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HEAD-MOVEMENT AT LF AND PF*

-The Syntax of Head-Internal Relatives in Japanese-

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1. Introduction

In Japanese the relative clause precedes the head noun phrase, and the relativized noun phrase appears as a gap in both restrictive (1a) and nonrestrictive (1b) relatives (see Kuroda 1965, Kuno 1973, Inoue 1976, etc.).

- (1)a. omawari-wa [_θ akiya-kara mono-o hakobidasiteiru] doroboo-o
policeman-top [empty house-from things-acc carry out] thief-acc

tsukamaeta.
caught

"The policeman caught the thief that was taking things out from an uninhabited house."

- b. Taroo-wa [_θ rooka-o isoide aruitekita] Hanako-ni deatta.
Taro-top [corridor-acc hurriedly walked] Hanako-dat met

"Taro happened to meet Hanako, who was hurriedly walking through the corridor."

It is less wellknown that Japanese also allows head-internal relative clauses comparable to those of Navajo discussed in Platero (1974). Thus, the sentences in (1) can be rephrased as in (2),

where the relative clause contains, instead of a gap, the head NP itself, and the complementizer no appears as the rightmost element of the NP.

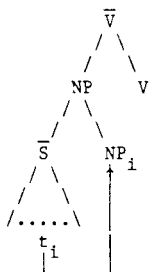
- (2)a. omawari-wa [doroboo-ga akiya-kara mono-o
 police-top {thief-nom empty house-from things-acc
 hakobidasiteiru]-no-o tsukamaeta.
 take out -acc caught
- b. Taroo-wa [Hanako-ga rooka-o isoide aruitekita] -no -ni deatta.
 Taro-top [Hanako-nom corridor-acc hurriedly walked]-dat met

Except for a series of papers by Kuroda (1974-77), which also deal with Classical Japanese, it seems that these head-internal constructions¹ have not received much attention in the generative literature. The goal of this paper is to consider some properties of Japanese head-internal relatives in the light of recent developments in the Government and Binding Theory (Chomsky 1981, 1982, etc.). It will be argued that these constructions involve movement at both LF and PF. The external head at S-structure is analyzed as the null category containing no ϕ -features, and the particle no is moved to head position at PF. LF-movement of the internal head to the syntactic head position captures the otherwise unexpected behavior of these constructions with respect to subadjacency, weak crossover, and multiple variable binding.

2. Head Raising

The interpretation of head-internal constructions relies on a noun internal to the relative clause being the semantic head of the entire noun phrase and serving as an argument to the matrix verb. We can adopt a head-raising analysis of relative clauses as proposed by Schachter (1973) and Vergnaud (1974), where the internal NP moves to the head position as illustrated in (3).

(3)

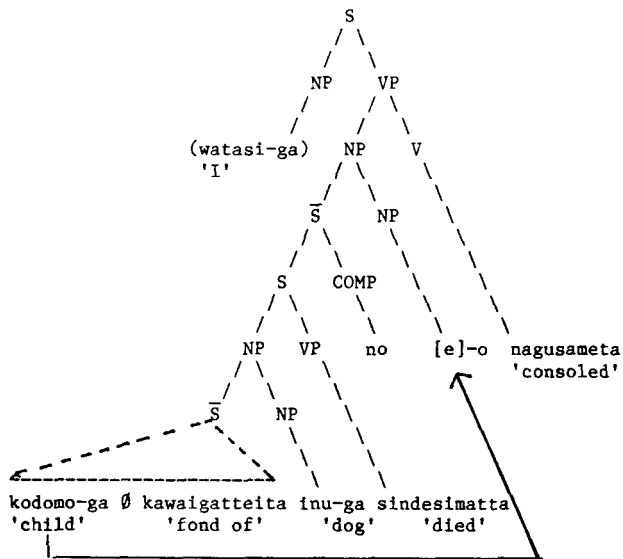


For head-internal relatives, movement can only take place at LF since the head must remain internal to the relative clause at S-Structure.² Raising the internal NP at LF ensures that the matrix verb assigns the appropriate thematic role to the noun in the head position of the noun phrase. The trace t_i in the relative S is coindexed with the "raised head" NP_i by virtue of Movement.

2.1 Subjacency

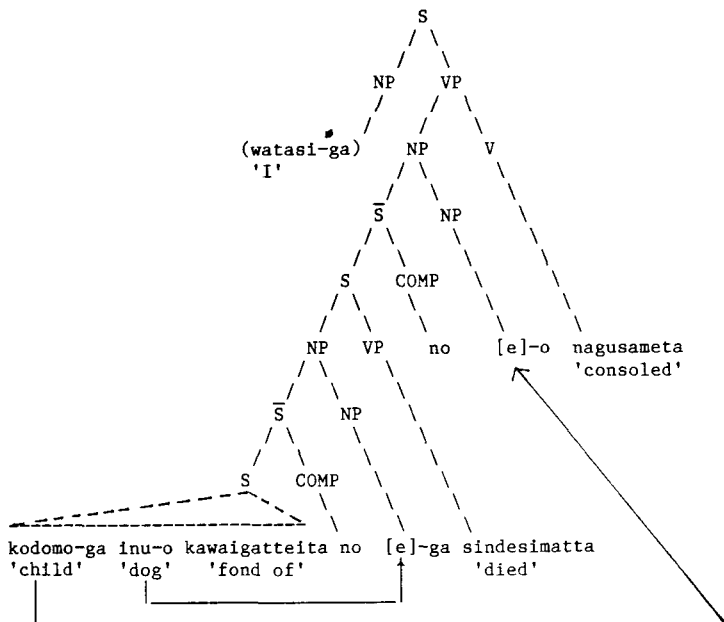
In connection with the idea that head-raising is an LF movement rule, it is interesting to note that the head-internal relatives violate island constraints.³ In both (4) and (5) the deeply embedded kodomo 'child' is an argument of the matrix verb nagusameta 'consoled'.

- (4) $[_{NP} [_{\bar{S}} [_{NP} [_{\bar{S}}$ kodomo_i-ga \emptyset_j kawaigatteita] inu_j NP]-ga
 child-nom was fond of dog-nom
 sindesimatta_S]-no_i NP]-o nagusameta.
 died -acc consoled



'The child was fond of the dog, the dog died, I consoled the child.'
 'lit. *I consoled the child who the dog that (he) was fond of died.'

- (5) [NP [\bar{S} [NP [\bar{S} kodomo_i-ga inu_j-o kawaigatteita]-no_j NP]-ga
sindesimatta \bar{S}]-no_i NP]-o nagusameta.



The sentence in (5) involves two head-internal relatives. If head-raising applies at LF, island violations are expected under the hypothesis that Subjacency is no longer relevant for LF operations (see Chomsky 1981, Finer 1984 for discussion).

Before exploring further consequences of analyzing head-raising as LF movement, it is important to note that the head-internal constructions in Modern Japanese are often marginal and restricted by pragmatic conditions. In particular, Kuroda (1975-76) convincingly illustrates that head-internal relatives must satisfy the Relevancy Condition given in (6).

- (6) The Relevancy Condition (Kuroda 1975-76, p. 86)

For a pivot-independent (i.e. head-internal [JI]) relative clause to be acceptable, it is necessary that it be interpreted pragmatically in such a way as to be directly relevant to the pragmatic context of its matrix clause.

Consider the sentences in (7) and (8) (slightly modified from those cited in Kuroda (1975-76)).

- (7)a. Taroo-wa [\emptyset sara-no ue-ni aru] ringo-o totte poketto-ni ireta.
Taro-top [plate's top-loc is] apple-acc take pocket-dir put in

"Taro took the apple on the plate and put it in his pocket."

- b. Taroo-wa [ringo-ga sara-no-ue-ni aru]-no-o totte...
apple-nom

- (8)a. Taroo-wa [\emptyset kinoo sara-no-ue-ni atta] ringo-o totte...
yesterday was

"Taro took the apple that was on the plate yesterday and..."

- b.*Taroo-wa [ringo-ga kinoo sara-no-ue-ni atta]-no-o totte...
apple-nom yesterday

The addition of the time adverb kinoo 'yesterday' results in unacceptability for the head-internal relative (8b). In Japanese there is no agreement in tense between the main clause and the embedded clause. Present tense in the relative clause expresses simultaneity with the action in the matrix, and past tense in the relative indicates a state prior to the time of the action expressed in the main clause. Thus, the content of the head-internal relative must be simultaneous with that of the matrix, that is, the apple must be on the plate at the time when Taro takes it and puts it into his pocket.

Simultaneity, however, is not the sole criterion for the wellformedness of head-internal relatives. As convincingly exemplified in Kuroda (1975-76), a kind of intentionality interpretation also plays a role. Compare the sentences in (9) and (10) containing two temporal adverbs, kesa 'this morning' (in the main clause) and kinoo 'yesterday' (in the relative clause).

- (9)a. kesa Taroo-wa [Hanako-ga kinoo \emptyset katta] ringo-o tabeta.
morning Taro-top [Hanako-nom yesterday bought] apple-acc ate

"This morning, Taro ate the apple that Hanako had bought yesterday."

- b. *kesa Taroo-wa [Hanako-ga kinoo ringo-o katta]-no-o tabeta.
apple-acc

- (10)a. kesa Taroo-wa [Hanako-ga kinoo \emptyset katte-oita] ringo-o tabeta.
buy-(aux)-past

- b. kesa Taroo-wa [Hanako-ga kinoo ringo-o katte-oita] no-o tabeta.
apple-acc buy-(aux)-past

The difference between the two head-internal relatives (9b) and (10b) lies in the presence of the auxiliary *-oita*, which can only be translated as "doing something with later usefulness in mind, or for some future purpose" (Kuroda 1976). This auxiliary yields the interpretation that Hanako had bought the apple for the convenience of some future event (i.e., Taro's eating the apple), allowing the head-internal construction in (10b). Thus, simultaneity, colocationality, intentional and physical connections satisfy the Relevancy Condition (7).⁴

Our analysis of head-raising does not directly interact with the pragmatic Relevancy Condition, but as an LF operation its interaction with other LF phenomena should shed further light on both LF in general and on the head-internal relatives. Below, we will consider evidence from weak crossover (3.2), quantified head raising (3.3) and multiple head raising (3.4). It will be concluded that head-raising must be done at a later LF level (perhaps LF') in order to account for some of the contrasts observed between normal externally headed relatives and the internally headed constructions.

2.2 Weak Crossover

Saito & Hoji (1983) argue that the Japanese (reflexive) *zibun* must be construed as a variable in order to explain the acceptability differences of the following examples: (Saito & Hoji 1983, 248-50)

- (11)a. [_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga
 -nom self_i-acc dislike fact -nom
 [_{VP} Ziro_i-o yūutu-ni siteiru]].
 _i-acc depressed make

"The fact that Hanako dislikes him_i has depressed Jiro_i."

- b. ?*[_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga
 [_{VP} daremo_i-o/dareka_i-o yuutu-ni siteiru]].
 everyone_i someone_i

"*The fact that Hanako dislikes him_i has depressed everyone_i/someone_i."

- c. ?*[_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga
 [_{VP} dare_i-o yuutu-ni siteiru]] no?
 who_i Q

"*Who_i has the fact that Hanako dislikes him_i depressed?"

- d. ?*[_S Ziro_i-o [_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga
 [_{VP} t_i yuutu-ni siteiru]]].

Lit. "Jiro_i, the fact that Hanako dislikes self_i has depressed."

After quantifier raising in (11b), LF wh-movement in (11c) and scrambling in (11d)⁵, the operator binds two variables zibun and t, violating the Bijection Principle proposed in Koopman & Sportiche (1981) and stated in Saito & Hoji (1983) as in (12).

(12) Bijection Principle

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

Consider now the following sentence with the relative clause modelled after (11).

(13) ?*[_{NP} [_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga

[_{VP} \emptyset_i yūutu-ni siteiru] _S] Zirō_i _{NP}]-o nagusameta.
 -acc consoled

"(I) consoled Jiro_i, who_i the fact that Hanako dislikes
 him_i has depressed."

Ziro_i binds both the gap and zibun, creating the illegal double
 Local binding.

It is interesting to note that such weak crossover effects are not found in English relative clauses (see Chomsky 1982). Armin Mester (personal communication) points out that the difference between the two languages may be related to the fact that there is no syntactic wh-movement in Japanese. Assuming that there is no (null) wh-operator, the head noun itself can be treated as the operator. The head noun and gap in Japanese are necessarily coindexed at LF, violating the Bijection Principle (12) (see Mester (1985) for an approach along these lines and Hasegawa (1984) for arguments in favour of an operator in COMP.)

Let us then look at the head-internal version of (13).

(14) [_{NP} [_S [_{NP} Hanako-ga zibun_i-o kiratteiru koto]-ga

[_{VP} Zirō_i-o yūutu-ni siteiru]-no]_{e_i} _{NP}]-o nagusameta.

Compared to the normal relative (13), the head-internal case (14) is noticeably better (although perhaps not perfect). This is a significant difference, since the head-internal relatives are usually less acceptable than their head-external counterparts.⁶ Notice that if the internal NP had already been raised to the head position, it should have caused a violation of the Bijection Principle in the same way. Therefore, the head-raised structure must not be created prior to the level at which the Bijection Principle holds. The NP can only be moved at a later LF-level, e.g. LF', where double binding is allowed.

2.3 Quantified Head Raising

In Japanese, question words are in situ at S-structure (15) and are adjoined to S at LF as are other quantifiers.

- (15) a. dare-ga kinoo harappa-de UFO-o mita-no
 who-nom yesterday field-at UFO-acc saw-Q

"Who saw a UFO in the fields yesterday?"

- b. sono-ko-wa itsu harappa-de UFO-o mita-no
 that-child-top when field-at UFO-acc saw-Q

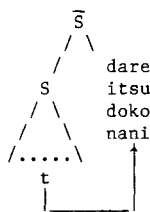
"When did the child see a UFO in the fields?"

- c. sono-ko-wa kinoo doko-de UFO-o mita-no
 that-child yesterday where-at UFO-acc saw-Q

"Where did the child see a UFO yesterday?"

- d. sono-ko-wa kinoo harappa-de nani-o mita-no
 that-child yesterday field-at what-acc saw-Q

"What did the child see in the fields yesterday?"



Another characteristic feature of Japanese questions is that the question word can be extracted from within a relative clause (except for naze 'why', see Lasnik & Saito 1984).

- (16)a. [dare-ga katta] keeki-o tabeta-no
 who-nom bought cake-acc ate -Q

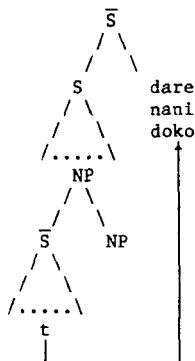
"Who_i did you eat the cake_j that e_i bought e_j?"

- b. [nani-de yaita] sakana-o tabeta-no
 what-with cooked fish-acc ate-Q

"With what_i did you eat the fish that you cooked e_i?"

- c. [doko-kara kita] hito-ni atta-no
 where-from came person-dat met-Q

"Where_i did you meet the person who came from e_i?"



An interesting contrast is found when the head of the relative clause is itself the question word.

- (17)a.??[∅_i heya-kara detekita] dare_i-ni atta-no
 room-from came out who-dat met -Q

"Who that came out of the room did you meet?"

- b.??[∅_i yaita] nani_i-o tabeta-no
 cooked what-acc ate -Q

"What that you cooked did you eat?"

The head-external relative constructions in (17) are at best marginal and can perhaps only be construed as echo questions. On the other hand, the parallel head-internal versions in (18) seem acceptable.

- (18)a. [dare-ga heya-kara detekita -no][e]-ni atta-no
 who-nom room-from came out -dat met-Q

"Who that came out of the room did you meet?"

- b. [nani-o yaita -no][e] -o tabeta-no
 what-acc cooked -acc ate -Q

"What that you cooked did you eat?"

It is not clear why the constructions in (17) are marginal.⁷ However, the facts suggest that Q-raising can extract any quantified NP out of a relative clause, whether it is just an argument of the embedded verb (16) or the internal head of the entire NP (18). More importantly, the contrast between (17) and (18) shows that head-raising cannot have taken place prior to Q-raising since head-internal relatives would then be identical to head-external relatives. As with the evidence from weak crossover in the previous section, the prior application of Q-raising at LF is expected if we assume that head-raising is a post-LF (or LF') operation.⁸

2.4 Multiple Head Raising and Absorption

Another interesting property of Japanese head-internal relatives is that they can have multiple internal heads. Kuroda (1975-76, 93) gives the following revealing example.

- (19) [zyunsa_i-ga doroboo_j-o kawa-no-hoo-e oitumete-itta-no][e_{ij}]-ga
 policeman-nom thief-acc river's direction-toward tracked down-nom
 ikioi amatte huaritomo kawa-no-naka-e tobikonda.
 power exceed both-two river into jumped

"A policeman was tracking down a thief toward the river, who both, losing control, jumped into the river."

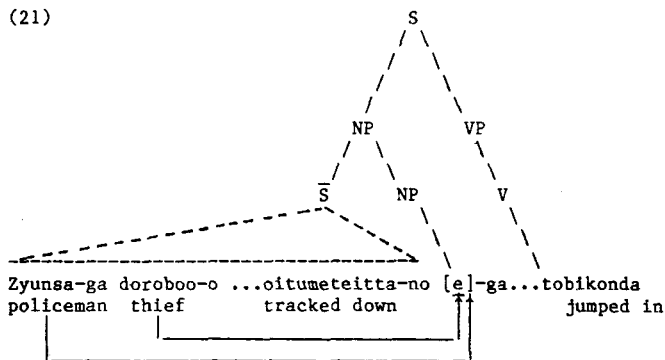
Both the subject zyunsa 'policeman' and the object doroboo 'thief' of the relative clause are the heads, that is, they together are the subject of the matrix verb tobikonda 'jumped into'. The quantifier hutaritomo 'both' assures this interpretation.

There is no plausible head-external version for (19). For example, (20) can only have the interpretation that 'the policeman' and 'the thief' both chased someone towards the river or that they were both chased by someone. In particular it does not have the interpretation of the head-internal version in (19), where the policeman is chasing the thief.

- (20) *[kawa-no hoo-e oitsumete-itta] zyunsa (to) doroboo-ga
 hutaritomo ikioiamatte kawa-no-naka-e tobikonda.

These multiple internal heads initially pose a problem for the head-raising analysis, since two NPs would have to move into the head position as shown in (21).

(21)



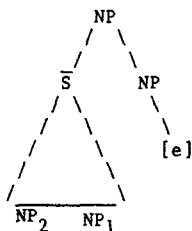
The multiple nature of (21) is somewhat reminiscent of multiple wh-questions (22a) or sentences with multiple quantifiers (22b).

(22) a. Who read which books?

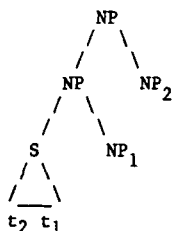
b. Everyone reads some books.

Parallel to analyses of multiple wh-questions, where the first wh-word is moved to COMP and the others subsequently Chomsky-adjoined to S, we might account for the multiple internal heads as follows: First, one of the internal heads is raised to the external head position, then the second internal head is Chomsky-adjoined to the entire NP.

(23) a.



b.



The resultant structure (23b) does not, however, express the correct interpretation of the multiple head-internal relative since in fact neither one of the two head NPs has scope over the other, as wrongly predicted by the structure (23b).

Higginbotham & May's (1981) Absorption Analysis. For certain multiple wh-questions such as (24a), there is both a singular interpretation (24b) and a bijective interpretation (24c).

(24)a. Which man saw which woman?

b. [for which x: x a man] [for which y: y a woman] x saw y

c. [for which x,y: x a man & y a woman] x saw y

Since the logical form obtained by Q-raising represents only the singular interpretation (24b) and not the bijective interpretation (24c), Higginbotham & May (1981) propose a rule of Absorption (25) which takes as input the logical form of the former to generate the logical form of the latter.

(25) [WH x: \bar{N} (x)] [WH y: \bar{N} (y)] \rightarrow [WH x, WH y: \bar{N} (x) & \bar{N} (y)]
 where the variables are those that show and
 [WH x: \bar{N} (x)], [WH y: \bar{N} (y)] are an adjacent pair of singular or plural wh-phrases.

Two NPs are defined as an adjacent pair "if A c-commands B and A c-commands nothing which c-commands B." (Higginbotham & May 1981, 49).

Higginbotham & May (1981) later in their paper extend the rule of Absorption to quantifiers, and it seems possible to further extend it to multiple head raised structures (23b). The correct pair interpretation for the subject NP is informally given in (26).

(26) [The pair x,y (x zyunsa & y doroboo) such that x chased y] fell into the river together.

In the previous sections we argued that head-raising must apply after LF. If the above analysis of multiple internal heads is correct, we predict that the Absorption Rule is also a post LF operation applying to the head-raised structures at LF'. This is not an unnatural hypothesis since the Absorption rule must in any case take place after Q-raising.

It is quite revealing that the cases where other LF operations interact with the proposed head-raising rule all involve reversals of grammaticality judgments with respect to normal relatives. The usually 'marginal' head-internal constructions become better than their head-external counterparts.

3. Movement and Deletion at PF

Besides the position of the head NP, another surface difference between the normal head-external relatives (27a) and their head-internal counterpart (27b) is the presence of the final *-no*.

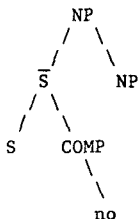
- (27)a. omawari-wa [\emptyset akiya-kara detekita] doroboo-o tsukamaeta
 policeman-top house-from came out thief-acc caught

"The policeman caught the thief that came out from an uninhabited house."

- b. omawari-wa [doroboo-ga akiya-kara detekita-no]-o tsukamaeta

It is reasonable to assume that -no is a complementizer which is freely inserted or base-generated under COMP.

(28)



However, positing such a structure (28) predicts that -no also appears in externally headed relative clauses, which is clearly ungrammatical as illustrated below.

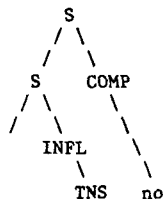
- (29) *omawari-wa [\emptyset akiya-kara detekita] no doroboo-o tsukamaeta
 policeman-top house-from came out thief-acc caught

"The policeman caught the thief that came out from an uninhabited house."

There must be a mechanism which deletes these cases of -no (or prohibit it from being inserted or base-generated). We might consider a language specific filter such as (30) which disallows both INFL and COMP to be filled.

- (30) *[INFL α] [COMP β]

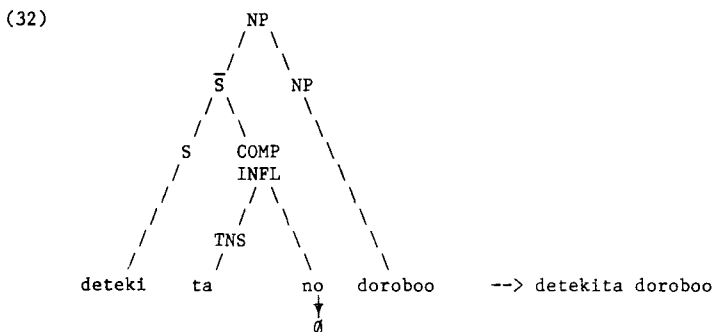
e.g.



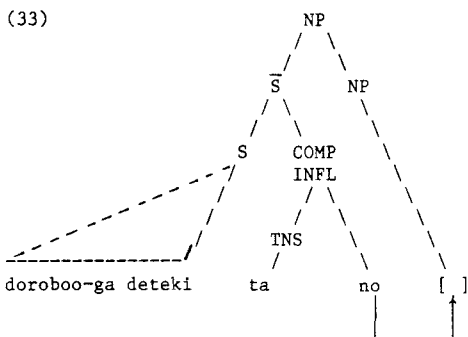
COMP and INFL are arguably related (e.g. the selection of complementizers in tensed/nontensed S) and together may be considered to be the head of the maximal projection of S (see Chomsky 1981 etc.). Since INFL is at the right periphery of S in Japanese, COMP and INFL are not discontinuous as in English. The proposed filter may be viewed as a version of the doubly filled COMP filter (Chomsky & Lasnik 1977) if it is possible to collapse INFL and COMP completely in Japanese.

(31) * [COMP α INFL β]

Free COMP deletion eliminates no but not the tense element because of recoverability.



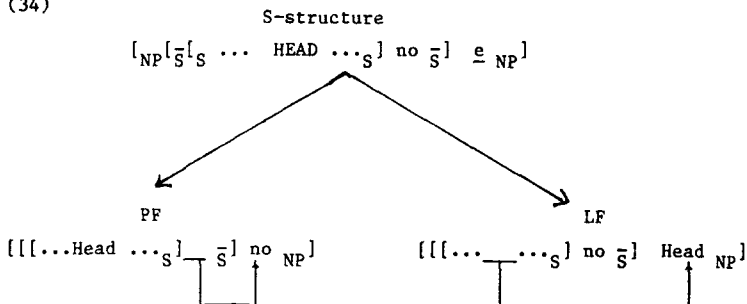
The filter can be circumvented for head-internal constructions if we assume that Move- \bar{c} applies to no, raising it to the empty head position as in (33).



This analysis is thus able to account for the complementary distribution of the complementizer *no* and lexical head NP's. In order to pass through the filter (31) *no* must vacate COMP. Move- α applies if the head NP position is phonologically null as in (33), otherwise COMP deletion applies as in (32).

We assume that (31) is a PF filter since movement of *no* to the head position must take place after S-structure in the \overline{PF} component. If it applied at S-Structure, then the head NP position would be already filled at LF, and head-raising would not be able to apply. Head-internal relative constructions thus provide an interesting case where raising to head position occurs in both the LF and PF component.

(34)



4. The Empty NP Head Position: The Null Category

The particle *no* appears not only in head-internal relatives (35c) but also in free relative constructions (35a) and nominalized complement constructions (35b). Following Kitagawa and Ross (1982), I assume that an empty NP head is also present in these cases. Notice that the higher clause determines the interpretation of the string [Taroo-ga benkyoo-site iru-no].

- (35) a. [Taroo-ga benkyoo-site iru-no][]-wa butsurei da.
 study-doing is -top physics is
 "What Taro is studying is physics."
- b. [Taroo-ga benkyoo-site iru-no][]-ni-wa odoroi ta.
 at surprised
 "I was surprised at the fact that Taro was studying."
- c. [Taroo-ga benkyoo-site iru-no][]-ni dekuwasita.
 ran into
 "I ran into Taro, who was studying."

If the external head position is empty we would expect head-raising to apply in (35a&b) as well. It will be argued below that the empty head NP in free relatives and nominalized complements in fact has ϕ -features. Only the NP of the head-internal relative (35c) is truly null (cf. Chomsky 1981 for discussion of the role of the null category in other languages), and this lack of ϕ -features is what licenses the internal head to be raised at LF by Move- α . We will see that this distinction can capture several other interesting characteristics of head-internal constructions.

4.1 [-honorific] and [-abstract]

Initial support for the claim that the empty NPs in (35a&b) (henceforth represented as [_{NP}F]) have ϕ -features, in contrast to the truly null NP in (c) (represented as [_{NP}e]) comes from certain types of semantic restrictions.

For the free relative case (35a), Kuroda (1976-77) and Hoji (1981) argue convincingly that there is a derogatory connotation to the referent of the empty NP.

- (36) a. [wakai-no] [F]-ga nannin-mo iru
 young many are
 "There are many young ones (whom I can use at any time)."
- b. [nihon-kara kita-no] [F]-ga nannin-mo iru
 Japan-from came many are
 "There are many who came from Japan, (but they're no good)."

The parenthesized clauses are possible connotations. The interpretation is neutral if a full lexical noun appears as in (37).

- (37) a. [wakai]hito-ga nannin-mo iru.
 young persons many are
 "There are many young people."
- b. [nihon-kara kita] gakusee-ga nannin-mo iru.
 Japan-from came student many are
 "There are many students who came from Japan."

This derogatory connotation is most transparent when it conflicts with the honorific marking on the verbs and produces unacceptable sentences as in (38).

- (38) a. ?*utsukusii-no [F]-ga irassyaimasita
 beautiful came (HON)
 "A beautiful one came."
- b. ?*kono daigaku-de osiete-orareru-no-[F]-ni oaisimasita.
 this college-loc teaches (HON) -dat met
 "I met one who is teaching at this college."

Compare (38) to the grammatical (39) with a lexical head noun.

- (39) a. utsukusii kata-ga irassyaimasita.
 beautiful person (HON) came (HON)
 "A beautiful person came."
 b. Kono daigaku-de osiete-orareru sensee-ni oaisita
 this college-loc teaches (HON) teacher-dat met(HON)
 "I met a teacher who is teaching at this college."

The honorific marking on the verb must agree with the marking on the relevant noun. If the empty NP has [-honorific] as one of its features, this could account for the unacceptability of (38), where the verb is marked [+honorific].

Notice that the head-internal relative with a null [_{N_{pe}}] (40) does not conflict with the honorific marking of the matrix verb as long as the internal head is [+honorific].

- (40) [sensee-ga kenkyusitsu-kara dete irassyatta-no][e]-ni
 teacher-nom office-from out come (HON) -dat
 guuzen oaisuru-koto-ga dekita
 accidentally meet (HON) able-past

"I happened to be able to meet the teacher who was coming out of his office."

Consider then the nominalized complements (35b). Kuno (1973) analyzes no and koto as nominalizing complementizers and argues that there is an intrinsic meaning associated with each: "koto is used for nominalizing a proposition and forming an abstract concept out of the proposition, while no is used for representing a concrete event (Kuno 1973, 221)." Compare the English translations of the sentences in (41). I follow Kitagawa and Ross (1982) in analyzing koto as the lexical head (equivalent to English fact) and no as the complementizer of an empty NP.¹⁰

- (41)a. watasi-wa [kare-ga gitaa-o hiku -no] [F]-o kiite odoraita
 I -top he -nom guitar-acc play -acc hear surprised

"I was surprised to hear him playing the guitar."

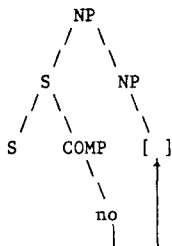
- b. watasi-wa [kare-ga gitaa-o hiku] koto-o kiite odoraita
 I -top he -nom guitar-acc play -acc hear surprised

"I was surprised to hear that he plays the guitar."

in fact be related to the [-honorific] feature of free relatives in (36 & 38). This feature represents a concrete entity or matter, and if used pronominally of a person the connotation becomes derogatory.

In section 3 we proposed a PF movement analysis raising the complementizer no into the empty NP position. This does not conflict with our hypothesis that (35a) and (35b) have ϕ -features if we make the rather natural assumption that only phonological features are visible for PF movement. It is ~~st~~ still possible to raise no at PF into the phonologically empty NP (42).

(42) PF

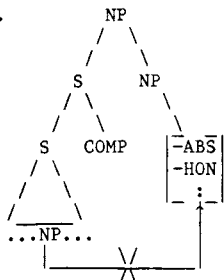


free relatives
nominalized complements
head-internal relatives

The ϕ -features are semantic features and they disallow other semantic features to be raised into the NP at LF. Since the empty NP of free relatives and nominalized complements contains ϕ -features, no NP can be raised into that position (43a). This ensures that only the head-internal relative with a semantically empty NP allows the internal head to be raised, and we can assume that the null NP acquires all features of the internal (raised) head (43b).

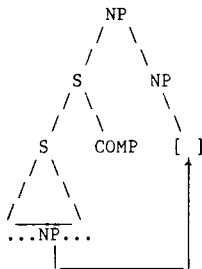
(43) LF

a.



free relatives
nominalized complements

b.



head-internal relatives

4.2 Topicalization

It is well-known that Japanese distinguishes two kinds of topic constructions (see Kuno 1973, Inoue 1976 etc.). In (44a) there is a gap left in the sentence, whereas in (44b) there is no syntactic position in the clause to which the topicalized phrase can return. The latter case has come to be known as the "aboutness relation" (cf. Chomsky 1982).

(44)a. kono hon₁-wa [Taroo-ga \emptyset_1 yonda]
 this book-top Taro-nom read
 "Speaking of this book, Taro has read it."

b. sakana-wa [tai-ga oisii]
 fish-top red snapper-nom delicious
 "Speaking of fish, red snapper is the most delicious."

The interesting point about these constructions is that head-internal relatives cannot appear as the topic of either of these types. In (45), the relativized NP's are in argument positions case-marked by -o (accusative).

(45)a. omawari-ga [doroboo-ga detekita-no][e]-o tsukamaeta
 policeman-nom [thief-nom came out] -acc caught

b. omawari-ga [\emptyset_1 detekita] [doroboo₁]-o tsukamaeta
 thief
 "the policeman caught the thief who came out."

The topicalized versions of (45) are given in (46).

(46)a. ?*[doroboo-ga detekita-no][e]-wa omawari-ga tsukamaeta
 thief-nom came out -top policeman-nom caught

b. [\emptyset_1 detekita] [doroboo₁]-wa omawari-ga tsukamaeta
 thief
 "As for the thief who came out, the policeman caught (him)."

Note that the head-internal (46a) is ungrammatical. Comparable free relatives (47a) and nominalized complements (47b), however, do not resist topicalization.

(47)a. [detekita-no][F]-wa omawari-ga tsukamaeta.
 came out -top policeman-nom caught
 "As for the one who came out, the policeman caught (him)."

b. [doroboo-ga detekita-no][F]-wa omawari-ga siranakatta.
 thief-nom came out -top policeman-nom knew-not
 "As for the fact that the thief had come out, the policeman
 did not know it."

The same pattern emerges with the other type of topicalization where only the "aboutness" relation holds between the topic and the clause. Although the normal relative (48b) as well as the free relative (48c) and the nominalized complement (48d) can be the topic marked by -wa, the head-internal relative (48a) cannot.

- (48)a. *[sanma-o yaita-no][e]-wa nioi-ga suki-da
 mackerel-acc cooked -top, smell-nom desirable
 "As for cooked mackerel, the smell is desirable."
 lit. "As for mackereal which (someone) cooked, ..."
- b. [\emptyset _i yaita] sanma_i-wa nioi-ga suki-da.
- c. [yaita-no][F]-wa nioi-ga suki-da
 cooked -top smell-nom desirable
 "As for what is cooked, the smell is desirable."
- d. [sanma-o yaita-no][F]-wa tonari-o komaraseru-koto-ga mokuteki-da
 mackerel-acc cooked -top next door-acc trouble -nom purpose
 "As for cooking mackerel, making trouble for the next door neighbor is the purpose."

It may be possible to understand this difference between head-internal relatives and the structurally similar free relatives and nominalized complements as a consequence of the nature of the null category [_{NPE}] and the the empty category [_{NP}F]. The restricted distribution of the head-internal relatives may in part be due to the restricted distribution of the null category itself. Although the possibility that the pragmatic Relevancy Condition (6) is the crucial factor here cannot be ruled out, it is still worth speculating whether the fact that topic positions are non-theta positions has an important influence in disallowing the head-internal relative with a null category. For example, we might hypothesize that the null category can only appear where an NP is required by considerations of X-bar theory and universal principles such as the theta-criterion and the projection principle.

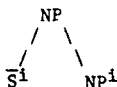
4.3 ga-no Conversion and Predication

Internal to the NP, the particle ga optionally converts to no (Harada 1971). Although the former marks nominative and the latter genitive, there is no change in meaning between (49a) and (49b). The sentences in (50) shows that ga-no conversion is impossible in a main clause.

- (49)a. [_{NP}[_S yuki-ga hutta] hi] b. [_{NP}[_S yuki-no hutta] hi]
 snow-nom fell day
 "the day it snowed"
- (50)a. [_Skinoo yuki-ga hutta] b. * [_Skinoo yuki-no hutta]
 yesterday snow-nom fell
 "Yesterday, it snowed."

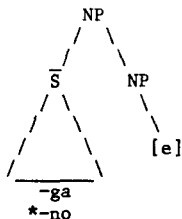
Intuitively, the S which is embedded in the NP loses its full status as an independent proposition so that the internal case marking may be different from what the predicate of the S requires. Formally, we might set up a "checking" mechanism which only allows the genitive no to appear in place of the nominative ga within a modifying S. Following Williams (1981), a modifying S is defined as an S coindexed with the head NP by a generalized rule of predication as in (51).¹¹

(51)

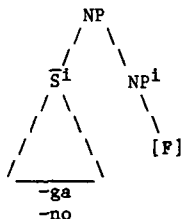


In section 2 it was argued that head-raising does not take place until LF'. If correct, the syntactic head position of the head-internal relative is still null at LF where predication applies. Let us assume that predication is vacuous in this case, since it makes little sense to have a modifier without a modifiee. Note that if the relative S is not coindexed with the head NP, we would expect it to behave as an independent S and not as a modifying S. In particular, we predict that within the head-internal relative, there is no ga-no conversion (52a). This should contrast with the other empty headed constructions such as free relatives and nominalized complements, which are coindexed with their head [_{NP}F] (52b).

(52) a.



b.



Although some complications arise, this predicted pattern is indeed borne out.

Both free relatives (53) and nominalized complements (54) always allow ga-no conversion.

(53)a. gakusee-wa [Chomusukii-ga kaita -no]ⁱ [F]ⁱ-o yonda

b. gakusee-wa [Chomusukii-no kaita -no]ⁱ [F]ⁱ-o yonda
 student-top Chomsky-(nom) wrote -acc read

"The student read what Chomsky had written."

- (54)a. *gakusee-wa* [*tomodachi-ga* *happyoo-suru -no*]ⁱ [*F*]ⁱ-o *kiita*
 b. *gakusee-wa* [*tomodachi-no* *happyoo-suru -no*]ⁱ [*F*]ⁱ-o *kiita*
 student-top *friend* *presentation-do* -acc *heard*
 "The student heard his friend give a presentation."

The head-internal relative construction (55) does not allow the *no*-version (55b) as predicted.

- (55)a. *Taroo-wa* [*hanako-ga* *ringo-o* *katteoita -no*] [*e*]-o *tabetesimatta*
 b.**Taroo-wa* [*Hanako-no* *ringo-o* *katteoita -no*] [*e*]-o *tabetesimatta*
 -*top* *apple-acc* *bought* -acc *ate up*
 "Taro ate up the apples that Hanako had bought."

However, apparent counterexamples such as (56) and (57) where both *ga*- and *no*-versions are allowed can easily be found.

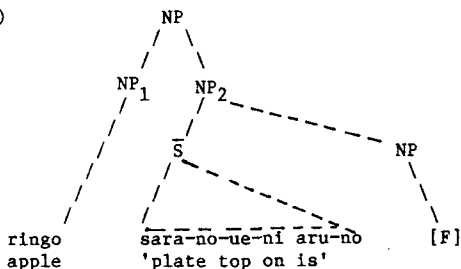
- (56)a. *omawari-wa* [*doroboo-ga* *akiya-kara detekita -no*] [*e*]-o *tsukamaeta*
 b. *omawari-wa* [*doroboo-no* *akiya-kara detekita -no*][*e*]-o *tsukamaeta*
 policeman *thief* *empty house-from* *came out* *caught*
 "The policeman caught the thief who came out of the empty house."

- (57)a. *Taroo-wa* [*ringo-ga* *sara-no-ue-ni aru -no*][*e*]-o *totte tabeta*
 b. *Taroo-wa* [*ringo-no* *sara-no-ue-ni aru -no*][*e*]-o *totte tabeta*
 Taro *apple* *plate-on is* *take ate*
 "Taro took the apple which was on the plate and ate it."

Kuroda (1976-77) identifies these occurrences of internal *no* as "no-relatives" (56b and 57b) and argues that they are not derived by *ga-no* conversion applying to (56a) and (57a). The arguments given below follow Kuroda's insightful analysis, with minor reinterpretations within the present framework.

The crucial difference between (55) and (56 & 57) is that in the latter the particle *ga* which can be replaced by *no* is attached to the internal heads (*doroboo* 'thief' in (56) and *ringo* 'apple' in (57)), whereas in (55) the NP case-marked with *ga* is not the internal head (i.e. *ga* is attached to *Hanako*, but the internal head is *ringo* 'apple'). The source for the *no*-versions (56b & 57b) can be represented as (58), where two NPs (the latter of which is a free relative) are in appositive relation to each other.

(58) (cf. 57b)



NP₁ = apple NP₂ = what is on the plate

The particle no is inserted between NP₁ and NP₂ ([ringo] no [sara-no-ue-ni aru no]) by the genitive-no insertion applying between two NPs in apposition as in (59). (See Bedell 1972, Kuroda 1976-77, and Kitagawa & Ross 1982 for similar no-insertion analyses.)

- (59)a. nihon no kuni
 Japan country "the country of Japan"
- b. Kyoo no sato
 Kyoto home "my home town Kyoto"
- c. bengosi no Satoo-san
 lawyer Mr. Sato "Mr. Sato, the lawyer"

If we adopt this appositive analysis for the apparent counterexamples, several related facts can be accounted for straightforwardly.

First, the no-versions seem acceptable even when the Relevancy Condition is not fulfilled (compare the ungrammatical ga-versions in the examples below).

- (60)a. *Taroo-wa [ringo-ga oisii-no]-o tabeta.
 b. Taroo-wa [ringo-no oisii-no] -o tabeta.
 Taro-top apple delicious -acc ate
 "Taro ate an apple which was delicious."
- (61)a. *koko-ni-wa [gakusee-ga yoku benkyoo-suru-no]-ga oozei iru
 b. koko-ni-wa [gakusee-no yoku benkyoo-suru-no]-ga oozei iru
 here students much study-do many are
 "There are many students who study a lot here."

Kuroda (1976-77) furthermore points out that the use of no makes the sentence in (62) slightly unacceptable because it acquires the "derogatory" reading which conflicts with the honorific form of the verb.

(62)a. watasi-wa [sensee-ga heya-kara deteirassyatta-no]-ni oaisita.

- b. ?watasi-wa [sensee-no heya-kara deteirassyatta-no]-ni oaisita.
 I-top teacher room-from came out(HON) met
 "I met the teacher who came out of the room."

We argued in section 4.1 that free relatives have a perjorative connotation because of their [-honorific] feature. Thus, if (62b) has the structure in (58), which contains a free relative, the unacceptability can be traced to the same source.

Recall that head-internal relatives can have 'multiple' heads when the appropriate context is met (section 2.4). In the no-version, however, Kitagawa & Ross (1982) point out that the only reading is where the NP marked by no is the head as shown in (64a), confirming the hypothesis that the two sentences are not simply related by the application of ga-no conversion.¹²

(63) [Zyunsa -ga doroboo-o kawa-no hoo-e oitumete-itta-no][]-ga

- | | | | |
|----|---|---|----|
| a. | i | | i |
| b. | | j | j |
| c. | i | j | ij |
- policeman thief river-towards tracked down

ikioi amatte kawa-no naka-e tobikonda.
 power exceed river-into jumped

"A policeman_i was tracking down a thief_j toward the river and, losing control, [a. he_i, b. he_j, c. they_{ij}] jumped into the river."

(64) [Zyunsa-no doroboo-o kawa-no hoo-e oitumete-itta-no][]-ga...

- | | | | |
|------|---|---|----|
| a. | i | | i |
| b. * | | j | j |
| c. * | i | j | ij |

Finally, consider the otherwise surprising occurrence of "o-no" conversion in this context. (Martin 1975, Kuroda 1975-76)

(65)a. [sakana-o yaita-no]-o minna-de tabeta.

- b. [sakana-no yaita-no]-o minna-de tabeta.
 fish-acc cooked -acc together ate

"We all ate the fish which was grilled."

As in (60) - (61), the no-version is often better and seems to disregard the Relevancy Condition.¹³

- (66)a. ?[ringo-o katta-no]-o tabeta
 b. [ringo-no katta-no]-o tabeta
 apple(acc) bought -acc ate
 "(I) ate the apple which (I) bought."

In the previous section, we saw that head-internal relatives cannot be topicalized. There is no problem in topicalizing the no-versions.

- (67)a. *[sanma-o yaita-no]-wa nioi-ga suki-da.
 b. [sanma-no yaita-no]-wa nioi-ga suki-da.
 mackerel-acc grilled -acc smell desirable
 "As for mackerel which is grilled, the smell is desirable."

Thus the evidence converges to support the hypothesis that head-internal relatives themselves do not allow ga-no conversion and that the superficially similar no-versions have a different source (see Kuroda (1976-77) for further details.)

Let us then recapitulate the arguments of this section. A rule of predication coindexes the relative S and the head NP. If the NP is null, predication is vacuous and no coindexing takes place. Since head-internal relatives have a null syntactic head, there is no predication, hence no coindexing. Assuming that ga-no conversion is allowed only in modifying S's (i.e. coindexed S's), we predict that there is no ga-no conversion. This is confirmed by the facts, which in turn supports our contention that the empty NP head of a head-internal relative construction is the null category and is different from other empty NP headed constructions.

5. Summary and Concluding Remarks

This paper has been an investigation of the head-internal relative construction in Japanese. From general considerations of X-bar theory, an empty head NP was posited in the Syntax. In the PF component, the complementizer no is raised into the empty syntactic head position, while in the LF component the semantic head is raised from within the relative clause to the head NP position. Finally, several arguments were given for the proposal that the empty NP head was the null category.

Although the consequences of the analysis presented in this paper cannot be fully considered, I hope at the least to have shown that the head-internal construction in Japanese offers quite interesting and revealing data relevant to current syntactic theory, clearly

FOOTNOTES

*This paper is a revised version of my syntax generals paper written in January 1984. Due to time limitations I have only been able to make minor stylistic revisions. I am grateful to the members of my generals paper committee, Emmon Bach, Nobuko Hasegawa, and David Pesetsky for discussion and valuable comments. Thanks also to Roger Higgins and Armin Mester for many helpful suggestions. Nobuko Hasegawa, who encouraged me to submit this paper to UMOP, helped me judge and formulate many of the sentences relevant to the discussion in this paper. I would also like to thank two anonymous UMOP reviewers for their comments and criticisms.

¹In this paper I have adopted Platero's (1974) more descriptive terminology head-internal rather than Kuroda's (1974-77) term pivot-independent. See also Harada (1973) and Josephs (1976) for discussion of tokoro complements.

²Finer (1984, 161-174) also analyzes Yuman relative clauses as involving LF movement of the internal head and shows that this head movement appears to violate subadjacency. We will see below that this is also the case in the relevant Japanese examples.

³It has generally been assumed that normal Japanese relatives also show island constraint violations (cf. Ross 1967, Kuno 1973, Inoue 1976).

[_{NP} [_S [_{NP} [_S \emptyset_i \emptyset_j kawaigatteita] inu_j NP] -ga
was fond of dog_j NP] -nom
sindesimatta_S] kodomo_i NP] -o nagusameta.
died child_i NP -acc consoled

"I consoled the child who the dog (he) was fond of died."

However, Hasegawa (1984) argues that in fact no subadjacency violation at S-structure is involved in these cases. The most deeply embedded anaphoric element (i.e. $i=kodomo$) is analyzed as an empty pronominal (see also Huang 1982).

⁴A similar phenomenon is noted in Hale (1976, 79) for Walbiri adjoined relative clauses: '...the relative clause may be used to specify the temporal setting of the event depicted in the main clause, or to make a subsidiary comment holding at the time specified in the main clause.' (See also Larsen 1983 for relevant discussion.) However, such a pragmatic constraint is by no means universally an inherent feature of head-internal relative constructions. Platero (1974) notes that the head-internal construction is considered by far the preferred type of relative clause in Navajo, and it clearly does not have the marginal status as in Modern Japanese. On the contrary, Platero argues that there are no language-specific constraints on the head-internal relative formation, whereas the

head-external cases are constrained in various ways involving deep structure grammatical relations, selectional restrictions and ranking (animacy) hierarchy. In Classical Japanese, the head-internal and head-external relatives appear to have existed side by side. The abundance of examples of head-internal relative construction shows that it occupies a more prominent role than in Modern Japanese (Kuroda 1974).

⁵In Saito & Hoji's framework, scrambling is argued to be Move- α . Note also that the VP node is necessary to capture the c-command relations. See also Saito (1982) and Hoji (1982) for discussion.

⁶An anonymous UMOP reviewer points out that sentence (i) where the internal head is dare 'who' (instead of Ziro in (14)) is much better than (14).

- (i) [NP_S[NP_{NP}Hanako-ga zibun_i-o kiratteiru koto]-ga
 [VP dare_i-o yūutu-ni siteiru]-no]_{e_i} NP]-o nagusameta-no?

I have no explanation for why this should be the case. See section 2.3 below for related issues.

⁷Since the NP head is the quantified phrase, the entire relative clause construction must be raised. There is presumably some principle which does not favor such pied piping in Japanese.

⁸In connection with the idea that internal head raising operates at a later LF level, an anonymous reviewer points out that the following sentences are ambiguous: the second dare in (i) and rannaa-ga ni-san-nin in (ii) have both wide and narrow scope readings.

- (i) dare-ga kimi-ni [zyunsa-ga [dare-ga mise-kara detekita]-no-o tukamaeta-ka] kiita-no?
 "Who asked you police arrested who coming out of the store?"
 (ii) daremo-ga [rannaa-ga ni-san-nin taoreta]-no-o tasuke okosita
 "Everyone helped stand a couple of runners fallen to the ground."

In (i) the second dare with wide scope moves by Move-wh at LF and its trace must be head-raised at LF' (a trace leaving another trace behind). The wide scope reading of rannaa-ga ni-san-nin in (ii) must QR it to the matrix COMP at LF, and its trace must head-raise at LF', leaving another trace.

⁹An independent requirement that a modified NP cannot remain phonologically null must be stipulated for Modern Japanese. Move- α and not COMP-deletion must apply in cases where the head NP is empty. In Classical Japanese there is no equivalent of the particle no in head-internal relatives and the case particles are attached

¹⁰Kitagawa & Ross (1982) also attribute the concrete event reading to the empty head, their PRO. However, they do not distinguish the head-internal cases and assume that PRO is ambiguous.

¹¹Superscripts are used for coindexing by predication to distinguish coreference indexing.

¹²Kitagawa & Ross (1982) adopt Bedell's (1972) restructuring analysis of ga-no conversion to explain this phenomenon. Although not incompatible with the proposal in this section, the consequences are too far-reaching to be dealt with here.

¹³Note that "o-no conversion" produces ungrammatical results if applied to sentence-internal o.

*[Taroo-ga sanma-no yaita]-no-ga sara-no-ue-ni aru.
Taro mackerel grilled -nom plate-on is

"The mackerel that Taro grilled is on the plate."

cf. [sanma-no [yaita]-no-ga sara-no-ue-ni aru.

[sanma-no[Taroo-ga yaita]-no-ga sara-no-ue-ni aru.

[sanma-no[Taroo-no yaita]-no-ga sara-no-ue-ni aru.

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