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## The Generalized Transformation Analysis of Relative Clauses and Island Effects in Japanese

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### ABSTRACT

This paper offers an empirical argument for Chomsky's (1993) minimalist framework. It discusses movement within and out of relative clauses in Japanese, and presents evidence that chain formation within relative clauses can apply before they are combined with the relative head. It is also argued that scrambling is not "costless," but is subject to the Economy Principle that demands fewest steps in a derivation.  
(Area of interest: Syntax)

### 1. Introduction

Lebeaux (1988) proposes that relative clauses, and adjuncts in general, are inserted into the phrase structure after D-structure by an operation similar to Chomsky's (1955) generalized transformation. For example, the relative clause in (1) is adjoined to the wh-phrase after the latter moves to CP SPEC.

(1) [which book<sub>i</sub> [that John read]] did he like  $t_1$

Chomsky (1992) radically generalizes this proposal in his minimalist program: he proposes to eliminate D-structure and S-structure all together, and to construct phrase structures in a bottom-up fashion. Within this model, chain formation (movement) can apply as the phrase structure is constructed, since there is no level of representation that constitutes the input for transformational operations. Thus, the wh-phrase in (2) can move to the embedded CP SPEC before the embedded CP is combined with the matrix verb to form the matrix V'.<sup>1</sup>

(2) John wonders [what<sub>i</sub> [Mary bought  $t_1$ ]]

In this paper, I will discuss movement within and out of relative clauses in Japanese, and present direct evidence that chain formation within a relative clause can apply before it is combined with the relative head. In the following section, I will briefly discuss the categorial status of Japanese relative clauses, and present one of the arguments that it is not CP but IP. Then, in Section 3, I will illustrate a paradox that arises from this IP hypothesis, and show that the paradox is straightforwardly resolved under the minimalist model. Finally in Section 4, I will discuss one consequence for the analysis of scrambling.

## 2. The IP Hypothesis

It has been argued extensively in the literature that Japanese relative clauses, and more generally, prenominal sentential modifiers, are of the category IP. (See, for example, Saito (1985), Tateishi (1991), Sakai (1990), and Murasugi (1991).) Here, I will discuss one piece of direct evidence.

As shown below, the complementizers to and no can never appear in prenominal sentential modifiers.<sup>2</sup>

(3)a. [[Mary-ga John-ni  $e_i$  watasita] (\*to/no)] hon;  
           -nom    -to   handed            book  
       (the book Mary handed to Mary)

b. [[John-ga sono hon -o nusunda] (\*to/no)] syooko  
           -nom that book-acc stole            evidence  
       (the evidence that John stole that book)

This fact directly follows if the embedded sentences in (3) are of the category IP. Then, there is no structural position where the complementizers can appear. The fact in (3b) is particularly important since an overt complementizer is required in English pure complex NPs. For example, (4a-b) are ungrammatical without the complementizer that.

- (4)a. the claim [\*(that) [Mary handed the book to John]]  
       b. the evidence [\*(that) [John stole the book]]

Stowell (1981) accounts for this fact in terms of the ECP. (See also Kayne (1981).) He argues that when that is absent, the C position is occupied by a non-pronominal empty category. Then, the empty category violates the ECP in the case of (4a-b), since it is not properly (lexically) governed. This account implies that the sentential modifier in (3b) must be of the category IP. If it is a CP, then the empty C should be in violation of the ECP. Thus, we falsely predict that the example is out without an overt complementizer.

The IP hypothesis for relative clause, on the other hand, is consistent with the base-generation analysis of Japanese relativization. Kuno (1973) points out that relativization in Japanese does not exhibit island effects. Thus, examples like (5) are perfectly grammatical.

- (5) [[[ $e_i$   $e_j$  kiteiru] yoohuku<sub>j</sub>]-ga yogoreteiru] sinsi;  
           wearing-is suit   -nom dirty-is       gentleman  
       (the gentleman who the suit that he is wearing is dirty)

Perlmutter (1972) relates this to another fact of Japanese, i.e. the language freely allows *pro* in any argument position. He proposes that Japanese relativization need not involve movement since the gap can be base-generated as *pro*.<sup>3</sup> Then, we do not expect island effects on Japanese relativization. If Japanese relative clauses are formed simply by the binding of *pro* by the relative head, and not by operator movement to CP SPEC, it is not surprising even if the relative clauses lack the C projection.

The IP hypothesis, illustrated above, seems to be consistent with the island effects on movement discussed in the literature. As noted by Haig (1976), Harada (1977), and Saito (1985), among others, complex NPs are islands for movement in Japanese, as in English. For example, scrambling out of a complex NP results in marginality as shown in (6a-b).

- (6)a. ??John-ni<sub>j</sub> [Bill-ga [[Mary-ga  $t_j$   $e_i$  watasita] hon<sub>i</sub>]-o nusunda]  
 -to -nom -nom handed book -acc stole  
 (Lit. To John, Bill stole the book Mary handed)
- b. ?sono hon -o<sub>j</sub> [Bill-ga [[John-ga  $t_j$  nusunda] syooko] -o mituketa]  
 that book-acc -nom -nom stole evidence-acc found  
 (Lit. That book, Bill found evidence that John stole)

Island effects are for some unknown reason weak in the case of scrambling, but (6a-b) are clearly worse than (7a-b).<sup>4</sup>

- (7)a. John-ni<sub>j</sub> [Bill-ga [Mary-ga  $t_j$  sono hon -o watasita to] omotteiru]  
 -to -nom -nom that book-acc handed Comp think  
 (To John, Bill thinks that Mary handed that book)
- b. sono hon -o<sub>j</sub> [Bill-ga [John-ga  $t_j$  nusunda to] omotteiru]  
 that book-acc -nom -nom stole Comp think  
 (That book, Bill thinks that John stole)

The marginality of (6a-b) can be straightforwardly accounted for under the Barriers theory. The IP prenominal modifiers in these examples are adjuncts, and hence, barriers for movement.<sup>5</sup> Since adjunction can nullify the effects of barriers, if scrambling can proceed via adjunction to these IPs, we do not expect any Subjacency effects. But as adjunction to adjuncts are prohibited, we correctly predict that these examples are Subjacency violations.

### 3. The Adjunction Paradox

As seen in the preceding section, the IP hypothesis for Japanese prenominal sentential modifiers seems to be well motivated. However, there is one interesting problem with this hypothesis. As noted above, the account for the islandhood of complex NPs crucially relies on the assumption that adjunction to adjuncts is prohibited. In particular, adjunction to the prenominal IP modifiers must not be allowed. But those IPs are clearly possible landing sites for scrambling. For example, the following

examples are perfectly grammatical:

- (8)a. [John-ni<sub>j</sub> [Mary-ga  $t_j$   $e_i$  watasita]] hon<sub>i</sub>  
 -to -nom handed book  
 (the book Mary handed to John)
- b. [sono hon -o<sub>j</sub> [John-ga  $t_j$  nusunda]] syooko  
 that book-acc -nom stole evidence  
 (the evidence that John stole that book)

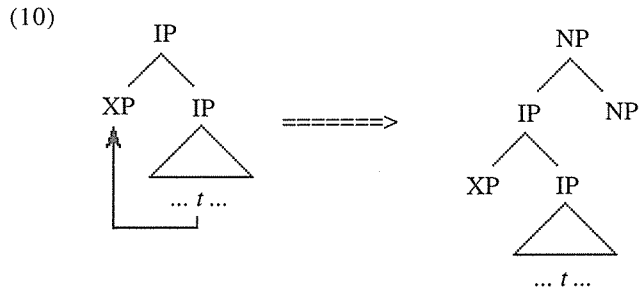
The IPs in question are possible landing sites not only for clause-internal scrambling, but also for long-distance scrambling, as shown below.

- (9)a. [John-ni<sub>j</sub> [Bill-ga [Mary-ga  $t_j$   $e_i$  watasita to] omotteiru]] hon<sub>i</sub>  
 -to -nom -nom handed Comp think book  
 (the book Bill thinks Mary handed to John)
- b. [sono hon -o<sub>j</sub> [Bill-ga [John-ga  $t_j$  nusunda to] omotteiru]] zizitu  
 that book-acc -nom -nom stole Comp think fact  
 (the fact that Bill thinks that John stole that book)

If scrambling is an adjunction operation, as argued, for example, in Saito (1985) and Webelhuth (1989), then the examples in (8)-(9) clearly indicate that adjunction to the IP prenominal modifiers is possible.<sup>6</sup> Note that the scrambled phrase in these examples cannot be adjoined to the whole complex NP: if Subjacency allows such adjunction, then there would be no way to explain the marginality of (6a-b). We now apparently have a paradox: the islandhood of complex NPs implies that adjunction to IP prenominal modifiers is not possible, but the examples in (8)-(9) indicate that it is.

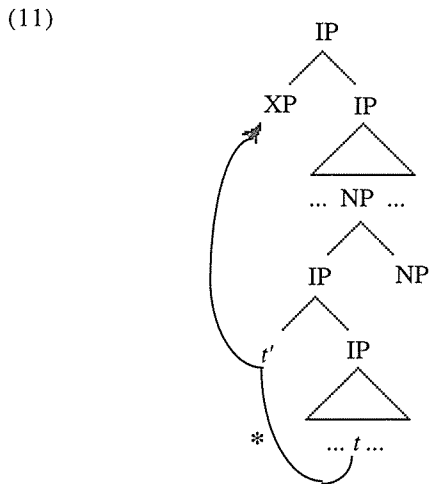
This apparent paradox, however, is immediately resolved under the minimalist approach. This approach, as noted above, allows chain formation (movement) to take place as the phrase structure is constructed. Thus, the scrambling in (8)-(9) can take place before the embedded IP is combined with the nominal head. The case of relative clause is illus-

trated in (10).



This means that the scrambled phrase can be adjoined to the IP before the IP attains the adjunct status. Then, if the relevant constraint on adjunction prohibits adjunction to adjuncts, the scrambling operation in (8)-(9) is correctly allowed.

On the other hand, the situation is different in the case of (6a-b). Since these examples involve scrambling out of a complex NP, the scrambling chain can be formed only after the IP modifier is combined with the nominal head. Again, the case of relative clause is illustrated in (11).

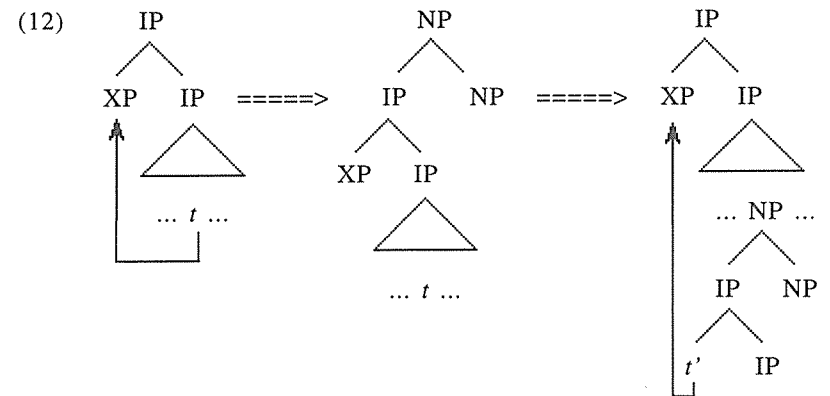


Hence, when the scrambling applies, the IP already has the adjunct status. Thus, the scrambled phrase cannot adjoin to this IP on the way to the sentence-initial position, and we correctly predict the islandhood of the complex NP.

4. Implication for the Analysis of Scrambling

It was shown above that the minimalist approach straightforwardly resolves the “adjunction paradox,” i.e. a modifier IP is a possible final adjunction site, but not an intermediate adjunction site. The “paradox” then provides supporting empirical evidence for the approach.

The account for the islandhood of complex NPs proposed above has one interesting implication for the analysis of scrambling.<sup>7</sup> Note first that the account for (6a-b) implies that the scrambled phrase must be moved to its final landing site by one application of ‘Form Chain’. Suppose, on the contrary, that (6a), for example, can be derived by scrambling Johnni (to John) to the initial position of the relative clause as in (10) first, and then, by scrambling it again to the sentence-initial position. The derivation is illustrated in (12).



If this derivation is allowed, we incorrectly predict that there is no Subjacency violation. By assumption, the first scrambling does not violate the constraint on adjunction sites. The second scrambling does not violate Subjacency

since the effect of the IP as a barrier is nullified by adjunction. Hence, this derivation must be blocked in favor of the one illustrated in (11).

The desired "blocking effect", of course, follows from the Economy of Derivation (Chomsky (1989, 1992)). Since (11) involves only one instance of 'Form Chain,' while (12) requires two, the former is shorter and hence blocks the latter. But this in turn implies that scrambling is not totally "costless."<sup>8</sup> And this conclusion directly contradicts some analyses for the apparent "optionality" of scrambling proposed in the literature. Fukui (1993), for example, presents an interesting account for this property of scrambling. There, he assumes that scrambling is costless, and hence, that its optionality is consistent with the Economy Principle. The major part of the paper is devoted to explaining why scrambling, as opposed to wh-movement and NP-movement, is costless. (See also Fukui and Saito (1992) for a similar approach.) But if scrambling is in fact costless, the derivation in (12) cannot be more costly than the one in (11), and the latter should fail to block the former. Hence, if the analysis of (6) presented above is correct, a different explanation must be provided for the apparent optionality of scrambling. More generally, the analysis indicates that scrambling is quite similar to wh-movement and NP-movement with respect to the Economy of Derivation, despite its apparent optionality.

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#### Notes

1. In this case, the chain formation in fact must apply before the embedded CP is combined with wonder because of the extension requirement

on substitution.

2. The complementizer to occurs in complement CPs, while no shows up in cleft sentences, as shown below.

- (i) Bill-ga [[Mary-ga John-ni sono hon -o watasita] to] omotteiru  
 -nom -nom -to that book-acc handed Comp think  
 (Bill thinks that Mary handed that book to John)
- (ii) [[Mary-ga John-ni e<sub>i</sub> watasita] no] -wa sono hon -o<sub>i</sub> da  
 -nom -to handed Comp-top that book-acc is  
 (It is that book that Mary handed to John)

See Hoji (1989), Murasugi (1991) for detailed discussion.

3. See Saito (1985), Murasugi (1991) for detailed discussion on the base-generation analysis of Japanese relative clauses.

4. The islandhood of complex NPs is confirmed by PP topicalization (Saito (1985)) and comparative deletion (Kikuchi (1989)), where the Subjacency effects show up more clearly.

5. Here, I simplify the exposition a little ignoring the distinction between BCs and barriers, along the lines of Chomsky and Lasnik (1991). Stowell argues that nouns do not take sentential complements, and hence, sentential modifiers of nouns are all adjuncts. Although this hypothesis is controversial for English, it clearly holds in Japanese. That is, all prenominal sentential modifiers are clearly adjuncts in this language.

6. Mahajan (1990) argues that clause-internal scrambling in Hindi need not be adjunction but can be movement to AGR SPEC. If this hypothesis applies to Japanese, then (9a-b) alone are the crucial examples.

7. This was pointed out to me by Mamoru Saito (personal communication).

8. The same conclusion is drawn by Sohn (1993) and Abe (1993) on independent grounds.

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