# SYNTACTIC RECONSTRUCTION AND THE ARCHITECTURE OF GRAMMAR

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**Abstract:** This paper investigates the nature of total reconstruction, movement that apparently does not bring about any semantic effect. I compare two main approaches – the pure PF movement account and the copy theory of movement – in deriving syntactic reconstruction effects. The arguments presented in this article include scrambling, argument-adjunct asymmetry in binding and the interaction between raising and *wh*-movement. We also discuss the implications of these arguments on the architecture of grammar, namely the choice between the classical T-model, where PF movement is assumed to take place after narrow syntax, and the single cycle grammar, where PF and LF can intersperse with each other.

## 1. Setting the Stage

More often than not, syntactic movement contributes to semantic alternations, such as generating new possible scopal or binding relations. However, there are cases in which semantic interpretations seem to be ignorant of certain prior syntactic operations. Consider (1) for example.

(1) Somebody from New York is likely to win the lottery.

(1) is a typical English example of total reconstruction. On the surface, the DP *somebody* is higher than the modal operator *likely*; however, (1) is interpreted ambiguously and the *de dicto* reading, the semantic representation of which can be represented in (2), is still available.

(1) ∀w'[w' is as likely as any other world, given I know in w
→ ∃x [x is a person from New York in w' & x wins the lottery in w']]

In other words, this sentence can be felicitous as long as it is likely that the winner is from New York, without necessarily having to assume a particular New York participant possessing the property of being likely to win, the so-called *de re* reading. Given the availability of the *de dicto* reading, it seems that the LF involved is essentially the pre-movement structure, which in turn

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implies that overt raising of the subject can have no semantic effect at all[1]. There is a number of ways to derive such an LF representation. In this paper I will concentrate on two syntactic reconstruction options.

One option is to assume that pure PF movement is involved in raising the matrix subject, defended by Saulerland and Elbourne (2002). They suggest that raising of the subject should be purely phonological and therefore the *de dicto* reading comes for free from syntax since the subject simply stays in its underlying position. Their proposal entails that movement which serves to satisfy LF interface conditions cannot undergo total reconstruction. That is to say, because totally reconstructing movement, such as EPP satisfaction movement to subject position in English, takes place to meet PF interface conditions, no interpretation effects are expected, just like other phonological processes.

The other option has to do with the copy theory of movement. As pointed out by Chomsky (1995), the copy theory of movement turns movement into a simple operation: it involves the fundamental structure-building operation Merge and differs only in that it takes an object that has served as input for an earlier merger as input. Phonology automatically decides which copy –the upper or the lower one – to pronounce and semantics can also make a choice between the two. For a case like (1), phonology deletes the lower copy at PF while at LF the upper copy gets deleted. The LF will hence look as if subject raising never occurs and it will straightforwardly get the desired *de dicto* reading. Specifically, Fox (2002) proposes a particular version of the copy theory of movement, in which the copy is converted to a definite description through the Trace Conversion mechanism. Moreover, he adopts Lebeaux's (1988) and Chomsky's (1993) ideas of Late Merger that adjuncts can be added to a structure countercyclically. That is, a relative clause can be merged with an NP after a DP that contains the NP has undergone movement.

Though the two approaches are similar in that they put the burden of generating de *re/de dicto* readings on the syntactic derivation, winding up with structures where the subject falls within the scope of modal operator, they differ in their predictions in various constructions and, significantly, implications for the architecture of the grammar. For the PF-raised subject approach, maintaining T-model (Chomsky and Lasnik 1977), where PF movement must be preceded by movement that affects both LF and PF, is crucial. On the other hand, for the copy theory of movement approach, especially Fox's 2002 version, a single

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[1] As just noted, the *de re* reading is also possible in (1). However, in this paper I will concentrate on the presence of *de dicto* or *de re* reading in cases where it should be absent. This is not to dismiss the absence of the other reading as trivial. As pointed out in the literature, the availability of *de re* reading in certain constructions is by itself an interesting issue in the semantic and pragmatic literature (cf. Fodor & Sag 1982). A de re reading is more widely available than raising or QR, as exhibited below.

(i) John hopes [that he will be able to hire a typist].

In this example, the de re reading of a typist is possible, but the sentence does not appear to provide a context for raising or QR, which is generally assumed to be clause-bounded. However, since the in vestigation of this issue is out of the scope of this paper, I will leave it aside.

output model, developed in Bobaljik (1995) among others, must be assumed. In this model, covert operations do not necessarily apply after all overt operations have taken place; there is no arbitrary line between different kinds of operations.

The article consists of three major parts in comparing the two approaches. Section 2 discusses total reconstruction in Japanese scrambling. Specifically, I investigate the Quantifier Induced Island effect and the issue of argument-adjunct asymmetry in. In section 3, I re-examine the validity of the PF movement solution with regard to Barss's generalization. In Section 4, I discuss variable binding in ellipsis, especially Fox's version of the copy theory of movement and its consequences of deriving *de re/de dicto* readings. Section 5 concludes the paper.

## 2. Japanese Scrambling

It is well known that Japanese scrambling need not establish a semantically significant operator-variable relation; that is, it can literally be undone, namely the so-called total reconstruction (Saito 1989 among many others). Consider (3). In (3) the interrogative phrase is scrambled to a position outside the embedded question while still taking scope in the embedded question.

(3) [Dono hon-o]$_i$ Mary-ga John-ga $t_i$ karidasita ka
which book-acc Mary-nom John-nom checked-out Comp
siritagatteeiru.
want-to-know
'Mary wants to know which book John checked out form the library.'

The first piece of evidence that shows the dubious necessity of the PF approach in scrambling reconstruction has to do with the famous argument-adjunct asymmetry in Condition C violation (Lebeaux 1988, Chomsky 1995, Fox 2000). Consider (4)[2]:

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[2] In addition to the interpretation we discuss in the following, the primary reading of *dono* 'which' in (4) is that in which it modifies *Taroo-no gakusei* 'Taro's students' in each case. That is, (4a), under this interpretation, can be literally translated as: he wants to know an/the article by which of Taro's students Hanako criticized. In order to force the readings we focus on, one possible way is to place *dono* immediately before *ronbun* 'article' in each case, as in the following example.

(i) a. (?)? [Taroo$^1$-no gakusei-no *dono* ronbun]-o$_j$ karei-ga [Hanako-ga $t_j$ hihansita ka]
Taroo-gen student-gen which article-acc he-nom Hanako-nom criticized Q
siritagatteiru (koto)
want-to-know the fact that
'(the fact that) he$_i$ wants to know which article of Taro$_i$'s student Hanako criticized.'

b. ? [Taroo$_i$-no gakusei-ga kaita *dono* ronbun]-o$_j$ karei-ga [Hanako-ga $t_j$
Taroo-gen student-nom wrote which article-acc he-nom Hanoko-nom
hihansita ka] siritagatteiru (koto)
criticized Q want-to-know the fact that
'(the fact that) he$_i$ wants to know which article that Taro$_i$'s student wrote Hanako criticized.'

(4) a. ?(?)[Dono Taroo$_i$-no gakusei-no ronbun]-o$_j$ kare$_i$-ga Hanako-ga
which Taroi-gen student-gen article-acc hei-nom Hanako-nom
**t**$_j$ hihansita ka siritagatteriu.
criticized Q want-to-know
'He$_i$ wants to know which article of Taro$_i$'s student Hanako criticized.'

b. [Dono Tarooi-no gakusei-ga kaita ronbun]-o$_j$ karei-ga
which Taroi-gen student-nom wrote article-acc hei-nom
Hanako-ga **t**$_j$ hihansita ka siritagatteriu.
Hanako-nom criticized Q want-to-know
'He$_i$ wants to know which article that Taro$_i$'s student wrote Hanako criticized'

Under the PF movement approach, the ungrammaticality of (4a) is predicted because the object scrambling is purely phonological and *Taroo*, staying in its original position at LF, is bound by *kare* 'he', violating Condition C. However, the grammatical (4b) comes as a surprise under this account. Exactly like what takes place in (4a), *Taroo*, which only moves at PF, should also be bound by *kare* in (4b) but this sentence turns out to be fine. In other words, the contrast cannot receive a satisfactory account within a framework where PF movement must follow movement that affects both interfaces. On the other hand, it falls naturally in a model where PF and LF movement intersperses with each other, just as assumed in Fox's version of copy theory of movement approach. That is, adjuncts, not arguments, can be merged after movement and thus the adjunct that contains the referential expression is missing from the tail of the chain. This is why, in certain structures, movement appears to escape potential Condition C violations. Note that the similar asymmetry can be observed in English as well. Consider (5).

(5) a. [An argument that sentence (33) supports John$_j$'s theory]$_i$ would seem to himj ti to be satisfactory. (∃>seem, *seem>∃)

b. [An argument that supports John$_j$'s theory]$_i$ would seem to him$_j$ t$_i$ to be satisfactory. (∃>seem, seem>∃)

(5a) is true only if there is a particular argument existing in the speaker's mind (∃ > seem); it would not be true if there does not pre-exist such an argument. However, both *de re /de dicto* readings are available in (5b). This follows straightforwardly from the assumption that an adjunct can be added after

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However, under such circumstances, the contrast between the two is admittedly not as sharp as indicated in the text. One possible problem has to do with the argument status of the genitive phrase *Taroo-no gakusei-no* 'Taro's student's' in (ia). In the literature of event/process nominalization (cf. Grimshaw 1990), it has been noted that, although the argumenthood of internal arguments of transitive verbs is preserved in their derived event/process nominal counterparts, that of other verbal arguments, including agents, creators, locations, temporals, etc., is not that robust and obvious. Therefore, if the genitive phrase in question, which seems to assume a creator role regarding *ronbun*, is simply an adjunct, it is expected that the contrast between (ia) and (ib) is not that clear and straightforward.

movement, whereas the "seem > ∃" reading is unexpected in S&E's account. In other words, the PF movement approach cannot capture the asymmetry.

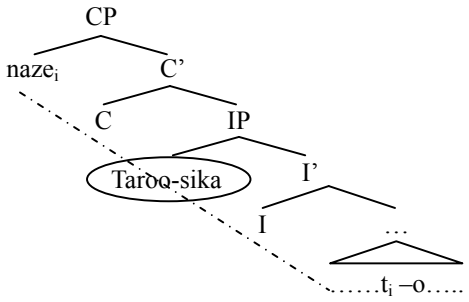
The second argument against the pure PF approach of scrambling reconstruction has to do with the Quantifier Induced Barrier (QUIB) effect (Beck 1996). Japanese is known to show a well-established restriction on the relative position of a *wh*-phrase and a Scope Bearing Unit (SBU). As exemplified in (6) (taken from Miyagawa 1999, 2004 and Ko 2005), a *wh*-phrase in Japanese may not be preceded by a Negative Polarity Item (NPI) such as *sika* 'only'; however, the counterpart sentence without *sika* 'only' is perfectly fine, as in (7).

(6) *Hanako-sika [Taroo-ga naze kuru to] iwa-nakat-ta no?
Hanako-only Tarro-Nom why come C say-not-Past Q

(7) Hanako-ga [Taroo-ga naze kuru to] itta no?
Hanako-Nom Tarro-Nom why come C said Q
'What is the reason x such that Hanako said that Taroo will come for x?'

A variety of approaches has been proposed to capture such an effect (Hoji 1985, Beck and Kim 1997, Hagstrom 1998, Pesetsky 2000, Kim 2002, Kratzer and Shimoyama 2002, Miyagawa 2002, Tomioka 2007). In the following discussion I assume with Beck and Kim that the ungrammaticality of (6) results from the QUIB effect[3]. In particular, in the spirit of minimalist framework, I assume that a wh-phrase contains an uninterpretable [*u*WH] feature, which has to be checked off by [+Q] feature, and [+Q] feature is hosted by a question morpheme in a head C. The intervention effect, as exhibited in (6), can be formulated as the following: at LF, a *wh*-phrase cannot be attracted to its checking position across a SBU. In other words, the *wh*-phrase in (6) must move to a head C containing [+Q] in order to be licensed; however, the licensing fails because the SBU *Hanako-sika* blocks the LF movement of *nani*. The LF structure looks like (8).

(8) The LF Structure of QUIB




[3] simply because it permits a reasonably simple presentation of my arguments in a manner consistent with other current works in syntax and thus, here, I am not in a position arguing for this particular approach.

Crucially, note that scrambling can save a potential QUIB violation. Consider (9)[4] (taken from Miyagawa 1999, 2004 and Ko 2005).

(9) (?)Naze$_i$ Hanako-sika [Taroo-ga $t_i$ kuru to] iwa-nakat-ta no?
why Hanako-only Taroo-Nom come C say-not-Past Q
(i) 'Did only Hanako say why Taroo will come?'
(ii) *'What is the reason x such that only Hanako said that Taroo will come for x?'

In this case, *wh*-phrase can be licensed again because, crucially, after the *wh*-phrase is overtly moved, the *wh*-phrase can reach its checking position without the interference of the SBU. Yet, notice that although the interrogative phrase has scrambled to a position outside the embedded question, it nevertheless takes scope in the embedded question. That is, the interpretation available is a matrix yes/no question with *naze* being construed as part of the indirect question of why *Taroo* will come. This means that *naze* must reconstruct to some position inside the embedded CP. Therefore, the *wh*-phrase seems to have two LF copies simultaneously in order to get the correct interpretations: one is for the formal *wh*-feature checking (and the escape from QUIB); one is for the scope taking relation (total reconstruction). This result is more compatible with the copy theory of movement[5]. On the other hand, the contrast between (6) and (9) is totally unexpected under the PF movement account. If the scrambled *naze* moves to its surface position via PF movement after Spell-Out, it is surprising why its movement has any bearing on the LF, namely the escape from QUIB. The LF structure of (9) should be exactly identical with that of (6).

Similar paradigm can be observed with Weak Crossover effects (WCO) as well. Consider the contrast between (10a) and (10b).

(10) a. ?*[[$e_i$ hitome$_j$ mita] hito]-ga dare$_i$-o suki-ni natta no
on saw person-nom who-acc fell-in-love-with
'the person who once glanced at $e_i$ fell in love with who$_i$'
b. dare$_i$o [[$e_i$ hitome$_j$ mita] hito]-ga $t_i$ suki-ni natta no

The marginality or ungrammaticality of (10a) is expected if we assume that $e_i$ in this example is pro. This is the case since, first, Japanese has null pronouns, and second if ei is a pronoun, then (10a) is a configuration of WCO. More specifically, (10a) contains a quantified NP that does not c-command a

[4] It has been noted in the literature that there are certain judgment variations about sentences like (6) and (8). For relevant discussions see Lee and Tomioka (2000) and Ko (2005).

[5] According to the standard copy theory of movement, it is assumed one only looks at one of the copies for the interpretation, either the upper or the lower one. But the case discussed here seems to show that both two copies are somewhat relevant for the correct interpretation. That is, it is possible that on some occasions we might want to allow two copies present at the same time. Nevertheless, the point here is to show that the result is still more compatible with the copy theory of movement than the PF-raised subject approach. Note that there are other alternative theories regarding the interpretation of copies at LF. For instance, Nunes (2004) have argued that part of the chain could be interpreted in the upper position and the other part in the lower one.

coindexed pronoun. Thus, (10a) is ruled out in exactly the same way as (11):

(11) ?* $His_i$ mother loves $everyone_i$.

Again, the contrast between (10a) and (10b) indicates that scrambling can save a sentence from a potential WCO violation. Given that the PF does not have anything to do with WCO, we can conclude that scrambling and its reconstruction must have some bearing at the LF, contrary to what S&E claim.

## 3. How likely is Barss's Generalization to be True?

To begin with, consider the contrast between (12a) and (12b). Barss (1986) observes that total reconstruction is impossible in (12a), where only one scopal construal in which *some* takes scope over *likely* and *every* is available, whereas (12b) allows another interpretation in which *some* takes scope below either *likely* or *every*.

(12) a. [How likely to $t_i$ address every rally]$_j$ is [some politician]$_i$ $t_j$?
(some > likely/every, *likely/every > some)

b. [Some politician]$_i$ is likely to $t_i$ address every rally.
(some > likely/every, likely/every > some)

Barss suggests the fact that the QP *some politician* in (12a) does not c-command any potential reconstruction site below *likely* in the overt form of (12a) is the factor blocking total reconstruction, thereby the so-called Barss's Generalization.

(13) *Barss's Generalization:*
Total reconstruction of an A-moved QP to a position X is blocked when the QP does not c-command X in the overt form.

Based on this, S&E argue that Barss's Generalization is a direct consequence of the PF movement nature of total reconstruction combined with two more assumptions: the c-command requirement on movement and the fact that PF processes must follow movement that affects both LF and PF. Moreover, they claim that other alternative accounts fail to make this prediction.

One major drawback of this argument is that perhaps the reason why *how likely* or *% likely* prohibits scope reconstruction is simply because it is not a raising environment to begin with. Lasnik and Saito (1992) are the first to propose that *how likely* sometimes behaves like a control predicate. This is illustrated in the following contrast:

(14) a. *[How likely $t_1$ to be a riot]$_2$ is there$_1$ $t_2$?
a' There is likely to be riot.
b. [How likely PRO to win] is John?
b' John is likely PRO to win.

They attribute the ungrammaticality of (14a), as opposed to (14a'), to a violation of the Proper Binding Condition noted in Fiengo (1977): the trace in the *wh*-phrase is not properly bound by their antecedents. On the other hand, (14b) is grammatical because *likely*-infinitive structures have two potential realizations: one is raising, and one control. The sentence in (14a) indeed exhibits the raising structure, controlled for by the expletive *there* whereas the grammatical (14b) has a control structure as represented in (14b'). Following their work, Boeckx (2001) and von Fintel and Iatridou (2003) observe that *how likely* and *% likely* bring about only scopally unambiguous sentences. In (15), only surface scope (∃ > 3% likely) is possible whereas in (16) only the reading of *someone* > *likely* is permitted and no scope reconstruction ever takes place.

(15) A soldier is 3 % likely to die in every battle.
(a soldier > 3% likely; *3% likely > a soldier)

(16) How likely to win the lottery is someone from New York?
(someone > likely; *likely > someone)

In this light, it appears that even with a DP that can undergo scope reconstruction in most cases, *3 % likely* and *how likely* do not permit scope reconstruction across them. Therefore, it is highly probable that *3 % likely* is not a raising predicate, but instead a control predicate (or at least ambiguous between the two). By the same reasoning we surely do not expect any scope reconstruction effect with a control predicate. As pointed out in von Fintel and Iatridou (2003), the possibility of *3 % likely* to be a control predicate is further confirmed by its incompatibility with expletives and idiom chucks, the classical tests for raising:

(17) a. There are likely to be many students waiting for you.
b. * There are 3 % likely to be many students waiting for you.

(18) a. Advantage is likely to have been taken care of John.
b. * Advantage is 3 %likely to have been taken care of John.

With these facts in mind, let us reconsider (12), repeated here as (19).

(19) a. [How likely PRO to address every rally]$_j$ is [some politician] $t_j$?
(some > likely/every, *likely/every > some)
b. [Some politician]$_i$ is likely to $t_i$ address every rally.
(some > likely/every, likely/every > some)
c. [Some politician]$_i$ is 3% likely PRO to address every rally.

If *how likely* is a control predicate *per se*, the argument built upon Barss's generalization does not make the PF movement approach any superior to others.

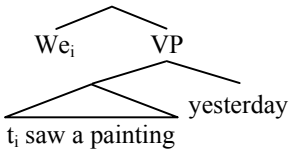
## 4. Excursus: Arguments about Variable Binding in Ellipsis

In the previous sections, I have shown that the copy theory of movement should be preferred over the PF movement approach in accounting for the total reconstruction effects. In the following, I want to digress a little and discuss Fox's (2002) version of copy theory of movement, which is pertinent to our current discussion. Crucially, however, note that the goal of this section is to examine the predictions made by this approach regarding the variable binding ellipsis facts, and the main point we made earlier, namely arguing for the copy theory of movement approach for total reconstruction, still holds.

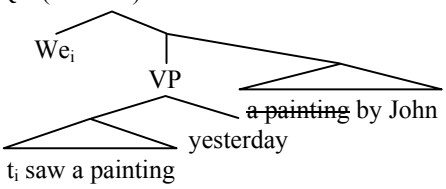
In order to resolve the conflict between the copy theory of movement and the parallelism effects in ACD, Fox proposes the late merger account, which derives a structure where the adjunct is missing from the tail of the chain. To understand the nature of this claim, consider (20). According to this proposal, the sentence is derived by covert QR followed by late merger: the DP *a painting* (the source DP) undergoes QR to VP, where the NP *painting* is late merged overtly with the adjunct *by John*.

(20) We saw a painting yesterday by John.

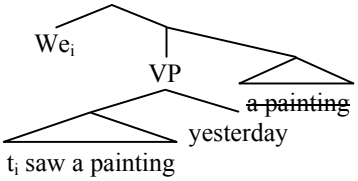
a.




b. *QR* ('covert')




c. *adjunct merger* ('overt')




This account has one significant prediction for the scope interpretation. Because extraposition involves covert movement of the source DP to the position where the adjunct is merged, and because reconstruction is impossible, due to late merger, it is thus predicted that the scope of the source DP will be at least as

high as the extraposition site[6]. This generalization can be illustrated by the contrast in (21).

(21) a. I read a book that John had recommended before you did.
b. I read a book before you did that John had recommended.

The (a) example is ambiguous. Under one interpretation, the sentence asserts that there exists a particular book such that the speaker read it before the listener read it. Under the other interpretation, the sentence asserts that the speaker read a book before the listener read one. The (b) example is unambiguous, restricted only to the interpretation in which the source DP is outside the antecedent VP and binds a variable in the elided VP. In terms of the current theory, for the (b) sentence to be derived, the source DP must move to a position above the before-clause where the relative clause is merged and thus the source DP must have scope outside the antecedent VP. Notice that, under this theory, whenever the adjunct is extraposed from the source DP, only '*the same book*' reading is derivable. However, this prediction is not borne out when a modal predicate is involved. Consider (22).

(22) I want to read a book before you do that John recommends.

According to this theory, because *that*-clause has extraposed from the source DP *a book*, the scope of *a book* would be higher than the VP; in other words, we have to QR the DP to a position above the modal predicate, minimally the VP headed by *want*. We would derive only the *de re* reading and end up only with a LF structure roughly like (23):

(23) [a book that John recommends]$_i$ [I want [PRO to read $t_i$]]

However, in addition to the *de re* reading, (22) has the de dicto interpretation such that that every possible world in which I get what I want is a world in which whenever there is a book recommended by John, I always read it before you read it. In other words, this version of copy theory of movement, though it makes correct predictions in total reconstruction environment as we showed previously, might be too restrictive in tackling DP scopal facts in modal contexts and thus some further modifications in this respect are desired.

## 5. Conclusion

In this article I have discussed arguments against the PF movement analysis of total reconstruction. In section 2, I concentrated on unexpected restrictions and construals in Japanese scrambling that do not follow from the PF movement

[6] As pointed out by Fox, this is another argument against semantic reconstruction. If semantic reconstruction (via higher type traces) were possible, it would not conflict with late merger of an adjunct.

view; in section 3 I argued that Barss's generalization does not make the PF-raised subject approach a necessity. The phenomena observed here are fully consistent with the single output model of syntax; however, undeniably, there also seem to exist some constructions, e.g. parasitic gaps (Nissenbaum 2001), pointing to an opposite direction, i.e. T model must be assumed. Thus, many details of the possible architecture of grammar need to be discovered and filled in and, hopefully, more future work will enlighten us on this topic.

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