

Wh-Questions in Japanese: Scrambling, Reconstruction, and *Wh*-Movement

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1 Introduction*

In this article, I discuss some important properties of *wh*-questions and *wh*-scrambling in Japanese. The questions I will address are (i) which instances of (*wh*-) scrambling involve reconstruction and (ii) how the undoing effects of scrambling can be derived. First I will discuss the claim that (*wh*-) scrambling is semantically vacuous and is therefore undone at LF (Saito 1989, 1992). Then I consider the data that led Takahashi (1993) to the conclusion that at least some instances of *wh*-scrambling have to be analyzed as instances of "full *wh*-movement" i.e., overt movement of the *wh*-phrase in its scopal position. It will be argued that these examples are not instances of full *wh*-movement in Japanese, but that they also represent semantically vacuous scrambling. Those instances of scrambling that apparently cannot be undone are best explained with recourse to parsing effects. I conclude that *wh*-scrambling in Japanese is always triggered by a ([*-wh*]-) scrambling feature. In addition, long distance scrambling (scrambling out of finite CPs) is analyzed as adjunction movement, whereas short distance scrambling is movement to a specifier position of IP. Turning to the mechanisms of undoing, I will argue that only long distance scrambling is undone. This is shown to follow from Chomsky's (1995) bare phrase structure analysis, according to which multi-segmental categories derived by adjunction movement are not licensed at LF.

The article is organized as follows. In section 2, the *wh*-scrambling phenomenon is described. In section 3, I discuss the reconstruction properties of scrambling. In addition, this section provides some basic assumptions about my analysis of Japanese scrambling in general. In section 4, I turn to the analysis of *wh*-scrambling as an instance of full *wh*-movement in Japanese. Section 5 provides discussion of multiple *wh*-questions in Japanese, and section 6 gives the conclusion.

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2 The Phenomenon of *Wh*-Scrambling

In an analysis which takes scrambling to be a movement-phenomenon, scrambling is traditionally analyzed as Chomsky-adjunction to a maximal projection.¹ This is illustrated by the derivation in (1b)-(1c) from Japanese, where the objects are scrambled to IP:

- (1) a. [IP John-ga Mary-ni hon-o yat-ta].
 John_{nom} Mary_{dat} book_{acc} gave
 'John gave Mary a book.'
- b. [IP *Mary-ni* [IP John-ga *t* hon-o yat-ta]].
 Mary_{dat} John_{nom} book_{acc} gave
- c. [IP *Hon-o*₂ [IP *Mary-ni*₁ [IP John-ga *t*₁ *t*₂ yat-ta]]].
 book_{acc} Mary_{dat} John_{nom} gave

Furthermore, *wh*-phrases in Japanese freely undergo scrambling (2b), (3b) (Saito 1985; 1989, Takahashi 1993 among others).² In (2b) the embedded object has been scrambled from the embedded into the matrix clause. (3b) shows clause-internal (short) *wh*-scrambling to IP.

- (2) a. John-ga [CP Mary-ga nani-o katta ka] sitteiru.
 John_{nom} Mary_{nom} what_{acc} bought Q knows
 'John knows what Mary bought.'
- b. [IP *Nani-o* [IP John-ga [CP Mary-ga *t* katta ka] sitteiru]].
 what_{acc} John_{nom} Mary_{nom} bought Q knows
 'John knows what Mary bought.'
- (3) a. John-ga nani-o katta no?
 J._{nom} what_{acc} bought Q
 'What did John buy?'
- b. *Nani-o* John-ga *t* katta no?
 what_{acc} John_{nom} bought Q

Saito (1989, 1992) has pointed out that (*wh*-) scrambling in Japanese is not "real" A'-movement i.e., it does not establish a semantically significant operator-variable relation. Whereas movement of *wh*-phrases to Spec CP in languages such as English represents operator movement to A'-positions, scrambling under this view is non-operator movement that is

¹ In section 3.4 this will be modified, since I add the option that scrambling may also target a specifier of IP.

² A preliminary remark is in order. By "scrambling" I mean movement to a pre-subject non-Case position. I will not discuss other cases of what is sometimes covered by the notion of "short scrambling" into the post-subject position, since there is independent evidence showing that the latter can often be analyzed as 'object shift' in the sense of overt movement to a Case position.

obligatorily reconstructed at LF. Takahashi (1993), on the other hand, assumes that certain instances of long scrambling count as non-reconstructable *wh*-movement in Japanese. I will argue in this article that Saito's conclusion is correct and that the reconstruction property of scrambling can be derived from Chomsky's (1995, chapter 4) analysis, according to which multi-segmental categories derived by adjunction movement are not licensed at LF.

In the following section, I will briefly outline the main empirical arguments for the assumption that scrambling is semantically vacuous and is undone at LF.

3 Theoretical Background

3.1 Scrambling and Reconstruction

To begin with, Saito (1989) has shown that the *Proper Binding Condition* (PBC) holds in Japanese at LF:

- (4) *Proper Binding Condition* (PBC)
Traces must be bound.

Recall that a *wh*-phrase in Japanese is only licensed if it is c-commanded at LF by a question marker like the element *ka*, as in (5a), in contrast to (5b):

- (5) a. [CP John-ga Mary-ni [CP dare-ga kuru [C ka]] osieta] (koto).
John_{nom} Mary_{dat} who_{nom} come Q told
- b. * [CP John-ga dare-ni [CP Mary-ga kuru [C ka]] osieta] (koto).
John_{nom} who_{dat} Mary_{nom} come Q told

Note that covert LF *wh*-movement of *dare-ni* in (5b) violates the PBC.³

Now consider the examples in (6).

- (6) a. [Masao-ga [CP [IP minna-ga [CP [IP Hanako-ga dono hon-o
M._{nom} all_{nom} H._{nom} which book_{acc}
tosyokan-kara karidasita] to] omotteiru] ka] siritagatteiru] koto.
library-from checked-out C⁰ think Q want-to-know fact
'the fact that Masao wants to know [Q[everyone thinks [that Hanako checked out
which book from the library]]]'

- b.?? [[_{CP} [_{IP} Hanako-ga dono hon-o tosyokan-kara karidasita] to]₁
 H._{nom} which book_{acc} library-from checked-out C⁰
 [Masao-ga [_{CP} [_{IP} minna-ga t₁ omotteiru] ka] siritagatteiru]].
 M._{nom} all_{nom} think Q want-to-know
 'the fact that [that [Hanako checked out which book from the library]]₁, Masao
 wants to know [Q [everyone thinks t₁]]'
- c. [*Nani-o* [_{IP} John-ga [_{CP} Mary-ga t katta ka] sitteiru]].
 what John_{nom} Mary_{nom} bought Q knows
 'John knows what Mary bought.'

Example (6a) is expected to be grammatical because the *wh*-phrase *dono hon-o* is in the c-command domain of the question marker, as in (5a). On the other hand, in (6b), the embedded sentence containing the *wh*-phrase is scrambled out of this domain. Since this sentence is not completely ungrammatical (unlike (5b)), we need to assume that the long scrambled CP is reconstructed at LF. If scrambling can be freely undone at the level of LF, as argued by Saito, at LF, the *wh*-phrase inside the lower copy is c-commanded and therefore licensed by the Q-morpheme *ka*. The situation is similar in example (2b), repeated here for convenience as (6c) where the *wh*-phrase alone is scrambled to the sentence initial position. Given that it is not c-commanded by *ka*, it has to reconstruct. If reconstruction of the *wh*-object left a trace, this example would violate the PBC, as in example (5b). However, given that (6b-c) are not ungrammatical, Saito concludes that reconstruction in (6b-c) does not leave a trace, i.e. that scrambling can be freely undone at LF.

A further argument for the assumption that scrambling is undone at LF is discussed in Bošković and Takahashi (1998). They note that a long scrambled quantifier cannot take scope over a quantified subject in the matrix clause:

- (7) *Daremo-ni* dareka-ga [_{CP} Mary-ga t atta to] omotteiru (koto).
 everyone someone Mary met C⁰ thinks (fact)
 (someone>everyone; *everyone>someone)

The long scrambled quantifier only takes scope over the embedded clause suggesting again that scrambling is obligatorily undone.

However, Takahashi (1993) has argued that long movement of a *wh*-phrase to the initial position of a clause headed by a [+wh] Comp differs from typical cases of long scrambling in that it cannot be undone ("reconstructed"). Hence he analyzes these constructions as *wh*-movement constructions in Japanese. Although Takahashi assumes that the landing-site of the moved *wh*-phrase is Spec CP in these cases, several authors have argued that the moved *wh*-phrase is in fact located in an IP-adjoined position. Before I turn to the data that seem to

³ Under the copy-deletion analysis (see the discussion of (8) below), example (5b) is explained without recourse to LF lowering. This example is ungrammatical since the overt trace/copy of the *wh*-phrase is not c-commanded by *ka* in the overt

suggest that some cases of scrambling cannot be reconstructed in section 4, I discuss two proposals for deriving the undoing effects.

3.2 Deriving the Reconstruction-Property of Scrambling

Given the copy theory of movement as assumed in Chomsky (1995), the mechanism involved in reconstruction consists in a deletion of the head of the chain. For example, in (7), *daremo-ni* in IP-adjoined position, as the relevant part of the derivation in (8a) shows, is deleted, as in (8b):

- (8) a. [_{IP} *Daremo-ni* [_{IP} ... [_{CP} ... *daremo-ni* V to] V]]
 everyone everyone C⁰
 b. [_{IP} ~~*Daremo-ni*~~ [_{IP} ... [_{CP} ... *daremo-ni* V to] V]]

The question arises how the reconstruction property of scrambling can be derived. Saito (1989) has suggested that it follows from the fact that scrambling is semantically vacuous, i.e., that it does not establish a significant operator-variable relation and has therefore to be undone. Another possibility is discussed by Chomsky (1995). Chomsky suggests that adjunction movement is obligatorily reconstructed because the label of an adjunction structure receives no interpretation. In order to see how he derives the fact that scrambling is undone, let us briefly recall his analysis of adjunction structures. Chomsky eliminates X-bar theory in favor of 'Bare Phrase Structure theory'. Phrase structure building in this theory is composed of the two operations 'Merge' and 'Move'. Merge is a binary structure-building operation that applies cyclically building trees from bottom to top. Two *terms* (constituents) are combined, forming a complex term (constituent), which has the properties of its head (Chomsky 1995). The notion 'term' is defined as follows: for any structure K, (i) K is a term of K, and (ii) if L is a term of K, then the members of the members of L are terms of K. In merging two terms α and β , we create a third term $\{K, \{\alpha, \beta\}\}$, where K is the label of the term formed by merging α and β . Hence, $\{K, \{\alpha, \beta\}\}$ consists of three terms according to the definition of a term. For example, the DP [_{DP} *the book*] is a result of merger. It consists of the complex term $\{(D)the, \{(D)the, (N)book\}\}$ which results from merging the terms *the* and *book* where D (*the*) is the (projecting) head of the complex term DP. Chomsky (2000) calls this operation "Set-Merge" since this DP is the set constructed from *the* and *book*.

Phrase-structure building works differently with adjunction. Chomsky (2000) calls this form of Merge "Pair-Merge." If α adjoins to a category K, we create a segment $\langle H(K), H(K) \rangle$ as a position for the adjoined element α . This yields $L = \{\langle H(K), H(K) \rangle, \{\alpha, K\}\}$. The label $\langle H(K), H(K) \rangle$ is not a term (by definition) and receives no interpretation at LF (Chomsky 1995:248, 322f.). Thus, the only possibility is that the adjoined element is deleted, leaving the

term K at LF. This obligatory deletion operation is then taken to account for the reconstruction properties of scrambling. Note that, according to this analysis, instances of scrambling which are not derived by adjunction such as, short scrambling to a Spec IP position for example (see the discussion in section 3.4. below), are not reconstructed at LF. In contrast to the first possibility for deriving reconstruction it is predicted by the latter that only long distance scrambling is reconstructed. In addition, the non-reconstructability of short scrambling follows without stipulations.

In the next sections, we will see that only (*wh*-) scrambling to an adjoined position is subject to reconstruction. This result leads to the conclusion that Chomsky's account of the reconstruction property of scrambling is correct.

3.3 A Constraint on Successive Cyclic Movement

Before I turn to the discussion of the relevant examples, I would like to note that the various (*wh*-) scrambling operations are compatible with the following constraint on movement (see Sabel 1998, 2002b for more discussion).

- (9) *Constraint on Adjunction Movement (CAM)*
Movement may not proceed via intermediate adjunction.

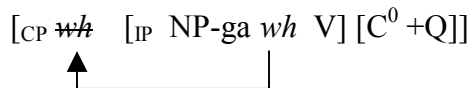
Several authors have argued that intermediate adjunction should be excluded in general (see for example Hoekstra and Bennis 1989, Cinque 1990, Rizzi 1990, Sabel 1996; 2002b, Grewendorf and Sabel 1999, among others). If long scrambling is adjunction, long scrambled *wh*-elements are unable to undergo any further covert movement to Spec CP from the adjoined position. This will be relevant for my analysis of *wh*-scrambling in sections 4 and 5.

In the following, I assume that covert *wh*-movement targets Spec CP in Japanese. As pointed out in Watanabe (1991), Groat and O'Neil (1996), Pesetsky (1998), and Chomsky (2000), among others, there is independent evidence for invisible movement in the overt syntax in Japanese (cf. section 5 for examples and discussion). The idea is that the difference between visible and invisible movement in the overt syntax is traced back to principles that determine pronunciation. Assuming that movement leaves copies of the moved element, 'overt movement', as it is traditionally called, is interpreted as movement which carries the phonological features of the moved element to the head of the movement chain, whereas 'covert movement' leaves the phonological features behind in the position of the foot of the chain. I assume invisible copy *wh*-movement of *wh*-phrases for *wh*-in situ constructions (cf. (3a), repeated here, with the representation (3'a)), and also for *wh*-phrases that are *short* scrambled (3b). I will argue that in (3b) the *wh*-element undergoes two kind of movements: Firstly, (non-reconstructable) scrambling that is triggered by a scrambling feature [Σ], see

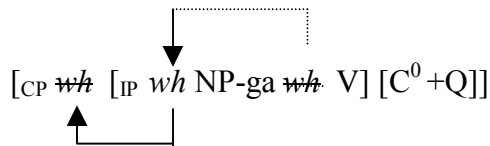
section 3.4 below, and secondly, covert *wh*-movement that is triggered by the presence of a [+*wh*]-feature in C^0 , as shown in (3'b).

- (3) a. John-ga nani-o katta no?
 J_{nom} what_{acc} bought Q
 (What did John buy)
- b. Nani-o John-ga t katta no?
 what_{acc} John_{nom} bought Q

(3')a. *Covert wh-movement to Spec CP (wh-in situ)*



b. *Short wh-scrambling followed by covert wh-movement to Spec CP*



Given the constraint in (9), the second movement step in (3'b) is only possible if the *wh*-phrase is located in a non-adjoined position. I propose an appropriate analysis in sections 3.4 and 4.

3.4 The Typology of Scrambling Positions

Before I turn to the analysis of *wh*-scrambling, I will briefly repeat some basic assumptions concerning my general analysis of scrambling in Japanese. I assume that the clause structure may contain multiple Γ^0 -specifiers in a scrambling language such as Japanese (10a), but not in a scrambling language such as German (10b), where the corresponding feature-checker can check only once (see Chomsky 1995:286 for discussion). Adopting the relational definition of levels of projections (Chomsky 1995, among others), I assume that a specifier is a sister of a category with the features [-maximal, -minimal] (X'), whereas XP-adjunction creates a sister of a category with the features [+maximal, -minimal] (XP). (Adjunction movement in the case of head-movement creates a sister of a category with the features [-maximal, +minimal] (X^0).)

- (10) a. [_{IP} DP_{acc} [_{Γ} DP_{nom} [_{Γ} [_{vP} . . . t . . .]]]] (Japanese)
 b. [_{IP} DP_{acc} [_{IP} DP_{nom} [_{Γ} [_{vP} . . . t . . .]]]] (German)

Furthermore, I assume that different structural positions such as adjunction and specifier positions correlate with different intrinsic properties. For example, adjunction movement as an

instance of scrambling targets a position with A'-properties, i.e. is a type of A'-movement, whereas scrambling to a specifier targets a position with A-properties, i.e. this type of scrambling is of the A-movement type.⁴ If this is correct, then the scrambled DP in (10a) is located in a Spec₂ position, which is an L-related position with A-properties (see Ura 1994 for a similar proposal). On the other hand, the scrambled DP in German (10b) is located in an adjoined position with A'-properties.⁵

This analysis provides an account for the differences found with respect to scrambling in the two languages. For example, short scrambling has A-properties in Japanese (11) but A'-properties in German (12), i.e. only in Japanese can a scrambled DP act as an A-binder for an anaphor (Saito 1992:74f):

- (11) ? [_{IP} *Karera-o*_i [_{I'} [*otogai-no*_i *sensei*]-ga [*t* *hihansita*]]] (koto).
 they_{acc} each other_{gen} teacher_{nom} criticized fact
 (Them_i, each other_i's teachers criticized)

- (12) * dass [_{IP} *den Studenten*_i [_{IP} [*die Lehrer von sich*_i *zweifellos*
 that the student_{acc} the teachers of himself_{nom} undoubtedly
 t in guter Erinnerung behalten haben]]
 in good memory kept have

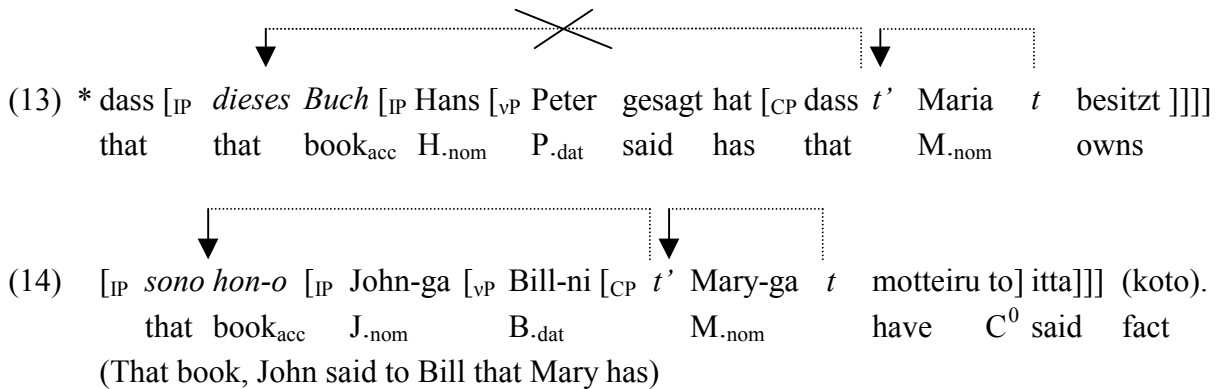
This difference can be explained if it is assumed that in (11) the scrambled element is located in Spec IP, i.e., an A- or L-related position, whereas the scrambled DP in (12) is in a IP-

⁴ In the following discussion, I will use the traditional expressions "A-position" and "A'-position" as descriptive terms on the one hand and the notion of "L-related," "non-L-related" or "broadly L-related" positions on the other hand interchangeably. Following Mahajan (1990:10f.) and Chomsky (1995:64, 86, 196) among others, I take positions as L-related if they are in a local relation (Spec or complement) to a head that bears a matching lexical feature (L-feature; Case, ϕ , θ). Since L-features are associated with lexical categories and the functional element I⁰ and v⁰, L-related positions include Spec and complement positions of lexical categories as well as of I⁰ and v⁰. By movement to L-related positions I mean movement to *narrowly* L-related positions, i.e. non-adjoined positions. Adjoined positions are "broadly L-related" and (along with Spec CP) do not count as L-related. Recall that Chomsky (1995: 196) substitutes the notion of "narrowly L-related position" for "A-position" and the notion of "non L-related" and "broadly L-related (adjoined) position" for the notion of an "A'-position." In the following I will maintain the traditional notions of A-/A'-movement, A-/A'-binding and A-/A'-position in the following sense: A-movement is understood as movement to an L-related position and A-binding as binding from an L-related position. Accordingly, by A'-movement I mean movement to a broadly L-related (adjoined) or non-L-related position and by A'-binding I mean binding from a broadly L-related or non-L-related position.

⁵ There has been some debate on whether a structural difference between specifier and adjunction positions exists, or whether all sisters to the projections of a head-complement structure have to be analyzed as specifiers (see Fukui 1986, Kuroda 1992, Kayne 1994, Ura 1994, Fukui and Saito 1998, Grohmann 2000, among others). In contrast to the analysis that I present here, it might be possible to analyze all types of XP-movement as movements to a specifier position and interpret the different properties of these movements instead in terms of different agreement or feature checking relations with the (attracting) head. This analysis, however, leaves head movement as the only existing (exceptional) type of adjunction movement (except the latter is analyzed as XP-movement, which, however, raises new problems; see for example Toyoshima 1997) and more importantly, offers no natural account for the reconstruction asymmetries found in connection with short and long scrambling, see the discussion in section 4.3. In the following, I therefore follow the traditional assumption that movement may target either a specifier or an adjoined position.

adjoined (broadly-L-related) position, which only has A'-properties (see Grewendorf and Sabel 1999 for extensive discussion of the A-/A'-properties of scrambling).⁶

Furthermore, given the CAM (9), elements in German may not be long scrambled because a scrambled element that is moved to an adjunction site inside the embedded clause may not move further (13). On the other hand, scrambling in Japanese may proceed in a successive-cyclic manner via embedded Spec IP positions. Hence, long distance scrambling is possible in Japanese (14):⁷



I assume that scrambling is triggered by the need to check a scrambling feature [Σ] (see also Collins 1995, Miyagawa 1997, Grewendorf and Sabel 1999, Chomsky 2000) and that this feature may be associated with Infl and v heads. For example, the scrambling feature in (10a-b)

⁶ It must be mentioned that with respect to short scrambling and scrambling from infinitives in Japanese, data such as (i) are often used as justification for the view that short scrambling (and scrambling from infinitives) can also be A'-movement in Japanese (see Mahajan 1990, Saito 1992; Saito 1994b, among others).

- (i) a. [IP *otagai-o* [karera_i-ga [VP *t* hihansita]]] (koto).
 each other_{acc} they_{nom} criticized fact
 (They criticized each other)
 b. John-ga [VP *otagai-o* [karera_i-ni [PRO *t* hihansuru yooni]]] itta (koto).
 J._{nom} each other_{acc} they_{dat} criticize to said fact
 (John told them to criticize each other)

Given the assumption that the Binding Theory applies at LF, reconstruction (an A'-property) seems to be necessary in order to license anaphoric binding in (i). In order to explain such binding data, I assume that Principle A can be fulfilled at any stage of the derivation. A technical implementation of this idea would assume that anaphors and reciprocal expressions fulfill Principle A of the Binding Theory when they are [+ ψ]-marked, whereby [+ ψ]-marking may apply at any step of the derivation, i. e. as soon as the anaphor is bound in the relevant domain. [+ ψ]-marking has to be present at the LF-interface in order for the anaphor to be licensed (iib) (cf. Belletti and Rizzi 1988, Lebeaux 1991, Sabel 1996; chapter 7; 2002b).

- (ii) a. An anaphor X is [+ ψ]-marked if it fulfills Principle A of the Binding Theory (under a certain indexing I) at one step of the derivation.
 b. LF-Filter: *Anaphor[- ψ]

(ii) accounts for the well-formedness of (ia-b) without referring to the question of whether or not the anaphor (or the element that contains the anaphor) has undergone A- or A'-movement. To sum up, the binding data in (i) do not provide evidence for the question of whether or not scrambling is A- or A'-movement. In addition, these examples are compatible with my view that scrambling is A'-movement in German, whereas only long scrambling out of finite clauses counts as A'-movement in Japanese.

⁷ This analysis implies that scrambling out of finite clauses in Japanese can only cross one clause boundary. The fact that scrambling across two (or more) CP nodes should not be possible is a consequence of the ban on successive cyclic adjunction (9). On the other hand, examples of "super-scrambling", where a scrambled element crosses two CP nodes, seem to be attested in Japanese (Takahashi 1993:665, Sakai 1994:308). However, these constructions act differently from scrambling across one CP node in that they exhibit the properties of left-dislocation structures (Shigeru Miyagawa, p.c.). This idea receives support from the observation that scrambling of *wh*-phrases (which cannot be left-dislocated) across two clause boundaries is impossible (Nishigauchi 1990: 8).

is realized on Infl (and on the scrambled DP). Applying the idea of feature-driven movement to long scrambling in (13) and (14), let us assume that assignment of the scrambling feature to I^0 implies assignment of a scrambling feature to each intermediate I^0 . Consequently, in sentences such as (13) or (14) displaying long scrambling out of a finite clause to IP, the scrambling feature is located in both matrix I^0 and embedded I^0 , and the scrambled element has to check both scrambling features. Given Chomsky's (1995, chapter 3) definition of 'Checking domain' the scrambling feature may be checked via adjunction to IP in German (10b, 13) or via substitution into Spec₂ of IP in Japanese (10a, 14). Recall that according to Chomsky (1995, chapter 3), an element β is in the checking domain of a head α if (i) it is in a Spec-head relation with α , or (ii) it is in a position adjoined to the head α , or (iii) it is adjoined to the maximal projection of α , or (iv) it is adjoined to the Spec of α . Returning to (13)-(14), the scrambled element has to check both $[\Sigma]$ -features in these examples. Now, given my assumption that successive-adjunction is generally impossible, elements in German may not be long scrambled because a scrambled element that is moved to an adjunction site inside the embedded clause like IP in (13) may not move further into the matrix clause. On the other hand, scrambling in Japanese may proceed in a successive-cyclic manner via the embedded Spec-(IP) position as in (14), i.e. not via XP-adjunction. Hence we derive the different locality constraints in (13)-(14) and the different A-/A'-properties in (11)-(12) that hold for scrambling in German and Japanese from the assumption that Infl in these languages licenses different types of phrase structure.

Note that Spec IP-positions are L-related, hence only L-related elements may use Spec IP as intermediate landing-sites. This accounts for the fact that adjuncts may not be long scrambled in Japanese in contrast to arguments (Saito 1985, Nemoto 1993). The adjuncts in (15) have to adjoin to the embedded IP, but then (9) forbids further movement into the matrix clause:

- (15) a. * *riyuu-mo nakui* Mary-ga [John-ga *t* sono setu-o sinziteiru to]
 reason-even without M._{nom} J._{nom} that theory_{acc} believes C⁰
omotteiru (koto).
 thinks (fact)
 'Without any reason, Mary thinks that John believes in that theory.'
- b. * *Naze* John-wa Bill-ni [kaisyaga *t* Mary-o kubinisita to] itta no?
 why J._{Top} B._{dat} company_{nom} M._{acc} fired C⁰ said Q
 'Why did John say to Bill that the company fired Mary?'

The fact that L-related positions may only be used by L-related elements has further consequences. Long distance scrambling in Japanese has A'-properties, as noted by Saito (1992). The ungrammaticality of (16a) results from a violation of Principle A, as expected. In contrast to short scrambling (11), long scrambling of a potential antecedent to a position in front of the anaphor does not result in grammaticality in (16b):

- (16) a. * *otagai_i-no sensei-ga [Hanako-ga karera_i-o hihansita to] itta (koto).*
 each other_{gen} teacher_{nom} Hanako_{nom} they_{acc} criticized C⁰ said (fact)
- b. * *karera_i-o otagai_i-no sensei-ga [t' Hanako-ga t hihansita to] itta (koto).*
 they_{acc} each other_{gen} teacher_{nom} Hanako_{nom} criticized C⁰ said (fact)

We can conclude from this that long scrambling out of finite clauses has only A'-properties. An argument that is long scrambled does not count as L-related with respect to the Spec₂ position of Infl-projections in the matrix clause. Hence it may not move into the matrix Spec₂ IP-position in (16b). Consequently it has to adjoin to the matrix IP, and - as already pointed out - XP-adjunction creates A'-positions. That is why there is no possibility for the scrambled element to A-bind the reciprocal expression in (16b). Let us now turn to *wh*-scrambling in Japanese.

4 *Wh*-Questions, Scrambling and Reconstruction

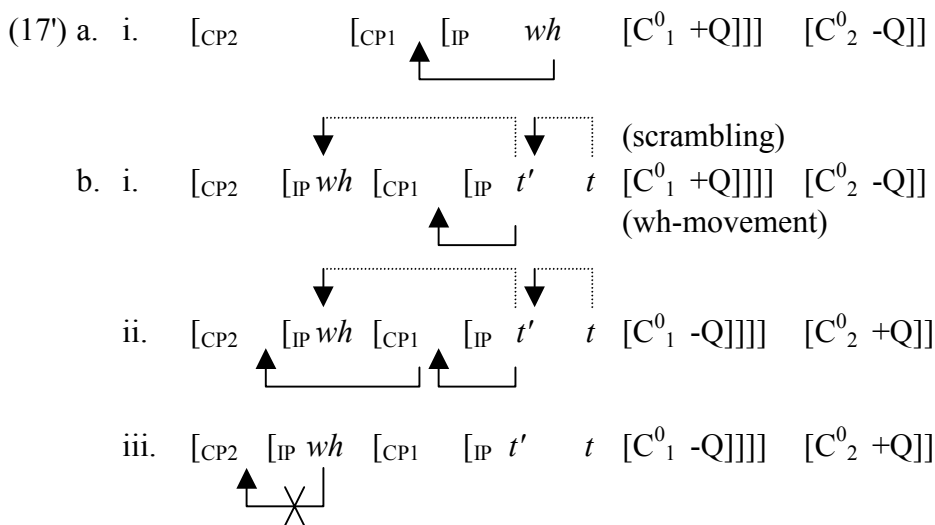
To begin the discussion, let us consider the following examples (Takahashi 1993) ((17'a-b) is the abstract representation of the examples (17a-b)):

- (17) a. John-ga [CP Mary-ga nani-o katta ka] sitteiru.
 J._{nom} M._{nom} what_{acc} bought Q knows
 'John knows what Mary bought.'
- b. *Nani-o* John-ga [CP *t'* Mary-ga *t* katta ka] sitteiru.
 what_{acc} J._{nom} M._{nom} bought Q knows
- (17') a. [CP₂ [CP₁ *wh* [C⁰₁ +Q]] [C⁰₂ -Q]]
 b. [CP₂ *wh* [CP₁ *t'* *t* [C⁰₁ +Q]] [C⁰₂ -Q]]

In example (17b), the *wh*-phrase has been long scrambled to the matrix clause but takes scope in the embedded clause, as indicated by the question marker *ka*. We have already seen that the target position of scrambling out of finite clauses is adjunction to IP. Since (17b) represents a declarative sentence with an embedded *wh*-question and thus has the same interpretation as (17a), the adjoined *wh*-phrase must be located in a *wh*-operator position of the embedded clause at the level of LF. Example (17b) therefore provides an example for the fact pointed out by Saito (1989) and already discussed in section 3.1 that scrambling as A'-movement can be undone at LF. Note that movement of the *wh*-phrase in (17b) is triggered by a scrambling feature [Σ].

Assuming reconstruction in terms of the copy theory in (17b), one of the lower copies of the scrambled *wh*-phrase in the embedded CP may be associated with the [+wh] C⁰-head, as is also the case in (17a). Takahashi (1993) assumes that scope taking of *wh*-phrases in (17) is due to

LF *wh*-movement. However, as already pointed out at the end of section 3.3 (see the discussion of example (3')), I would like to claim that *wh*-in situ constructions such as (17a) as well as *wh*-scrambling constructions such as (17b) involve invisible copy movement of the *wh*-phrase to Spec CP in the overt syntax (see the discussion in section 5 for independent motivation of this assumption). Movement of the invisible copy takes place from the in situ position of the *wh*-phrase as shown in (17a.i) for (17a), or, in constructions involving long scrambling of the relevant *wh*-phrase, from the intermediate landing site occupied with the intermediate copy/trace *t'*, i.e. from the Spec₂ of IP in (17b), as shown in (17b.i). If C⁰₂ were a [+wh] Comp and C⁰₁ would be [-wh], as shown in (17b.ii), movement of the invisible copy to Spec CP₂ has to apply from Spec CP₁ to Spec CP₂. The CAM (9) excludes that invisible copy movement proceeds from an adjoined position in the matrix clause to Spec CP₂ (17b.iii).



Now compare (17) with (18) (Takahashi 1993):

(18) a. John-wa [CP Mary-ga nani-o tabeta ka] siritagatteiru no?
 J.Top M.nom what_{acc} ate Q wants-to-know Q
 (Does John want to know what Mary ate?) or
 (What does John want to know whether Mary ate?)

b. *Nani-o* John-wa [CP *t'* Mary-ga *t* tabeta ka] siritagatteiru no?
 what_{acc} J.Top M.nom ate Q want-to-know Q
 (*Does John want to know what Mary ate?)
 (What does John want to know whether Mary ate?)

(18') a. [CP₂ [CP₁ *wh* [C⁰₁ +Q]] [C⁰₂ +Q]]
 b. [CP₂ *wh* [CP₁ *t'* *t* [C⁰₁ +Q]] [C⁰₂ +Q]]

The examples in (18) differ from those in (17) in that they have a question marker in both the embedded clause and the matrix clause. Since the question marker *ka* is ambiguous between a

scope marker for a *wh*-phrase and a complementizer (corresponding to *whether* in English), sentence (18a) is ambiguous with respect to the scope of the *wh*-phrase *nani*. As indicated in the translations, it can either be a yes/no question with an embedded *wh*-question or a *wh*-question with an embedded *whether*-question.

As pointed out by Takahashi (1993), the interesting fact about (18b) is that long scrambling of the embedded *wh*-object has the effect that, in contrast to (18a), the *wh*-phrase in (18b) can only have matrix scope. Unlike the scrambled *wh*-phrase in (17b), the scrambled *wh*-phrase in (18b) obviously cannot be reconstructed at LF. Takahashi (1993, 10) concludes from this observation that long "A'-movement of a *wh*-phrase to the initial position of a clause headed by a [+wh] Comp counts as *wh*-movement in Japanese" and assumes that the target position of the *wh*-phrase in that case is Spec CP. He attributes the fact that the *wh*-phrase in (18b) cannot undergo LF-movement (reconstruction) to a constraint according to which overt movement of a *wh*-phrase to a [+wh] Comp prevents this *wh*-phrase from undergoing any further movement at LF (Lasnik and Saito 1992, Epstein 1992).

However, the assumption that *wh*-movement in sentences such as (18b) cannot be undone and targets a [+wh] Spec CP makes several wrong predictions. In the following section, I review some of the arguments that have been formulated against Takahashi's analysis of (18b). It turns out that these arguments are in line with the analysis of long (*wh*-) scrambling as reconstructable adjunction movement.

4.1 *Wh*-Scrambling as Non-*Wh*-Movement

The first argument is presented in Kuwabara (1999). It relates to the fact that a *wh*-phrase cannot be c-commanded by the negative polarity item (NPI) *sika* (meaning 'only' in combination with negation), as demonstrated by the contrast between (19a) and (19b). As shown in (19c), the ungrammaticality of (19b) can be circumvented by *wh*-scrambling. The grammaticality of (19c) indicates that the short scrambled *wh*-phrase is not reconstructed. If the *wh*-phrase were reconstructed, (19c) should be ungrammatical, just as (19b).

- (19) a. Dare-ga sono hon-sika yomanakatta no?
 who_{nom} that book-SIKA read-not Q
 'Who read only that book?'
 b. *Taroo-sika nani-o yomanakatta no?
 T.-SIKA what_{acc} read-not Q
 'What did only Taroo read?'
 c. *Nani-o* Taroo-sika *t* yomanakatta no?
 what_{acc} T.-SIKA read-not Q

Let us now turn to long *wh*-scrambling. The examples in (20) are bad because the *wh*-phrase in both examples is c-commanded by an NPI. In (20a) the NPI is located in the matrix and in (20b) in the embedded clause.

- (20) a. * Taroo-sika [Hanako-ga dare-ni atta to] omotteinai no?
 T.-SIKA H._{nom} who_{dat} met C⁰ think not Q
 'Who does only Taroo think that Hanako met?'
 b. * Taroo-wa [Hanako-sika dare-ni awanakatta to] omotteiru no?
 T._{Top} H.-SIKA who_{dat} met not C⁰ think Q
 'Who does Taroo think that only Hanako met?'

As Kuwabara points out, long scrambling into a clause headed by a [+wh] Comp over an NPI in the matrix clause is ungrammatical (21a). On the other hand, long distance scrambling renders the sentence grammatical if the NPI is located in the embedded clause (21b). As Kuwabara observes, the same contrast as in (21) obtains for cases where the matrix and embedded clauses are headed by an interrogative complementizer (22):

- (21) a. * *Dare-ni* Taroo-sika [*t'* Hanako-ga *t* atta to] omotteinai no?
 who_{dat} T.-SIKA H._{nom} met C⁰ think not Q
 'Who does only Taroo think that Hanako met?'
 b. *Dare-ni* Taroo-wa [*t'* Hanako-sika *t* awanakatta to] omotteiru no?
 who_{dat} T._{Top} H.-SIKA met not C⁰ think Q
 'Who does Taroo think that only Hanako met?'
- (22) a. * *Nani-o* Taroo-sika [*t'* Hanako-ga *t* katta ka] sirinai no?
 what_{acc} T.SIKA H._{nom} bought Q know-not Q
 'Does only Taroo know what Hanako bought?'
 'What does only Taroo know whether Hanako bought?'
 b. *Nani-o* Taroo-wa [*t'* Hanako-sika *t* kawanakatta ka] sitteiru no?
 what_{acc} T._{Top} H.-SIKA bought-not Q know Q
 'Who does Taroo think that only Hanako met?'

Examples (21a) and (22a) show that the *wh*-phrase is put back into a position c-commanded by the NPI rendering the sentence ungrammatical. The examples demonstrate that *wh*-scrambling into a [+wh] clause involves reconstruction and contradicts what has been assumed by Takahashi (1993) on the basis of examples such as (18b). I come back to the contrast between (21a), (22a) and (21b), (22b) in section 4.3 below.

As pointed out by Maki and Ochi (1998), a further problem with Takahashi's analysis concerns examples (23)-(24). In contrast to the [+wh] Comp *ka*, the [+wh]-element *kadooka* 'whether' cannot license a *wh*-phrase:

- (23) * John-ga [CP Mary-ga nani-o katta kadooka] siritai.
 J._{nom} M._{nom} what_{acc} bought whether want-to know
 'John wants to know whether Mary bought what.'

Now consider (24b). (24b) is a variant of example (18). The *wh*-phrase *nani* is long scrambled to the initial position of a clause headed by a [+wh] Comp:

- (24) a. Bill-ga [CP John-ga [CP Mary-ga nani-o katta ka] sitteiru kadooka] sirabeteiru.
 B._{nom} J._{nom} M._{nom} what_{acc} bought Q know whether investigate
 'Bill is investigating whether John knows what Mary bought.'
 b. Bill-ga [*nani-o* John-ga [*t'* Mary-ga *t* katta ka] sitteiru kadooka] sirabeteiru.
 B._{nom} what_{acc} J._{nom} M._{nom} bought Q know whether investigate

If *wh*-scrambling in (24b) would count as *wh*-movement, this example should be ungrammatical, as its English translation (viz. **Bill is investigating what whether John knows Mary bought*). Given the grammaticality of (24b), and the fact that the *wh*-phrase takes embedded scope, we have to conclude that scrambling in (24b) can reconstruct. (24b) represents another case of *wh*-scrambling to the initial position of a clause headed by a [+wh] Comp that does not count as *wh*-movement in Japanese.

A further argument against analyzing long *wh*-scrambling into a [+wh] clause as non-reconstructable *wh*-movement comes from the following observation. The claim that the *wh*-phrase in (18b), repeated here as (25b) can only have matrix scope, cannot be upheld. It has been observed by several authors that example (25b) is in fact ambiguous. Although the strongly preferred reading for the scrambled *wh*-phrase in (25b) is the matrix scope reading, the lower scope construal is also available (see Maki and Ochi 1998, Kuwabara 1999, among others). ((25a) is ambiguous as well, although in contrast to (25b), a matrix scope reading is harder to get in (25a)).

- (25) a. John-wa [CP Mary-ga nani-o tabeta ka] siritagatteiru no?
 J._{Top} M._{nom} what_{acc} ate Q wants-to-know Q
 (Does John want to know what Mary ate?) or
 (What does John want to know whether Mary ate?)
 b. *Nani-o* John-wa [CP *t'* Mary-ga *t* tabeta ka] siritagatteiru no?
 what_{acc} J._{Top} M._{nom} ate Q want-to-know Q
 (Does John want to know what Mary ate?) or
 (What does John want to know whether Mary ate?)

If, however, example (25b) is ambiguous, with one reading being strongly preferred, scrambling into a clause headed by a [+wh] Comp cannot be considered as scope-fixing *wh*-movement. The problem, imposed by examples such as (25), is then how to account for the

fact that the one reading is strongly preferred. Before I address this question in more detail, let me turn to a final example that confronts Takahashi's analysis with an empirical problem.

Japanese *wh*-scrambling allows a combination of long scrambling into a [+wh] clause and interpretation in a higher clause. In (26), the *wh*-object *nani* is long scrambled, hence adjoined to IP in a [-wh] clause. As indicated in the translation, this *wh*-phrase may take scope at the [+wh] Comp of the highest clause, which contains the question marker *no* (Takahashi 1993):

- (26) Kimi-wa [CP *nani-o* John-ga [CP *t'* Mary-ga *t* tabeta ka]
 you_{Top} what_{acc} J._{nom} M._{nom} ate Q
 sitteiru to] omotteiru no?
 know C⁰ think Q
 (Do you think that John knows what Mary ate?)
 (What do you think that John knows whether Mary ate?)

- (26') [CP₃ [CP₂ NP [CP₁ *t'* *t* [C⁰₁ +Q]] [C⁰₂ -Q]] [C⁰₃ +Q]]

However, long scrambling of the *wh*-phrase in (26) takes place to the initial position of a [-wh] clause, and as we have seen in the case of (17b), this sort of scrambling is triggered by a scrambling feature and has to be undone. We therefore have to assume that the *wh*-phrase in (26) reconstructs into the Spec₂ IP position of the embedded clause CP₁. Then it is associated with the [+wh] C⁰ position of the lowest clause to create the narrow scope reading, or it is interpreted in the Spec CP position of the highest clause to create the wide scope reading (cf. also the discussion of example (17)).

Abe (1997) discusses a variant of this example that provides further evidence against analyzing long *wh*-scrambling into a [+wh] clause as *wh*-movement in Japanese. In (27), the matrix verbs in (26) are replaced by a verb selecting a [-wh] clause and one selecting a [+wh] clause respectively:

- (27) Kimi-wa [*nani-o* John-ga [*t'* Mary-ga *t* tabeta to] omotteiru ka] sitteru ka?
 you_{Top} what_{acc} J._{nom} M._{nom} ate C⁰ thought Q know Q
 (Do you ask what John thought that Mary ate?)
 (What do you ask whether John thought that Mary ate?)

- (27') [CP₃ [CP₂ NP [CP₁ *t'* *t* [C⁰₁ -Q]] [C⁰₂ +Q]] [C⁰₃ +Q]]

Contrary to what is found in (26), the *wh*-phrase, which is again long scrambled to the initial position of the intermediate clause, is now moved to the initial position of a [+wh] clause. However, (27) is ambiguous in that it can have either the intermediate scope reading or the matrix scope reading – although the matrix scope reading is harder to get. If (27) would represent an example of *wh*-movement, as assumed by Takahashi (1993), the long scrambled

wh-phrase would be located in an operator position and we would expect that it could not be associated with the [+wh] C^0 position of the highest clause to create the matrix scope reading – according to the constraints suggested in Lasnik and Saito (1992) and Epstein (1992). But this prediction is not borne out. In fact, there is no difference in the interpretational possibilities between example (27), involving an A'-moved *wh*-phrase, and example (28), taken from Takahashi (1993), involving an A-moved *wh*-phrase:

- (28) John-wa [*nani-o* Mary-ga *t* tabeta ka] siritagatteiru no?
 J.Top what_{acc} M.nom ate Q want-to-know Q
 (Does John want to know what Mary ate?) or
 (What does John want to know whether Mary ate?)

- (28') [CP₂ [CP₁ NP... *t* ... [C⁰₁ +Q]] [C⁰₂ +Q]]

As was the case with the examples in (27), the embedded clause (CP₁ in (28') and CP₂ in (27') as well as the matrix clause are marked as interrogative sentences. Like (27), the scrambled *wh*-phrase in (28) permits a wide scope reading as well as a narrow scope reading, as indicated in the translations. Now, according to the analysis of short scrambling in Japanese, presented in section 3.4, the *wh*-phrase is moved into a non-operator position with A-properties, i.e it occupies the Spec₂-position of the embedded IP in (28). In order to be interpreted as having matrix scope it is associated with the [+wh]-feature in the matrix C^0 head, or alternatively, it is related to the [+wh] C^0 position of the lowest clause to create the narrow scope reading. The fact that (27) allows for the same scope readings as (28) can then be taken to lend further support to the conclusion that long *wh*-scrambling in Japanese does not count as *wh*-movement.

I therefore conclude that Japanese long *wh*-scrambling to the initial position of a [+wh] clause is like any other instance of scrambling triggered by the [Σ]-feature. Further arguments against the *wh*-movement analysis of long *wh*-scrambling in Japanese – and against the view that movement of a *wh*-phrase to the initial position of a [+wh] clause is movement to Spec CP, as assumed in Takahashi (1993) – can be found in Nishiyama, Whitman and Yi (1996), Kuwabara (1999), and Tanaka (1999).

4.2 Scope-Ambiguities and Parsing Effects

We have already seen that the difference between examples such as (25a) and (25b), repeated here for convenience, reduces to the difference as to which of the two possible scope readings is more salient. In (25a), the embedded scope reading is strongly preferred whereas in (25b) the embedded scope reading is degraded and the matrix scope reading is preferred.

(25) a. [CP₁ John-wa [CP₂ Mary-ga nani-o tabeta ka] siritagatteiru no]?

J._{Top} M._{nom} what_{acc} ate Q₂ wants-to-know Q₁

(Does John want to know what Mary ate?) or

(What does John want to know whether Mary ate?)

b. [CP₁ Nani-o John-wa [CP₂ t' Mary-ga t tabeta ka] siritagatteiru no]?

what_{acc} J._{Top} M._{nom} ate Q₂ want-to-know Q₁

(Does John want to know what Mary ate?)

(What does John want to know whether Mary ate?)

The global ambiguity of (25), i.e., the fact that both readings in (25a) and (25b) are grammatical, suggests that the contrast in (25) is not due a grammatical condition but results from processing strategies. Before going into the details of the processing account of (25) we have to ask how antecedent/trace dependencies (i.e. "filler/gap relations" in parsing terms) are processed. Frazier and D'Arcais (1989) propose a universal parsing strategy, the Active Filler Strategy (AFS), that can be phrased as: *Assign an identified filler as soon as possible, i.e. rank the option of a gap above the option of a lexical noun phrase within the domain of an identified filler.* The effects of the AFS can be demonstrated with the preferred readings of ambiguous sentences such as *Who did Fred tell Mary left the country?* The preferred reading of this sentence is the reading *Who did Fred tell t Mary left the country?* and not the reading *Who did Fred tell Mary t left the country?* This result is in accordance with the AFS. The AFS reminds on grammatical constraints such as the Superiority Condition, Relativized Minimality (Rizzi 1990), the Minimal Link Condition, or Minimize Chain Links (Chomsky 1995) since it relies on the notion of short/close antecedent (filler) trace (gap) dependencies. However, in contrast to these grammatical concepts, the AFS is a preference principle and can be violated without causing ungrammaticality.

Besides for English, the AFS has been argued to determine sentence comprehension in German (Bader and Lasser 1994, among others), Italian, Spanish, Dutch (Frazier and D'Arcais 1989), and Japanese (Inoue and Fodor 1995, Nagai 1995). Nagai argues that the effects of the AFS can be seen in examples involving topicalization in Japanese (see footnote 8 for some

examples).⁸ His account has consequences for the analysis of *wh*-constructions in Japanese as well to which we turn now.

Following Inoue and Fodor (1995) and Nagai (1995), I assume that the Japanese parser creates an initial syntactic representation on-line following universal parsing principles before all relevant lexical information of the sentential structure is available (see also Bader and Lasser 1994). A *wh*-phrase is preferably interpreted as being associated with the next scope marker that c-commands the overt *wh*-phrase at spell-out, i.e. Q2 in (25a) and Q1 in (25b). I assume that this effect results from the following parsing strategy: *When a wh-phrase has been identified coindex the wh-phrase and the Comp of the sentence in which the wh-phrase seems to be located.* This coindexation happens as soon as the *wh*-phrase is encountered and has to be integrated into the sentence structure already formed:

- [_{CP1} John-wa Mary-ga nani-oⁱ ... [_{C°2i}] for (25a);
 [_{CP1} ... nani-oⁱ John-wa ... [_{C°1i}] for (25b);
 [_{CP1} Kimi-wa nani-oⁱ ... [_{C°1i}]] for (26) and (27).

The decision with which Comp the *wh*-phrase is associated is made at a point at which the parser does not have evidence as to whether the corresponding Comp is specified as [+wh] or as [-wh] because the relevant lexical information is still missing. In (25a) and (25b) the parser postulates [+wh] Comp's in accordance with a structure that turns out to be correct, i.e. the *wh*-phrase in (25a) is located in CP2 and it is associated with a [+wh] Comp (Q2) in the same clause and the *wh*-phrase in (25b) is located in CP1 and is also associated with a [+wh] Comp in the same clause. The fact that the other scope readings for (25a) and (25b) are more difficult to get can be explained as follows. Given that the wide scope reading for the *wh*-phrase in (25a) and the embedded scope reading for the *wh*-phrases in (25b) is incompatible with the initial structure assignment made by the parser, the initial structure has to be revised although this structure is grammatically correct. To realize the alternative reading results in a higher cost in processing difficulty. Consequently, the alternative readings are harder to get.

⁸ NP-topics receive a *wa*-marking in Japanese. In this case, nominative and accusative marking disappear from the NP. This is illustrated in (i) where we find a predicate with two nominative NPs. (i) is ambiguous, the topic NP can be the subject (i'a) or the object (i'b). However, the preferred reading is the one with the subject as topic. According to Nagai (1995) this results from the AFS:

- (i) Hanako-wa Taroo-ga sukidesu
 H_{Top} T_{nom} like
 Preferred reading: Speaking of Hanako, she likes Taroo
 vs. : Speaking of Taroo, Taroo likes her
- (i') a. Hanako-wa [_{IP} t Taroo-ga sukidesu]
 b. Hanako-wa [_{IP} Taroo-ga t sukidesu]

Example (ii) is also ambiguous, with the structures given in (ii'). *Michiko* can be the matrix subject (ii'a) or the embedded subject (ii'b). Again, the AFS correctly predicts that the matrix subject reading (ii'a) for the topic NP is preferred:

- (ii) Michiko-wa Hanako-ga Junko-o kiratteiru to itta
 M_{Top} H_{nom} J. dislikes C⁰ said
 Preferred reading: Speaking of Michiko, she said that Hanako dislikes Junko
 vs. : Speaking of Michiko, Hanako said that she dislikes Junko
- (ii') a. Michiko-wa [_{IP} t [_{CP} Hanako-ga Junko-o kiratteiru to] itta]
 b. Michiko-wa [_{IP} Hanako-ga [_{CP} t Junko-o kiratteiru to] itta]

Now consider a case such as (17b), repeated here as (29). In (29) the parser wrongly postulates that the Comp of the matrix clause is [+wh], making reanalysis necessary as in the case of the embedded scope reading for (25b). However, reanalysis in (29) does not cause similar difficulties, since the initially constructed structure does not result in a well-formed syntactic representation and need to be revised anyway, in contrast to (25b) (Note that (29) has the same interpretations as (25b), if it is read with rising intonation, because a question maker *no* in the matrix clause can be dropped. However, I am not considering the question marker drop in (29). Thanks to a reviewer for making me aware of this alternative.)

- (29) *Nani-o* John-ga [_{CP} *t'* Mary-ga *t* katta ka] sitteiru.
 what_{acc} J._{nom} M._{nom} bought Q knows
 'John knows what Mary bought.'

To sum up, I have tried to show that *wh*-scrambling in Japanese never is an instance of *wh*-movement. Preferences for different interpretations with respect to *wh*-scrambling arise from the interaction of processing and syntactic constraints. In the remainder of this section, I will discuss how the undoing effects of scrambling can be derived.

4.3 Deriving the Reconstructability of (*Wh*-) Scrambling

The effects of *wh*-scrambling in Japanese generally conform to the constraints on scrambling formulated in sections 3.3 and 3.4. Accordingly, we have to distinguish between the two types of scrambling in Japanese, shown in (30). In (30a) the scrambled element occupies a second specifier position of IP with A-properties, whereas it is located in an adjoined position which has A'-properties in (30b) (see also Mahajan 1990, Saito 1992). The representations in (30) reflect the generalization that scrambling is A-movement with the exception of scrambling from finite clauses, which is always A'-movement:

- (30) *Short scrambling and scrambling from infinitivals = A-scrambling*
 a. ... [_{IP} *XP* [_{I'} DP-ga [... *t* ...]]]
- Scrambling out of finite clauses = A'-scrambling*
 b. ... [_{IP} *XP* [_{IP} DP-ga [_{CP} ... *t'* ... *t* ...]]]

We have seen so far that scrambling of a *wh*-phrase that represents A'-movement (30b) is undone, whereas reconstruction is not possible in the case of A-scrambling (30a). This generalization was already illustrated with the examples in (19b-c), repeated here as (31a-b). As shown in (31a), a *wh*-phrase cannot be c-commanded by the negative polarity item (NPI).

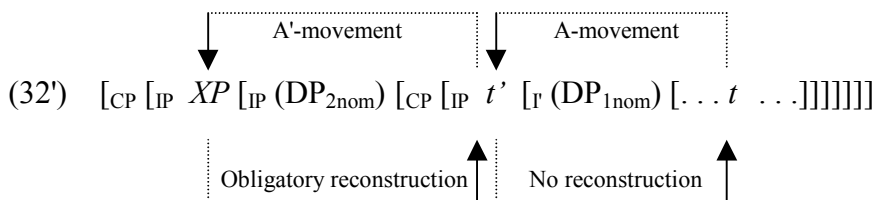
The ungrammaticality of (31a) can be circumvented by *wh*-scrambling (31b). If the short-scrambled *wh*-phrase would undergo reconstruction, (31b) should be ungrammatical as (31a).

- (31) a. * Taroo-sika nani-o yomanakatta no?
 T.-SIKA what_{acc} read-not Q
 'What did only Taroo read?'
 b. *Nani-o* Taroo-sika *t* yomanakatta no?
 what_{acc} T.-SIKA read-not Q

Consider again the examples in (21), repeated here as (32).

- (32) a. * *Dare-ni* Taroo-sika [*t'* Hanako-ga *t* atta to] omotteinai no?
 who_{dat} T.-SIKA H._{nom} met C⁰ think not Q
 'Who does only Taroo think that Hanako met?'
 b. *Dare-ni* Taroo-wa [*t'* Hanako-sika *t* awanakatta to] omotteiru no?
 who_{dat} T._{Top} H.-SIKA met not C⁰ think Q
 'Who does Taroo think that only Hanako met?'

The first movement step targets a Spec₂ position, which is an L-related position with A-properties. The second movement step targets an adjoined position with A'-properties. The second movement step is obligatorily reconstructed, whereas the first cannot. In (32a), the NPI is in the position of DP₂ in the abstract representation (32') and in (32b) the NPI is located in the position of DP₁ in (32').



Given that *t'* is the (only) reconstruction site, this analysis correctly predicts the contrast in (32): In (32a) the *wh*-phrase is c-commanded by the NPI after reconstruction. On the other hand, the *wh*-phrase in (32b) is not c-commanded by the NPI in the intermediate position *t'*. In addition, this analysis automatically explains the grammaticality of (31b). Given that short scrambling is not reconstructed, this example is grammatical. (The same explanation holds for the examples in (22) where the embedded clause contains a scope marker as well.)

To sum up, the examples (31)-(32) suggest that only such instances of scrambling are reconstructed that target an adjoined position.

The following phenomenon provides further evidence for this generalization. As already mentioned in section 3.1, a long scrambled quantifier cannot take scope over a quantified subject in the matrix clause. (33) suggests that long scrambling is obligatorily undone.

- (33) *Daremo-ni* dareka-ga [*t'* John-ga *t* atta to] omotteiru (koto).
 everyone someone John met C⁰ thinks (fact)
 (someone>everyone; *everyone>someone)

On the other hand, it has been observed that short quantifier scrambling behaves differently in Japanese. Consider the examples in (34). (34a) does not show scope ambiguity. However, in contrast to (33) and (34a), the example with short scrambling (34b) is ambiguous, suggesting again that no reconstruction of short scrambled elements takes place (see Hoji 1985, Sohn 1994, among others).

- (34) a. dareka-ga daremo-o aisiteiru.
 someone_{nom} everyone_{acc} love
 'Someone loves everyone.'
 (someone>everyone; *everyone>someone)
- b. *daremo-o* dareka-ga *t* aisiteiru.
 everyone_{acc} someone_{nom} love
 (someone>everyone; everyone>someone)

Furthermore, this analysis of reconstruction correctly predicts that in contrast to (33), long distance scrambling as in (35a) results in ambiguity.

- (35) a. *Daremo-ni* John-ga [*t'* dareka-ga *t* kiusita to] omotteiru.
 everyone_{dat} J._{nom} someone_{nom} kissed C⁰ think
 'Mary thinks that someone kissed everyone.'
 (someone>everyone; everyone>someone)
- b. John-ga [dareka-ga daremo-ni kiusita to] omotteiru.
 J._{nom} someone_{nom} everyone_{dat} kissed C⁰ think
 (someone>everyone, *everyone>someone)

From this I conclude that reconstruction takes place if (*wh*-) scrambling takes the form of adjunction movement.⁹

In order to answer the question of how to derive the undoing effects of scrambling discussed in section 3.1 and 3.2, we can rely on the idea that the label of an adjunction

⁹ This only holds if reconstruction is not excluded for independent reasons. For example, Cinque (1990, section 1.4.2) notes that scope reconstruction across islands is generally very restricted. It therefore does not come as a surprise that scope reconstruction into islands in combination with scrambling is banned in Japanese, as discussed in Saito (1994c) and Maki and Ochi (1998). For further discussion of the reconstructability of scrambling see also Saito (1989, 1992), Cho (1991), Abe (1993a), Sohn (1994), Takahashi (1993) and footnote 6 above.

structure receives no interpretation and therefore has to be deleted, triggering obligatorily reconstruction, as suggested in Chomsky (1994, 1995) and discussed in section 3.2. This analysis correctly predicts reconstruction in the case of long distance *wh*-scrambling to IP in the presence of [+wh] and [-wh] Comp's, and excludes reconstruction in cases of short A-scrambling to a second Spec IP position.

5 Multiple *Wh*-Questions

In the final part of this article, I will discuss how the analysis presented in the preceding sections can be extended to account for *wh*-questions involving multiple *wh*-phrases. In addition to the mechanisms already proposed, I will make use of an assumption by Saito (1994a), Sohn (1994), Takahashi (1994), Fukui and Saito (1998), Sabel (1998, 2001), Grewendorf and Sabel (1999) (among others), who base their analysis of multiple *wh*-constructions in Japanese on the idea that a *wh*-phrase can be covertly adjoined to another *wh*-phrase.

The first piece of evidence for this amalgamation process is provided by the contrast between (36a) and (36b) from Maki (1994). Note that example (36a) provides evidence for invisible *wh*-movement in the overt syntax of Japanese. It demonstrates the fact that Japanese *wh*-in situ shows *wh*-island effects. (36b) differs from (36a) in that in the former the matrix subject is changed to the *wh*-phrase *dare*, as a consequence of that the subjacency violation disappears.

- (36) a.?? [IP John-ga [CP Mary-ga nani-o katta kadooka] oboeteiru ka] osiete kudasai.
 John_{nom} Mary_{nom} what_{acc} bought whether remember Q tell please
 (Please tell me [Q John remembers [whether Mary bought what]].)
- b. [IP Dare-ga [CP Mary-ga nani-o katta kadooka] oboeteiru ka] osiete kudasai.
 who_{nom} Mary_{nom} what_{acc} bought whether remember Q tell please
 (Please tell me [who remembers [whether Mary bought what]].)

Assume that the more deeply embedded *wh*-phrase is attracted by the higher *wh*-phrase in (36b). Then the (invisible/unpronounced copy of the) embedded *wh*-argument adjoins to the matrix subject *dare-ga* in (36b) without crossing two IP nodes followed by movement of the *wh*-cluster to Spec CP. In (36a), on the other hand, the first possible landing site for the embedded *wh*-argument is Spec CP of the matrix clause. Thus, the *wh*-argument has to cross two IP nodes to reach its final position, giving rise to a subjacency violation.

It is well known that extraction of arguments out of islands is far better than extraction of adjuncts. Different analyses of this fact have been proposed by Lasnik and Saito (1984, 1992), Chomsky (1986), Rizzi (1990), Cinque (1990), and Sabel (2002a). Rizzi (1990), for example, tries to explain the fact that adjunct extraction must meet different locality requirements than argument extraction by assuming that only adjunct traces must be "antecedent governed". Now

consider the examples in (37). They show that Japanese *wh*-adjuncts are subject to island constraints, where (37a) illustrates the case for complex NP islands and (37b) for adjunct islands. Unlike *wh*-adjuncts, *wh*-arguments are allowed to occur within these islands. Interestingly, if the *wh*-adjunct is preceded in the same clause by a *wh*-argument, the example improves considerably. Compare (37a) with (38a) and (37b) with (38b), respectively.

- (37) a.* John-wa [_{NP} [_{IP} sono hon-o naze katta] hito]-o sagasiteru no?
 J.Top that book_{acc} why bought person_{acc} looking-for Q
 (Q John is looking for [the person [that bought that book why]]?)
- b.* John-wa [_{PP} [_{IP} Mary-ga sono hon-o naze katta] kara] okotteru no?
 John_{Top} Mary_{nom} that book_{acc} why bought since angry Q
 (Q John is angry [because Mary bought that book why]?)

- (38) a.?? John-wa [_{NP} [_{IP} nani-o naze katta] hito]-o sagasiteru no?
 John_{Top} what_{acc} why bought person_{acc} looking-for Q
 (Q John is looking for [the person [that bought what why]]?)
- b.? John-wa [_{PP} [_{IP} Mary-ga nani-o naze katta] kara] okotteru no?
 John_{Top} Mary_{nom} what_{acc} why bought since angry Q
 (Q John is angry [because Mary bought what why]?)

If the *wh*-phrases in (38) are extracted from the islands one by one, one would expect these sentences to be as ungrammatical as (37a) and (37b) because of the island sensitivity of adjuncts. We can therefore conclude that the *wh*-phrases in (38) form a *wh*-cluster before exiting the island, and that ultimately it is only one (complex) *wh*-phrase that moves to the matrix Spec CP. I conclude from these data that multiple *wh*-phrases in Japanese can amalgamate before movement to Spec CP applies. Let us now turn to multiple *wh*-questions involving *wh*-scrambling.

As shown in (39a), in Japanese, a base-generated configuration results in ungrammaticality where an adjunct *wh*-phrase like *naze* precedes a *wh*-object. This effect disappears when a higher *wh*-phrase is added either by scrambling into a position preceding the *wh*-adjunct as in (39b), or by base generation as in (39c) where a third *wh*-phrase is added (Watanabe 1991, Saito 1994a):

- (39) a.* John-ga naze nani-o katta no?
 J._{nom} why what_{acc} bought Q
- b. *Nani-o* John-ga naze *t* katta no?
 what_{acc} J._{nom} why bought Q
- c. Dare-ga naze nani-o katta no?
 who_{nom} why what_{acc} bought Q

In the following I want to suggest an account of the "additional-*wh* phenomenon" in (39) above that provides further evidence for my analysis of scrambling in Japanese developed in the preceding sections.

I would like to suggest that *wh*-phrases in Japanese may establish internal operator positions which attract *wh*-elements in multiple *wh*-constructions with the exception of (non-referential) *wh*-adjuncts. In other words, the reason for the ungrammaticality of (39a) lies in the fact that it is impossible for adjuncts to attract other *wh*-phrases. That adjuncts do not provide an operator position is probably related to the fact that they (in contrast to arguments) lack a position for a variable, as has been pointed out by several authors (see Tsai 1994, Reinhart 1995, Chomsky 1995: footnote 65). Why is an alternative derivation in (39a) impossible in which the invisible copy of the adjunct moves to Spec CP and *nani* adjoins to *naze* in Spec CP? Adjunction to *wh*-elements (adjuncts and arguments) in Spec CP is excluded if we assume the copy theory of movement and the *Uniformity Condition on Chains* (UCC), i.e. the requirement that chains be uniform. The UCC allows that something is adjoined to the head of a trivial (one membered) chain. On the other hand, given the copy theory of movement, the UCC excludes adjunction to the head of a non-trivial chain, since this would render the head of the chain distinct from its other parts resulting in a non-uniform chain. Therefore, the UCC excludes adjunction of *wh*-phrases to *wh*-phrases in Spec CP. (Note that the CAM (9) rules out the possibility that an element is first adjoined to the foot of a chain before it adjoins to the head of the chain in Spec CP thereby creating a uniform chain.) To summarize, it follows that adjunction to an element in Spec CP is not permissible: such an adjunction would render the chain of this element non-uniform, since its copy does not have an element adjoined to it.

On the other hand, A-movement is not analyzed as copy movement in Lasnik (1998, 1999) for reasons mainly having to do with binding theory (see also Hornstein 1998, Saito and Hoshi 2000). Thus, it follows that elements in (base-generated or derived) A-positions are potential targets for cluster formation. This aspect is relevant for the analysis of (36b), (38), and (39b-c).

As far as the well-formed examples (36b) and (38) already discussed are concerned, the UCC is respected since the higher *wh*-phrase is located in an L-related position. In (39b), *nani* has undergone short scrambling, which according to my analysis is movement to Spec₂ of IP, an L-related position with A-properties. Again cluster formation is not excluded in this case. The [+*wh*]-feature of the attracting *wh*-phrase is checked in a second movement step by moving the entire cluster to Spec CP. (39c) displays a situation analogous to (39b): a *wh*-argument that precedes a *wh*-adjunct and occupies an L-related position attracts the *wh*-adjunct, the only difference being that the attracting *wh*-element in (39c) is not scrambled. Checking of the three *wh*-elements in (39c) is ensured as follows: *naze* and *nani* move to *dare*; finally, the entire cluster moves to Spec CP where *dare* enters a checking relation with the [+*wh*]-feature in C⁰. We can thus conclude that the assumption that short scrambling is movement to an L-related position provides us with a unitary account for the behavior of multiple *wh*-elements which are clause-mates.

Saito (1994a) shows that the "additional-*wh* effect" is subject to a clause-boundedness restriction. It is not operative when the added higher *wh*-element is long scrambled out of a finite clause. This restriction is illustrated in (40). (40b) shows that the *wh*-adjunct *naze* in the matrix clause can be rescued by scrambling the indirect *wh*-object *dare* of the matrix clause to the front of the *wh*-adjunct. (40c) shows that *naze*-rescuing is not achieved if the *wh*-phrase that is moved to the front of *naze* is scrambled out of a finite clause.¹⁰

- (40) a. * *Naze dare-ga Mary-ni* [_{CP} *John-ga sono hon-o katta to*] *itta no?*
 why who_{nom} M._{dat} J._{nom} that book_{acc} bought C⁰ said Q
 (Q who told Mary [that John bought that book]why?)
- b. *Dare-ni naze dare-ga t* [_{CP} *John-ga sono hon-o katta to*] *itta no?*
 who_{dat} why who_{nom} J._{nom} that book_{acc} bought C⁰ said Q
- c.?* *Nani-o naze dare-ga Mary-ni* [_{CP} *t' John-ga t katta to*] *itta no?*
 what_{acc} why who_{nom} M._{dat} J._{nom} bought C⁰ said Q
 (Q who told Mary [that John bought what] why?)

I assume that *naze*-rescuing in (40b) is achieved by adjunction of the *wh*-adjunct and *dare-ga* to the scrambled *wh*-argument *dare-ni*, which, according to my analysis, occupies the Spec₂ position of IP in (40b). Obviously, a similar derivation is not possible for (40c). This contrast can be accounted for by an analysis of scrambling as movement to Spec₂ of IP or to an adjoined position.

On the basis of the scrambling theory developed in the preceding sections and the cluster formation hypothesis, the data in (40) can be analyzed along the following lines: even though the latter hypothesis requires that the two *wh*-phrases in (40a) form a cluster, this requirement cannot be fulfilled since, as a consequence of the morphological properties of the *wh*-adjunct *naze* and the UCC, *dare* cannot adjoin to *naze* either in its base-position or if moved to Spec CP (as in (39a)). In (40b), on the other hand, the indirect object *dare-ni* has undergone short scrambling to Spec₂ of IP. Since, according to my analysis, the target position of this scrambling operation is an L-related position, the required cluster can be formed by adjunction of *naze* and *dare-ga* to *dare-ni* in a way exactly analogous to the derivation of (39c).

The ungrammaticality of example (40c), which displays the intricate clause-boundedness restriction on the additional-*wh* effect, can then be accounted for as follows. According to the analysis of long *wh*-scrambling to a [+wh] clause, developed in section 4., the long scrambled object *nani* occupies an adjoined position in the matrix clause and needs to undergo reconstruction. As a consequence, no *wh*-element in (40c) can be checked by moving to the long scrambled *nani* since this would violate the UCC, i.e. the trace/copy *t'* would be different

¹⁰ One may wonder whether in (40b) the scrambled *wh*-argument, which precedes the base-generated adjunct *naze*, can occupy Spec₂ of IP if the adjunct is adjoined to IP. The theory of Bare Phrase Structure does not prevent an adverbial phrase from being adjoined between the inner and the outer Spec of a projection (see Chomsky 1995:353). However, it is natural to restrict this possibility to the case of Merge since adjunction by movement establishes a checking relation with non L-related or broadly L-related elements and thus can plausibly be taken to "close off" the generation of narrowly L-related specifiers within the same projection.

from the head of the head of the chain and would no longer represent a possible reconstruction site. Furthermore, *naze* and *nani* cannot move to Spec CP because this would also violate the UCC as already pointed in the discussion of (39a). It can thus be concluded that an account of the clause-boundedness constraint illustrated in (40c) crucially relies on the fact that long scrambling out of finite clauses is A'-movement.¹¹

This account of (40c) makes two interesting predictions. The first prediction is that (40c) would also be impossible if the matrix clause contained only the argument *wh*-phrase *dare-ga*. This prediction also appears to be in accordance with the facts, as can be seen from (41). *Nani* cannot form a *wh*-cluster with *dare* in the adjoined position because of the UCC.

- (41) ?* *Nani-o dare-ga* [*t'* *Mary-ga t* *tabeta to*] *itta no?*
 what_{acc} who_{nom} M._{nom} ate C⁰ said Q
 'What did John tell who that Mary ate?'

The second prediction is that the long scrambled object *nani* may rescue the *wh*-adjunct in examples like (40c) if it originates in a control infinitive rather than a finite clause. This prediction is in fact borne out, as shown by the following example taken from Nemoto (1993):

- (42) *Nani-o naze dare-ga Michael-ni* [PRO *t utau yoo(ni)*] *itta no?*
 what_{acc} why who_{nom} M._{dat} sing to told Q
 'What, why who told Michael to sing?'

Following the analysis of scrambling out of infinitives (see footnote 6), the long scrambled *wh*-object in (42) occupies the Spec₂ position of the matrix IP. Since this position is an L-related position, the *wh*-adjunct *naze* can be rescued in the same way as in (39b) and (40b), i.e. by adjoining to the scrambled *wh*-object. Then nothing prevents the complex *wh*-element from moving to Spec CP.

To sum up, the explanations for multiple *wh*-question phenomena in Japanese given in this section are crucially based on the restriction on *wh*-cluster formation, according to which adjunction to a *wh*-element is only possible if this element is located in an L-related position. The data provided additional evidence in favor of the analysis of *wh*-scrambling in Japanese as movement to Spec₂ of IP and, in the case of scrambling out of finite clauses, as movement to an adjoined position that has different properties and is obligatorily reconstructed.

¹¹ Sohn (1994: 318) points out that there is also a saving effect according to which an adjunct *wh*-phrase within an island can be rescued when there is a non-*wh* argument phrase which moves out of that island together with it:

- (i) a. * *John-wa* [[*Mary-ga sono hito-o naze uttaeta to io*] *uwasa*]-o *kiita-no?*
 J._{Top} M._{nom} the man_{acc} why sues rumour_{acc} heard-Q
 (Why did John hear [the rumour[that Mary sued the man *t*]?)
 b. ?(?) *Sono hito-o naze John-wa* [[*Mary-ga t t uttaeta to iu*] *uwasa*]-o *kiita-no?*
 the man_{acc} why J._{Top} M._{nom} sued rumour_{acc} heard-Q

I assume that cluster formation in (ib) is triggered by the [Σ]-feature; see Sabel (2001) for a general account of cluster formation that allows to derive cluster movement in (ib).

6 Conclusion

In this article, I have argued that *wh*-scrambling as an instance of "full *wh*-movement" does not exist in Japanese. All instances of scrambling out of finite clauses target an adjoined position and are obligatorily reconstructed, irrespective of whether scrambling goes into the initial position of a clause headed by a [+wh] or [-wh] Comp. In addition, *wh*-scrambling in Japanese may also target the Spec₂ position of IP as a final landing site, accounting for its A-movement properties. This holds for short scrambling (of arguments), scrambling from infinitives and for scrambling into an intermediate position in the case of long scrambling out of finite clauses. However, this movement to Spec IP is never reconstructed. The different reconstruction properties of long and short scrambling were argued to follow from Chomsky's (1995) theory of Bare Phrase Structure, in which the label of adjunction structures receives no interpretation at LF and therefore has to be deleted. With respect to *wh*-questions containing more than one *wh*-phrase in Japanese, it was suggested that 'invisible' cluster formation of *wh*-phrases applies. This analysis was argued to provide the basis for a uniform account of multiple *wh*-question constructions in Japanese that is in line with the independently established generalization concerning scrambling and reconstruction.

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