP-internal permutation is rendered impossible. Examine (83).

(83) a. John-ga [$_{VP1}$ zitensya-de [$_{VP2}$ [$_{Obj}$ sono hon-o] kai-ni] Kanda-ni itta]
John-Nom bicycle-by that book-Acc buy-to Kanda-to went
'John went to Kanda to buy that book.'
b. *John-ga [$_{VP1}$ [$_{Obj}$ sono hon-o] zitensya-de [$_{VP2}$ t_{Obj} kai-ni] Kanda-ni itta]]
John-Nom that book-Acc bicycle-by buy-to Kanda-to went
c. ?[$_{Obj}$ sono hon-o] John-ga [$_{VP1}$ zitensya-de [$_{VP2}$ t_{Obj} kai-ni] Kanda-ni itta]
that book-Acc John-Nom bicycle-by buy-to Kanda-to went

According to Miyagawa (1986), restructuring requires adjacency between a restructuring verb and an infinitival head. Thus, in (83a), restructuring is blocked because the adjacency between the restructuring verb and the infinitival head is disrupted by the intervening element *Kanda-ni* 'Kanda-to.' In this case, it is impossible to permute the linear order between the elements inside the two VPs, as in (83b), even though it is possible to scramble the object inside VP2 to the leftmost position of the structure, as in (83c).

Given the unboundedness of scrambling as it is demonstrated by the grammaticality of (83c), the ungrammaticality of (83b) leads us to conclude that scrambling cannot target the edge of VP; otherwise, (83b) would be grammatical, contrary to fact. Once it is proved that scrambling cannot target the edge of VP, it automatically follows that the VP-internal permutation observed in (82c,d) cannot be an instance of the general unbounded scrambling rule. Therefore, we should distinguish between the VP-internal permutation and scrambling and characterize the former as a strictly local movement rule whose domain of application is limited to the smallest VP. I will assume that the same local movement is charge of the alternation from double object constructions to their dative counterparts. For the lack of a common name, I will call the VP-internal permutation "switching" (SWT) for ease of reference.[34]

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[34] Saito (1985) and Sakai (1994) also point out that long-distance scrambling to the edge of VP (the position lower than a subject but higher than a dative/oblique argument) degrades the acceptability of a sentence more radically than long-distance scrambling to the left periphery of the structure. Compare the (b) examples with the (c) ones in the following two triplets of data.
(i) Saito (1985: 267)
a. John-ga minna-ni [$_{CP}$ Mary-ga [$_{Obj}$ sono hon-o] motteiru to] itta
John-Nom all-Dat Mary-Nom that book-Acc have Comp said
'John told everyone that Mary has that book.'
b. ??John-ga [$_{Obj}$ sono hon-o] minna-ni [$_{CP}$ Mary-ga t_{Obj} motteiru to] itta
John-Nom that book-Acc all-Dat Mary-Nom have Comp said
c. [$_{Obj}$ sono hon-o] John-ga minna-ni [$_{CP}$ Mary-ga t_{Obj} motteiru to] itta
that book-Acc John-Nom all-Dat Mary-Nom have Comp said

Returning now dative constructions, let us consider how the scope ambiguity of example (79) is accounted for in the present representational framework. (84) is an interface representation for surface scope, in which the DO is interpreted in the switched position, thus forming a partial mismatch chain, and (85) is an interface representation for inverse scope, where the DO gets interpretation solely in the base position, hence making up a complete mismatch chain.

(84) *Surface Scope*

John-Nom [$_{DO}$ someone-Acc] [$_{IO}$ everyone-Dat] [$_{DO}$ someone-Acc] introduced

PF: /dareka-o/	**PF: /daremo-ni/**	**PF:**
LF: QP	**LF: QP**	**LF: vbl**
CH: SWT	**CH: A**	**CH: SWT, A**

(85) *Inverse Scope*

John-Nom [$_{DO}$ someone-Acc] [$_{IO}$ everyone-Dat] [$_{DO}$ someone-Acc] introduced

PF: /dareka-o/	**PF: /daremo-ni/**	**PF:**
LF:	**LF: QP**	**LF: QP**
CH: SWT	**CH: A**	**CH: SWT, A**

In both representations, the Chain Conditions are satisfied vacuously because the intervening IO does not have a SWT-property in common with the chain formed by the DO.

Cases of switching do not pose any particular difficulty to the present theory. However, things get a little more complicated when we scrutinize structures in which both DO and IO are scrambled to the left of subject in this order, as shown in (86).

(86) [$_{DO}$ dareka-o] [$_{IO}$ daremo-ni] John-ga (t_{DO}) t_{IO} t_{DO} syookaisita
someone-Acc everyone-Acc John-Nom introduced
(some>every, every>some)
'(Lit.) Someone, to everyone, John introduced.'

(ii) Sakai (1994: 295)

a. Masao-ga Kumiko-ni [$_{CP}$ Takashi-ga [$_{PP}$ Boston-e] itta to] itta
Masao-Nom Kumiko-Dat Takashi-Nom Boston-to went Comp said
'Masao told Kumiko that Takashi went to Boston.'

b. ?* Masao-ga [$_{PP}$ Boston-e] Kumiko-ni [$_{CP}$ Takashi-ga t_{PP} itta to] itta
Masao-Nom Boston-to Kumiko-Dat Takashi-Nom went Comp said

c. [$_{PP}$ Boston-e] Masao-ga Kumiko-ni [$_{CP}$ Takashi-ga t_{PP} itta to] itta
Boston-to Masao-Nom Kumiko-Dat Takashi-Nom went Comp said

This example still exhibits scope ambiguity and thus makes a contrast with a structure in which the two objects are scrambled in such a way that they maintain the pre-movement hierarchical relation and linear order, as shown in (87), which is a recycle of (11c).

(87) [$_{IO}$ dareka-ni] [$_{DO}$ daremo-o] John-ga t_{IO} t_{DO} syookaisita
someone-Dat everyone-Acc John-Nom introduced
(some>every, *every>some)
'(Lit.) To someone, everyone, John introduced.'

At this point, two questions arise. What interface representation yields the wide scope reading for universal in (86)? Does the intermediate copy (trace) of the DO, which is parenthesized in (86), show up in the interface representation, and if so, when? In other words, under what circumstances does the DO have to be switched before it undergoes scrambling?

Let me begin with the second question. The DO has to undergo switching (i.e., create the intermediate copy) whenever it forms a partial mismatch SCR-chain and the IO forms a SCR-chain, partial mismatch or complete mismatch, because otherwise the entire SCR-chain of the IO will always intervene the partial mismatch SCR-chain of the DO. Assuming that the IO has formed a partial mismatch chain, let us compare the two interface representations drawn in (88) and (89), where the former does not contain the intermediate copy of the DO, while the latter does. (In these representations, case particles are omitted from the PF feature slot for a space reason.)

(88) *No Reconstruction, No Intermediate Copy*

*[$_{DO}$ someone] [$_{IO}$ everyone] John [$_{IO}$ everyone] [$_{DO}$ someone] introduced

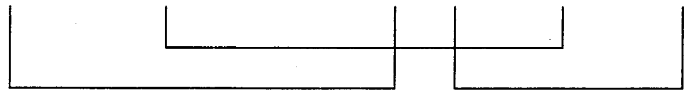
PF: /dareka/	**PF: /daremo/**	**PF:**	**PF:**
LF:	**LF: QP**	**LF: vbl**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

The interface representation in (88) clearly violates the Chain Condition I because the partial mismatch SCR-chain formed by the DO is intervened by the entire chain of the IO that also carries a SCR-property. (Note that the violation occurs when the IO has made up a complete mismatch chain too.)

(89) *No Reconstruction, Intermediate Copy Present*

[$_{DO}$ someone] [$_{IO}$ everyone] John [$_{DO}$ someone] [$_{IO}$ everyone][$_{DO}$ someone] introduced

PF: /dareka/	**PF: /daremo/**	**PF: /dareka/**	**PF:**	**PF:**
LF: QP	**LF: QP**	**LF: vbl**	**LF: vbl**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, SWT**	**CH: SCR, A**	**SWT, A**



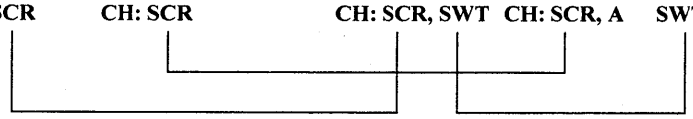
On the other hand, in interface representation (89), the DO has formed a partial mismatch SWT-chain and a partial mismatch SCR-chain. Since neither chain is intervened by any entire chain, the Chain Condition I is satisfied trivially. Note that since the DO receives conflicting instructions for pronunciation from the two chains (both the SWT-chain and the SCR-chain are interpreted as being assigned a PF feature to their chain-head member), the Pronunciation Convention in (77) comes in here as well; as a result, the DO correctly gets phonological realization in the chain-head position of the SCR-chain. As for scope interpretation, since the chain-head member of the DO is interpreted as a generalized quantifier and c-commands the (scope) interpretation site of the IO, surface scope obtains via a general procedure of semantic calculation.[35]

Now recall that the inner scrambled phrase can undergo reconstruction in multiple-scrambled structure of the dative construction, as seen in (15d), where the IO containing a bound pronoun is reconstructed beneath the subject whereas the DO takes wide scope over the subject. The relevant interface representation obtains by tampering with (89) in such a way that the IO is reconstructed to its base position (i.e., forms a complete mismatch SCR-chain), as shown in (90).

(90) *IO Reconstructed, Intermediate Copy Present*

[$_{DO}$ someone] [$_{IO}$ everyone] John [$_{DO}$ someone] [$_{IO}$ everyone][$_{DO}$ someone] introduced

PF: /dareka/	**PF: /daremo/**	**PF: /dareka/**	**PF:**	**PF:**
LF: QP	**LF:**	**LF: vbl**	**LF: QP**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, SWT**	**CH: SCR, A**	**SWT, A**



[35] Representation (89) involves that invisible operator beneath the variable in the intermediate copy which binds the variable in the base position of the DO. See note 1 for semantics of intermediate traces/copies and the present convention on (syntactic) representations.

In this representation, the Chain Condition II will be violated because the complete mismatch chain of the IO ends up with being intervened by the chain-tail member of the SCR-chain of the DO, which contains both PF and LF features and bears a SCR-property. Thus, in order to rule in the relevant reading in (15d), we need to fix the system somehow. Two possibilities spring to my mind. First, we could say that the feature structure of each chain member is finer grained, and the Chain Condition II is sensitive to the exact association between PF/LF features and a movement property. More specifically, in (90), since the PF feature carried by the intermediate copy of the DO is associated with the switching property, rather than the scrambling property (in other words, the PF feature shows up in the intermediate copy because this position is the head member of the SWT-chain, not because it is the tail member of the SCR-chain), the PF feature does not enter into the evaluation of the intervention with the complete mismatch SCR-chain of the IO. Alternatively, it is possible to say the movement property of a chain is borne and determined solely by its head-member, hence the tail-member never counts as an intervener. In the case at hand, since the intermediate copy of the DO, which is the head member of the SWT-chain as well as the tail member of the SCR-chain, bears only a SWT-property and thus does not intervene the complete mismatch SCR-chain of the IO. As far as I can see, either auxiliary hypothesis does not destroy the system developed so far, and both are compatible with the present attempt to regulate possible PF-LF pairings by imposing restrictions on chains.

Let us now tackle the second question. Inverse scope is produced by an interface representation in which the (scope) interpretation site of the IO c-commands that of the DO, but on the surface level of representation, the highest chain member of the DO c-commands that of the IO. Hence, in order for inverse scope to arise, the DO has to undergo reconstruction. However, as we saw in section 2, an outer scrambled phrase is prohibited from reconstructing across an inner scrambled phrase by virtue of the MCR, which we have translated into a representational constraint on complete mismatch chains, the Chain Condition II.[36] Thus, the present theory predicts that inverse scope is obtainable only if both DO and IO are reconstructed (i.e., constitute a complete mismatch chain). There are two conceivable interface representations, depending on whether the intermediate copy shows up or not. First consider (91).

[36] See example (16c), which shows that the outer scrambled phrase (DO) can be reconstructed only when the inner one (IO) is also reconstructed.

(91) *DO and IO Reconstructed, No Intermediate Copy*

*[$_{DO}$ someone] [$_{IO}$ everyone] John [$_{IO}$ everyone] [$_{DO}$ someone] introduced

PF: /dareka-o/	**PF: /daremo-ni/**	**PF:**	**PF:**
LF:	**LF:**	**LF: QP**	**LF: QP**
CH: SCR	**CH: SCR**	**CH: SCR, A**	**CH: SCR, A**

In this interface representation, both the IO and DO have formed a complete mismatch chain with a SCR-property, and neither chain is intervened by any chain-member that bears both PF and LF features. Thus, The Chain Condition II is satisfied vacuously. However, witness that the complete mismatch chain of the DO is intervened by the entire chain of the IO. Though I have thus far argued that the complete mismatch chain obeys only the Chain Condition II, it is rather natural that the complete mismatch chain is amenable to the Chain Condition I as well because complete mismatch chains are cases of more radical PF-LF mismatches than partial mismatch chains in an obvious sense. Accordingly, the Chain Condition I, which was originally meant to regulate the distribution of partial mismatch chains, should be generalized so as apply to all chains, as stated in (92).

(92) Generalized Chain Condition:

At the interface representation, no chain X may be intervened by an entire chain Y that bears the same movement (chain) property as X.

The Generalized Chain Condition rules out the interface representation in (91) as the complete mismatch chain of the DO is intervened by the entire chain of the IO. In order to satisfy (92), we need to posit the interface representation in (93).

(93) *DO and IO Reconstructed, Intermediate Copy Present*

[$_{DO}$ someone] [$_{IO}$ everyone] John [$_{DO}$ someone] [$_{IO}$ everyone][$_{DO}$ someone] introduced

PF: /dareka/	**PF: /daremo/**	**PF: /dareka/**	**PF:**	**PF:**
LF:	**LF:**	**LF:**	**LF: QP**	**LF: QP**
CH: SCR	**CH: SCR**	**CH: SCR, SWT**	**CH: SCR, A**	**SWT, A**

In this representation, the DO has formed complete mismatch SCR-chain and SWT-chain while the IO has constituted a complete mismatch SCR-chain. Since there is no chain-member that bears both PF and LF features, the Chain Condition II is satisfied vacuously. Furthermore, the Generalized Chain Condition is also met because this representation does not involve any chain that is intervened by an entire chain. Since the sole interpretation site of the IO c-commands that of the DO, (93) gives rise to inverse scope reading.[37]

We have seen that multiple-scrambled dative structures such as (86) involve the intermediate trace any time. The acute reader may be wondering whether or not the introduction of the intermediate copy would wrongly produce the inverse scope reading for example (87), where both IO and DO are scrambled without altering their surface order. I will show that it will not. Consider (94).

(94) *IO and DO Reconstructed, Intermediate Copy Present*

*[$_{IO}$ someone]	[$_{DO}$ everyone]	John [$_{DO}$ someone]	[$_{IO}$ everyone]	[$_{DO}$ someone] introduced
PF: /dareka/	**PF: /daremo/**	**PF: /dareka/**	**PF:**	**PF:**
LF:	**LF:**	**LF: QP**	**LF: QP**	**LF: vbl**
CH: SCR	**CH: SCR**	**CH: SCR, SWT**	**CH: SCR, A**	**SWT, A**

In this interface representation, the DO has formed a complete mismatch SCR-chain and a partial mismatch SWT-chain, and the IO a complete mismatch SCR-chain. Since the (scope) interpretation site of the DO c-commands the sole interpretation site of the IO, this representation, if well-formed, would yield the missing inverse scope reading. However, the representation cannot be ruled in because the complete mismatch SCR-chain of the IO is intervened by the entire SCR-chain of the DO, in violation of the Generalized Chain Condition. Thus, the unavailability of inverse scope in (87) is correctly elucidated.

5.4. Sauerland and Elbourne's Analysis

Now that we have seen how the proposed theory accounts for the scope facts about multiple-scrambled structures of ditransitive and dative constructions in Japanese, it is worthwhile to inspect the rival analysis proposed by Sauerland and Elbourne (2002), putting aside the conceptual problems with their model pointed out in 5.1.2. The gist of their proposal is three-fold, as summarized in (95-97).

[37] In (93), the SCR-chain of the DO does not bear any LF feature with it, but this does not raise any problem to the present system because nothing said so far requires that chains carry both PF and LF features on some chain member. Complete mismatch chains are defined as the chain in which no single member carries both PF and LF features, not the one in which PF feature and LF feature are borne by different chain members. In fact, the existence of expletives in human language reveals that chains do not have to contain both PF and LF features.

(95) PF-movement does not feed semantics whereas stem movement always does.
(96) PF-movement always follows stem-movement. (T-model architecture)
(97) Both PF-movement and stem-movement obey Superiority.

Let us first apply their proposal to the multiple-scrambled structure of double object constructions such as (87). By virtue of (95), inverse scope would obtain only if the IO underwent PF-movement and the DO stem-movement, as illustrated in (98).

|--------stem-movement------|
(98) *[$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom t_{IO} t_{DO} introduced
|------------------PF-movement------------------|

However, this derivation is impossible because the derivational order between stem-movement of the DO and PF-movement of the IO conflicts the order of movement dictated by Superiority. To put it more concretely, under the T-model where stem-movement precedes PF-movement, stem-movement of the DO has to take place prior to PF-movement of the IO. On the hand, since the IO c-commands the DO in the pre-movement structure, Superiority forces the IO to move before the DO moves. The derivation in (98) cannot meet the contradictory ordering requirements, hence inverse scope is unavailable.

Turning to multiple-scrambled dative structures, let us see how Sauerland and Elbourne analyze example (86). Since they assume that scrambling obeys Superiority, their analysis needs to appeal to a non-trivial derivation. Assuming that the elements in the specifiers of the same head are equidistant from outside so that Superiority does not hold among them, they claim that example (86) is derived first by scrambling of the two objects into the specifiers of T, as in (99), and then by scrambling of the DO over the IO, as in (100).

(99) [$_{IO}$ someone-Dat] [$_{DO}$ everyone-Acc] John-Nom t_{IO} t_{DO} introduced
(100) [$_{DO}$ everyone-Acc] [$_{IO}$ someone-Dat] t_{DO} John-Nom t_{IO} t_{DO} introduced
|----------Stem/PF-movement----------|

The last step of movement does not violate Superiority because the first two steps have made the two objects equidistant from the ultimate landing site of the DO. Then they contend that if the first two steps of scrambling take place in the stem, the third step can occur either in the stem or at PF, giving rise to scope ambiguity. If it takes place in the stem, surface scope results whereas if it occurs at PF, inverse scope obtains.

Although it may appear that Sauerland and Elbourne can also correctly account for the relevant scope data, there are three problems with their account. First, there is no evidence for the assumption that scrambling to the left of the subject targets specifiers of T. They capitalize on this assumption simply by stipulation. Second, there is no evidence that scrambling obeys Superiority. In this connection, they refer to Sauerland's (1999) explanation of remnant movement, but we saw in Section 3 that his explanation is not only unmotivated but also involves an inconsistency, which is caused by his adoption of equidistance (see note 13.) Third, their recourse to equidistance causes another inconsistency: It deprives them of the ability to prevent the multiple-scrambled double object structure from having inverse scope through the following derivation. Suppose the DO first undergoes stem-movement to a specifier of the head of which the IO is also a specifier, as in (101), and then both IO and DO undergo PF-movement in such a way that the two movement paths are nested, as in (102).

|---------**stem-movement**---------|

(101) (John-Nom) [$_{DO}$ <u>everyone-Acc</u>] [$_{IO}$ someone-Dat] t_{DO} introduced

|-------**PF-movement**------|

(102) [$_{IO}$ <u>someone-Dat</u>] [$_{DO}$ <u>everyone-Acc</u>] John-Nom t_{DO} t_{IO} t_{DO} introduced

|---------------------**PF-movement**------------------|

The last two steps of movement do not violate Superiority because the two objects have become equidistant from outside as a result of the first step, which I have called switching. Given that only stem-movement feeds semantics, this derivation would incorrectly yield inverse scope. In order for Sauerland and Elbourne to rule out this derivation, they will have to stipulate either that the DO cannot undergo switching before it is scrambled or that the landing site of switching is not a specifier of the head that hosts the IO as a specifier. I do not know any evidence to support such stipulations. Unless the stipulations and inconsistencies of their analysis are cleared off, their theory cannot exercise any explanatory forth. In conclusion, the present representational theory, in which all the crucial assumptions for it have been motivated on independent grounds, is much preferable to the rival theory in every conceivable respect.

5.5. Parsimony Principle and Quantifier Lowering

In relation to the discussion on the interface representation in (93), it is hypothesized that chains do not have to carry both PF and LF features (see note 37). Let us now consider whether or not it is required that each chain member (copy) bear either PF or LF feature. To this question, I will give a positive answer. More specifically, I will defend the Parsimony Principle of Interface Representation formulated in (103).

(103) Parsimony Principle of Interface Representations

Every chain member (copy) must bear either PF or LF feature in the interface representation.

The Parsimony Principle can be taken as the ban against creating a chain member that bears only chain property in the interface representation. To put it differently, the interface representation must not contain any entity whose ontology is justified on syntactic grounds alone. Of course, this principle is not novel, and similar ideas have been expressed in different words in different works by Chomsky, for example, a principle of Full Interpretation in Chomsky (1986), an economy of representation in Chomsky (1991), Bare Output Condition in Chomsky (1995) and the legibility condition in Chomsky (2000).

The existence of expletives tells us that chains do not have to contain both PF and LF features. Then, what would show that every chain member has to bear either PF or LF feature?[38] A possible hint stems from reconstruction. We know that a variety of overt movement allow reconstruction, and in fact we have seen that scrambled phrases in Japanese may undergo reconstruction with the proviso that the Chain Conditions are not violated. However, to the best of my knowledge, nobody has ever addressed the question whether covert movement allows reconstruction or not, and if not, why. The Parsimony Principle implies that covert movement never allows reconstruction. Since chains expressing covert movement relations by definition do not bear any PF feature in their chain-head member, the Parsimony Principle mandate that an LF feature be borne by the chain-head member in such cases.

Now remember that in 2.1, we left pending the question whether a QRed phrase can undergo QL or not, for the reason that we cannot either prove or disprove the existence of QL. The Parsimony Principle gives this question a principled answer. A QRed phrase must not be allowed to undergo QL because QL will remove the LF feature from the head member of the QR-chain that by definition does not carry any PF-feature so that it will create a chain member that does not bear either PF or LF feature, in violation of the Parsimony Principle.

Indeed, the Parsimony Principle is called for in accounting for the unavailability of the inverse scope reading for the structure given in (7), repeated in (104).

(104) John wanted to give a linguist every paper Mary wrote. (*every>want>a)

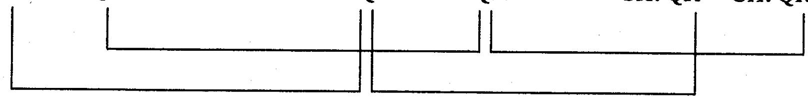
[38] If (103) is correct, then it follows that expletives cannot create a non-trivial chain because none of the members of an expletive chain carries either PF or LF features except the head member. See Bošković (2002b) for evidence of the immovability of expletives. Moreover, it is predicted that there is no such thing as null expletives in human language. These issues require further research.

Without the Parsimony Principle, the missing reading cannot be ruled out. Examine the following interface representation. (Simplified for a space reason.)

(105) John

[$_{VP}$ a ling [$_{VP}$ every paper [$_{VP}$ wanted [$_{VP}$ a ling [$_{VP}$ every paper [$_{VP}$ give a ling every paper]

PF:	**PF**	**PF**	**PF**	**PF:/a ling/**	**PF: /every paper/**
LF:	**LF: Scope**	**LF: Scope**	**LF: vbl**	**LF: vbl**	**LF: vbl**
CH: QR	**CH: QR**	**CH: QR**	**CH: QR**	**CH: QR**	**CH: QR**



(105) is a representational counterpart of the hypothetical derivation postulated for the missing reading, in which both IO and DO are QRed to the higher VP-adjoined position, and then the IO alone undergoes QL (reconstruction) to the lower VP-adjoined position. In representational terms, both IO and DO have formed a three-membered partial mismatch QR-chain. Notice that the Chain Conditions are satisfied in this interface representation. Specifically, the partial mismatch chain of the IO meets the Generalized Chain Condition because it is not intervened by the entire QR-chain of the DO. In section 2, we took the impossibility of reconstructing the IO across the DO as a first piece of evidence for the MCR. However, its representational counterpart, the Chain Condition II, is satisfied vacuously in this representation because the QR-chain of the IO is not a complete mismatch chain. Here is a right place where the Parsimony Principle enters and rules out the representation in question because the head member of the QR-chain formed by the IO does not bear either PF or LF feature. Once the Parsimony Principle is in place within the representational framework, the impossibility of reconstructing a QRed phrase receives a principled answer.

It should be noted that ruling out (105) with recourse to the Parsimony Principle amounts to giving up the first piece of evidence for the MCR, but this does not weakens the proposed representational theory at all because the MCR is not part of the theory, but a generalization partially derived from it. On the contrary, to the extent that the Parsimony Principle can be regarded as a natural consequence of the present interface representation theory, the relative easiness with which to derive the non-existence of QL should be taken as an advantage of it.

6. Conclusion

In the history of generative grammar, many attempts have been made to elucidate minimality conditions on upward movement, and some of these attempts have given birth to the core principles of the theory of grammar in each era, such as the Superiority Condition of Chomsky (1973), Relativized Minimality of Rizzi (1990), the Minimal Link Condition of

Chomsky (1995). In the current Minimalist theory, minimality conditions on upward movement are considered as constraints imposed on the establishment of feature-checking relation and the follow-up movement operation, and such constraints are regarded as incarnations of the general economy condition operative in the faculty of human language. This view was first proposed by Chomsky (1993) and has later been defended and developed by Bošković (1997, 1998), Chomsky (1995, 2000), Kitahara (1997), Richards (1997, 2001) and many others. While the economy-based theory of the minimality condition has considerably deepened our understanding of the nature of human language faculty, it has strengthened the derivational character of the computational system. Computation needs to be derivational; otherwise, the economy-based theory of the minimality condition cannot simply be formalized.

The economy-centered derivational theory implies that upward movement behaves differently from reconstruction with respect to the way it obeys the minimality condition, under the assumption that reconstruction is an operation onto the LF representation that is the output of derivation. However, what we have seen is the opposite: Reconstruction obeys the minimality condition just like upward movement such as Wh-movement, QR, and object shift. This observation suggests that the theory of grammar should be symmetrical in the sense that it deals with upward movement and reconstruction in essentially the same manner. I have shown that the symmetrical grammar does not fit with the derivational theory for reasons of technicality and theoretical elegance. As an alternative to the derivational theory, I have proposed the representational theory that is able to express syntactic relations borne by upward movement and reconstruction in the same fashion, and have demonstrated that it can capture the minimality conditions on upward movement and reconstruction uniformly by means of the Chain Conditions. Importantly, since the Chain Conditions are motivated not by derivational economy, but by an idea that the language faculty attempts to minimize PF-LF mismatches, to the extent that the representational theory is maintainable, it weakens the significance of derivational economy in the theory of grammar. (This does not mean that economy plays no role in the theory of grammar. In fact, the present theory matches economy conditions that play a role in the interface representations, and it is possible to interpret the Chain Conditions as an "interface economy" condition.)

Naturally, many questions remain with the proposed representational theory, but I hope that I have established some solid grounds for representational theories as well as offered some severe questions that derivational theories have to answer.

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