

International Christian University
Publication VI-A

Descriptive and Applied Linguistics

Bulletin of the ICU Summer Institute in Linguistics

Vol. XVIII

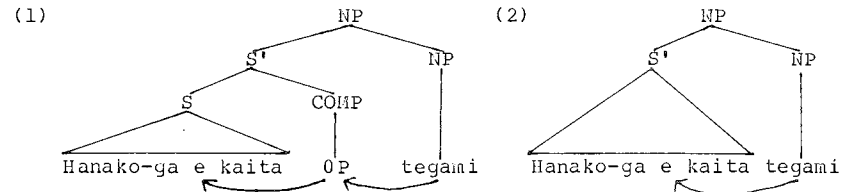
January 1985

International Christian University
Tokyo Japan

Japanese Relatives and the Theory of Empty Operators

Ralf-Armin Mester
Department of Linguistics
University of Massachusetts at Amherst, USA

In this paper, I will consider some questions concerning the syntactic structure of Japanese relative clauses. In particular, I will compare two analyses which differ crucially in the presence or absence of an empty operator in COMP. The two analyses are informally sketched in (1) and (2) for the noun phrase Hanako-ga kaita tegami 'the letter which Hanako wrote'.



In (1), the relative clause contains an empty operator in COMP binding the gap - essentially the mirror image of English relative clause structure. The head NP tegami is related to the relative clause by predication. The relationship between head NP and gap is indirect, mediated through the COMP position. In (2), on the other hand, there is no empty operator; the head NP tegami itself is the relativization operator, and it binds the gap in the relative clause directly.

In one form or another, these two basic approaches are familiar from the literature on Japanese linguistics. I will compare them here in the framework of the Government and Binding Theory (Chomsky 1981,1982), and I will tentatively conclude that there is some evidence in favor of the structure in (2), without empty operator, a result which has some consequences for the theory of empty operators in general.

Since an analysis with an operator in COMP is well motivated for relative clauses in a variety of languages, English among them, it could be argued that (1) is the unmarked assumption. (2), on the other hand, seems closer to the surface facts of Japanese, where overt elements corresponding to operators never appear in COMP, neither in relative clauses nor in questions. Chomsky (1982) considers both possibilities for other cases where no overt element appears in COMP in relative clauses, without reaching a firm conclusion.

Let us consider, then, whether there is any evidence in Japanese which could bear on the issue. One sort of evidence can be found in the behavior of relative clauses with respect to weak crossover. In English, it is well known ever since Wasow's (1972) dissertation that relative clauses differ from questions in this respect: questions, but not relative clauses, show weak crossover effects. We can see this in the paradigm given in (3), which is taken from Chomsky (1982).

- (3) a. his mother loves John
 i i
 b. the man who his mother loved e best
 i i i i
 c. *who did his mother love e best
 i i i i
 d. *his mother loves everyone
 i i

(3a) is grammatical with coreference between his and John. The corresponding relative clause in (3b) is grammatical, too. But the question (3c) is ungrammatical. Similarly, if we replace John in (3a) by a quantifier like everyone, the result is ungrammatical under the intended interpretation.

Chomsky (1982: 92-95) proposes the following explanation for these facts. (3c) and (3d) are excluded by the Bijection Principle proposed by Koopman and Sportiche (1981), which is given in (4) (in the formulation of Saito & Hoji (1983)).

(4) BIJECTION PRINCIPLE

Every operator must locally bind exactly one variable, and every variable must be locally bound by exactly one operator.

The Bijection Principle applies at LF. (3c) now has the LF representation in (5), and we see that the operator who is coindexed with two elements: his and the gap.

- (5) [who (did) [his mother love e best]]
 S' i S i i

(3d) is excluded in the same way, since everyone undergoes Quantifier Raising, leaving a trace, and ends up coindexed with both the pronoun his and the trace in object position.

The relative clause in (3b), on the other hand, can have the LF representation (6).

- (6) [the man [who [his mother loved e best]]]
 NP i S' j S i j

In this case, the operator who is only coindexed with one element, the gap, whereas the pronoun his is coindexed with the head noun, and the indices of head and operator differ at LF. So there is no violation of the Bijection Principle. After LF, a rule of Predication applies to (6), and this rule sets i equal to j. This gives us the intended interpretation of (3b), but there is no violation of the Bijection Principle, since this principle applies only at LF, not later. Notice that this explanation relies on the fact that there are two elements - head NP and operator in COMP - which play a role in relative clauses, while there is only one element - namely the wh-operator in COMP - which plays a role in questions. This difference is reflected in differing indexing structures which we can schematically represent as follows:

- (7) a.
 operator pronoun gap
 b.
 head operator pronoun gap

Now, if Japanese relative clauses have the structure in (1), we would expect them to behave just like English relative clauses, there should be no weak crossover effects. But if they do not have an operator in COMP, we might expect them to behave like English questions, because then head noun and operator would be one and the same entity, and there could be no later coindexing between the two which could circumvent the Bijection Principle. The indexing structure would be like this:

- (8)
 pronoun gap head/operator

It is not easy to test these predictions. As pointed out by Saito and Hoji (1983), we cannot use pronominal forms like kare or sono hito to correspond to English pronouns in potential weak crossover situations. These forms can never be bound by an operator, whether locally or nonlocally. For example, even the sentence (9) is ungrammatical, if kare is intended to be bound by daremo.

- (9) * daremo -ga kare -no nahaoya-o aishite iru
 i i
 everyone-NOM his -GEN mother-ACC loves
 'Everyone loves his mother.'

This fact implies that these forms cannot be variables, and therefore the Bijection Principle is irrelevant to them. Saito and Hoji (1983), who studied weak crossover in Japanese, found that *jibun* is the right element to look at; it can function as a variable and shows weak crossover effects. Two of their examples are given in (10) and (11) (Saito & Hoji 1983: 248-249).

- (10) [Hanako-ga jibun -o kiratteiru koto]-ga Jirō -o
 NP i i
 -NOM him -ACC dislikes fact -NOM -ACC
 yūtsu-ni shite iru
 depressed makes
 'The fact that Hanako dislikes him depresses Jirō.'

- (11) ?*[Hanako-ga jibun -o kiratteiru koto]-ga
 NP i
 -NOM him -ACC dislikes fact -NOM
 daremo -o yūtsu-ni shite iru
 i
 everyone-ACC depressed makes
 'The fact that Hanako dislikes him depresses everyone.'

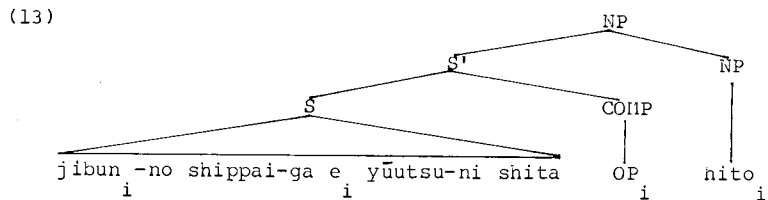
(11) is considered to be worse than (10), and this contrast can be accounted for by the Bijection Principle: *daremo* in (11) undergoes Quantifier Raising, and at LF, it is in an S-adjoined position, from where it binds both its trace and the *jibun* which is part of the subject NP, violating the Bijection Principle. Notice that only certain somewhat exceptional occurrences of *jibun* can enter into weak crossover violations: In order to fall under the Bijection Principle, *jibun* must be a variable; in order to be a variable, it must not be locally A-bound, in particular, not A-bound by a subject (assuming that the subject position is an A-position). Normally, however, *jibun* has to be bound by a subject. Relevant cases, then, are those - first pointed out by Noriko Akatsuka - where certain psychological predicates like *yūtsu-ni suru* 'make depressed', *zetsubō-e oiyaru* 'drive into desparation' allow tautoclausal object-antecedents for *jibun*.

(12) exemplifies the full weak crossover paradigm in Japanese, including relative clauses, parallel to the English paradigm in (3).

- (12) a. jibun -no shippai-ga Tarō -o yūtsu-ni shita
 i i
 his -GEN failure-NOM Tarō -ACC depressed made
 'His failure depressed Tarō.'
- b. ?*jibun -no shippai-ga e yūtsu-ni shita hito
 i i
 his -GEN failure-NOM depressed made man i
 'man whom his failure depressed'
- c. ?*jibun -no shippai-ga dare -o yūtsu-ni shita no
 i i
 his -GEN failure-NOM who -ACC depressed made?
 'Whom did his failure depress?'
- d. ?*jibun -no shippai-ga daremo -o yūtsu-ni shita
 i i
 his -GEN failure-NOM everyone-ACC depressed made
 'His failure depressed everyone.'

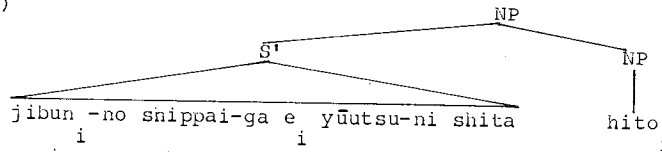
The judgments in these cases are rather delicate, but there is a strong tendency for the relative clause in (12b) to be judged considerably worse than the sentence in (12a). It seems to pattern with questions as (12c) and sentences containing quantifiers as (12d). This is distinctly different from English, as we have seen above.

With some idealization, we can interpret the paradigm in (12) as evidence for the relative clause structure in (2), without empty operator. The analysis in (1), with empty operator, allows the LF representation in (13).



There is no Bijection Principle violation in (13), and the weak crossover effect in (12b) is not explained. The LF representation without empty operator, given in (14), on the other hand, violates the Bijection Principle, and this accounts for the weak crossover effect in (12b).

(14)



There is no empty operator, therefore the head noun *hito* has to be coindexed with both the gap and the pronoun *jibun*.

There are several ways to show that what is involved is really a violation of a principle at LP. It is well known that the so-called *aboutness* relation plays an important role in Japanese thematization and relativization, a matter to which I will return. It is plausible that aboutness relations, which involve pragmatic factors of various kinds, are not established at a syntactic level, but at some point later than LF. Aboutness relations do not create weak crossover effects corresponding to those in (9b). This is illustrated in (15) and (16). (15) is a simple sentence with a psychological predicate.

(15) *jibun -no snippai-ga Bill -o zetsubō-e oiyatta*
 his -GEN failure-NOM -ACC into desperation drove

(16) shows two different relative clauses formed from this sentence.

- (16) a. ?**jibun -no snippai-ga e zetsubō-e oiyatta hito*
 his -GEN failure-NOM into desperation drove man
 'man who his failure drove into desperation'
- b. *jibun -no snippai-ga kodomo-o zetsubō-e oiyatta hito*
 his -GEN failure-NOM child -ACC into desp. drove man
 'man such that his failure drove his children into desp.'

(16a) has a real gap in object position, and it is ruled out by the Bijection Principle at LF. In (16b), on the other hand, there is an aboutness relation between *hito* and *kodomo* (under a certain interpretation). According to my informants, (16b) is more acceptable than (16a). This indicates that (16a) is excluded by a principle which applies strictly at LF.

A second kind of evidence leading to the same conclusion comes from certain facts about head-internal (or pivot-independent) relative clauses in Japanese. Kuroda pointed out the existence of such

relative clauses in Japanese (see Kuroda 1974, 1975-76, 1976-77). The examples in (17) and (18) illustrate the phenomenon. (17) contains a normal headed relative clause.

- (17) *omawari-wa [e akiya-kara mono-o hakobidashiteirul*
 policeman-TOP empty house-from things-ACC carry out
dorobō -o tsukamaeta.
 thief -ACC caught
 'The policeman caught the thief who was carrying things out of the empty house.'

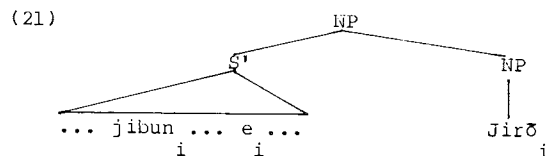
(18) shows a head-internal version of the same relative clause.

- (18) *omawari-wa [dorobō-ga akiya-kara mono-o*
 policeman-TOP thief-NOM empty house-from things-ACC
hakobidashiteirul-no-o tsukamaeta.
 carry out -ACC caught

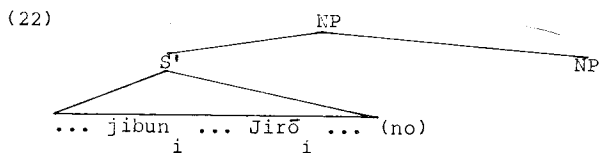
Kuroda showed that head-internal relative clauses, historically a residue of a productive relative clause formation strategy in Classical Japanese, have a highly restricted occurrence in Modern Japanese. They are possible only under certain pragmatic conditions (Kuroda's Relevancy Condition). Itô (1984) shows that head-internal relative clauses differ from ordinary headed relative clauses with respect to weak crossover. The examples (19) and (20) (from Itô 1984) illustrate this difference.

- (19) ?*[[*Hanako-ga jibun -o kiratteiru koto]-ga e*
 (I) -NOM him -ACC dislike fact -NOM
yūtsu-ni shiteiru Jirō]-o nagusameta.
 depressed made -ACC consoled
 'I consoled J whom the fact that H disliked him depressed'
- (20) [[*Hanako-ga jibun -o kiratteiru koto]-ga*
 (I) -NOM him -ACC dislike fact -NOM
Jirō -o yūtsu-ni shiteiru nol-o nagusameta.
 -ACC depressed made -ACC consoled

(19), where *Jirō* is in normal head position, seems to be less acceptable than (20), where *Jirō* occurs as a clause-internal head. In terms of the present discussion, this means that (19), but not (20), violates the Bijection Principle at LF. (19) has the LF representation (21), which is ruled out by the Bijection Principle.



Itō (1984) suggests that head-internal relative clauses undergo a rule of head-raising which applies to LF, not before LF; there are independent arguments for this assumption (cf. also Finer (1983), who proposes and motivates a similar analysis for head-internal relative clauses in Yuman). For the example in (19), this means that the LF representation is essentially as in (22).



The semantic head *Jirō* is still part of the S', it will raise only after LF, and the structure is well-formed with respect to the Bijection Principle. Notice that the contrast between things happening before LF and things happening after LF, which played an important role in the English weak crossover paradigm, shows up in Japanese, too, in this case, but in a different form and with different consequences: the observable result is not a contrast between relative clauses and questions, but a contrast between two kinds of relative clauses.

Assuming the Bijection Principle, the existence of weak crossover effects in Japanese relative clauses provides some indirect evidence for a relative clause structure without empty operator in COMP. Now we have to ask two further questions: Is there any more direct evidence for this kind of structure? And secondly, is there any way of in principle ruling out a structure with empty operator in COMP for Japanese?

Let us turn to the first question. There is indeed direct evidence for a relative clause structure without empty operator, and it is familiar from the literature. The many similarities between relativization and thematization first pointed out by Kuno (1973: 243-260), and in particular the existence of relative clauses without a gap, are relevant in this context. (23) and (24) are representative examples.

(23) konyakusha-ga shinde shimatta Hanako
 fiancé -NOM died
 'Hanako, who (was affected by the fact that) her fiancé died'

(24) Richard Burton-ga shinde shimatta Elizabeth Taylor
 -NOM died
 'Elizabeth Taylor, who (was affected by the fact that) Richard Burton died'

In (24), there can be no empty operator, because there is no variable it could possibly bind, and vacuous operators are prohibited in general. This evidence is fairly straightforward, and it immediately tells the child learning Japanese that relative clauses without empty operators are possible.

There can be no serious doubt, then, about the existence of this structure. This does not imply, however, that relative clauses with empty operator are impossible in cases where the relative clause contains a gap, and this leads us to our second question: How can we rule out a second, alternative, derivation with empty operator in these cases?

To achieve this result, we have to find a plausible way of restricting the distribution of empty operators in Universal Grammar, we have to give some more content to the theory of empty operators. Let me make a tentative suggestion. Keeping the properties of empty elements as close as possible to those of overt elements has been a leading idea in GB theory, well represented in Chomsky (1982). Apart from principles of local identification and local sanctioning (like the ECP) and apart from the Case Filter, their typology and distribution is identical, and a proliferation of empty categories with special properties and distribution is undesirable. From this perspective, empty operators in COMP would be somewhat disturbing in Japanese, since overt elements corresponding to operators are never moved to this position in the syntax. The problem poses itself still more seriously when we consider languages with a sentence-final COMP position in general: rightward wh-movement of overt elements into a sentence-final COMP seems to be nonexistent. It would be quite undesirable if we had to allow rightward movement to COMP only for empty elements.

Generalizing from these considerations, we could assume that, in a given language, empty operators can occur only in structural positions where overt operator-elements can occur as well, in positions which are, so to speak, already "activated" by overt operators. We could call this the "principle of paradigmatic triggering" for empty operators. Such a principle is not implausible, and it rules out the occurrence of an empty operator in COMP in Japanese relative clauses, as desired.

To conclude, I would like to return to the question of relative clause structure and weak crossover, extending the analysis presented above beyond Japanese. This analysis predicts that quite generally weak crossover effects should occur when the relative clause head functions simultaneously as a relativization operator. It is interesting that this prediction is borne out even in languages like English and German, where weak crossover effects normally do not occur in relative clauses. We have to look at a special kind of relative clause, namely free relatives. If head and operator are identical in free relatives (as for example in the analysis proposed by Bresnan & Grimshaw (1978)), we expect weak crossover effects in free relatives. And they do indeed occur, as illustrated in (25). I will here concentrate on the German examples.

- (25) *wen auch immer (sogar) seine Mutter e hasst
 i i i
 *whoever (even) his mother hates e
 i i i

(25) is bad up to incomprehensibility in German, and the English example is also unacceptable. (26) shows a corresponding normal relative clause, there is no weak crossover effect.

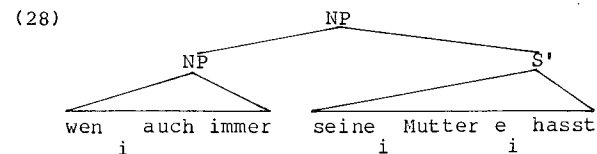
- (26) der Mann, den (sogar) seine Mutter e hasst
 i i i
 the man who (even) his mother hates e
 i i i

The reason why (25) is bad cannot be attributed to the quantified nature of the noun phrase, because (27), with a quantified head NP, is perfectly acceptable in German.

- (27) jeder Mann, den (sogar) seine Mutter e hasst
 i i i
 every man who (even) his mother hates e
 i i i

Assuming that (25) has the LF representation in (28), the weak crossover effect in (25) is explained by the Bijection Principle,

analogous to the Japanese examples discussed above.*



* I would like to thank Jane Grimshaw, Nobuko Hasegawa, Junko Itô, David Pesetsky, and the participants of the 1984 ICU Summer Institute in Linguistics for helpful discussion and suggestions. All remaining errors, of course, are mine.

Bibliography

- Bresnan, J. & J. Grimshaw (1978) "The Syntax of Free Relatives in English," *Linguistic Inquiry* 9.3.
 Chomsky, N. (1981) *Lectures on Government and Binding*, Foris, Dordrecht.
 Chomsky, N. (1982) *Some Concepts and Consequences of the Theory of Government and Binding*, MIT Press, Cambridge/Mass.
 Finer, D. (1983) *The Formal Grammar of Switch Reference*, U. Mass PhD Dissertation.
 Itô, J. (1984) "Head-internal Relatives in Japanese," unpubl. paper, U. Mass, Amherst.
 Koopman, H. & D. Sportiche (1981) "Variables and the Bijection Principle," paper presented at the 1981 GLOW conference, Goettingen.
 Kuno, S. (1973) *The Structure of the Japanese Language*, MIT Press, Cambridge/Mass.
 Kuroda, S. Y. (1974) "Pivot-Independent Relativization in Japanese (I)," *Papers in Japanese Linguistics* 3, 59-93.
 Kuroda, S. Y. (1975-76) "Pivot-Independent Relativization in Japanese (II)," *Papers in Japanese Linguistics* 4, 85-96.
 Kuroda, S. Y. (1976-77) "Pivot-Independent Relativization in Japanese (III)," *Papers in Japanese Linguistics* 5, 157-179.
 Saito, M. & H. Hoji (1983) "Weak Crossover and Move in Japanese," *Natural Language and Linguistic Theory* 1, 245-359.
 Wasow, T. (1972) *Anaphora in Generative Grammar*, MIT PhD Dissertation.