

REMARKS ON RELATIVIZATION*

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0. In the present paper, I will examine the Relativization processes in the handful of languages that I have some acquaintance with and try to establish a universal framework which would enable us to account for their similarities and differences. I will approach the problem of universals from a transformational point of view and will not be as much concerned with implicational universals among superficial grammatical features as Greenberg's pioneer work (1966). My emphasis will thus be put on determining the underlying structure of a relative clause and the derivations thereof.

1. On the basis of our rather extensive knowledge of such well-studied languages as English or Japanese, we often assume that something like (1)-(3) should represent the basic universal properties of Relativization.

- (1) A relative clause (RC) is a sentence embedded in an NP (RNP) and which modified the HEAD noun phrase of that NP.
- (2) RC must contain in underlying structure an NP (REL) which is identical to the HEAD.
- (3) REL undergoes various transformational processes, but the HEAD remains unaffected.

What I will try to demonstrate below is that none of these putative universals are correct and something like the following is much nearer to the truth.

- (4) An RC is a sentence embedded in an NP whose HEAD is PRO in underlying structure.
- (5) The RC must contain in underlying structure an NP (REL) which has the same index as does the PRO-HEAD. ***
- (6) Surface forms of RNP's are derived through the following transformations:

Pro Head Substitution
REL Fronting
Shadow Deletion
Pronoun Drop

The diversity of surface realizations of RNP's in individual languages is, then, dependent on whether the given language possesses all of the rules in (6) or just some of them.

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*** This point is not demonstrated in the present paper.

2. In most languages, an RMP can be divided into two parts at the surface level, one full-fledged NP and one deformed sentence. If this were the case in every language, we would not have to modify our putative universals in (1)-(3). There are, however, several languages in which the surface form of an RNP is not so analyzable. Thus in Navajo, an American Indian language of the Athapaskan family, the normal surface form of an RNP consists just of a sentence with a "nominalizing" enclitic added to the (sentence-final) main verb. *

(7) [tsin Litshíí?-ííí] shaa ná?aah.
 wood red RM to-me you-give (imp.)

'Give me the red block.'

(8) [yiskáágo Líí? nidooyéL -ííí] nashííLgo?
 tomorrow horse you-carry-will RM away-me-threw

'The horse that you will ride tomorrow threw me.'

Sentences like the following are ambiguous, with respect to which NP in the RC corresponds to the subject of the matrix sentence.

(9) [?ashkii ?at?ééd yiyiiLtsá-éé] bitah doo hats?íid da.
 boy girl saw RM was-sick

(a) 'The boy who saw the girl was sick.'

(b) 'The girl who the boy saw was sick.'

It is clear that Navajo RMP's are "headless" in surface structure.

Another language which manifests such "headless relative clauses" is Old Japanese (spoken in 9-10 century).** The following are examples selected at random from Sei Shonagon's Makura no Sooshi ["The Pillow Book", an anthology of essays written around 1,000 A. D.]:

(10) [Katafara ni [[ito yoku naru] bifa no
 beside LocM very well sounds 'biwa'*** SubjM
 wokasi-ge naru] ga aru] wo ... kakinarasi-taru
 interesting-looking be SubM be ObjM play past
 koso wokasi-kere.
 TopM was

'It was fun playing the good-looking Japanese guitar that sounded nice which happened to be beside us.'

* The Navajo examples are taken from Akmajian and Anderson (1970), Langacker (1972), and Perlmutter (1970).

** This was first pointed out by S.-Y. Kuroda (lecture in Tokyo, October 1972).

*** Bifa is a traditional Japanese musical instrument that looks like a mandolin.

- (11) [[wotoko nado no utisarugafi, mono yoku ifu] ga ki-taru]
 man e. g. jokes things say come

wo ... ire-t- tu - kasi
 let-in-have-feel like

'One would be tempted to let in a talkative jokester who called.'

- (12) uresiki mono ... [[mada mi - nu] monogatari no
 pleasing yet see not story PossM
 iti wo mi-te, imiziu yukasi to nomi omofu]
 one (volume) very much feel like simply think
 ga nokori miide-taru.
 PossM rest find

'Things that make us happy ... to find out the parts which follow the first volume of an unknown story one happened to read and felt like reading the rest.'

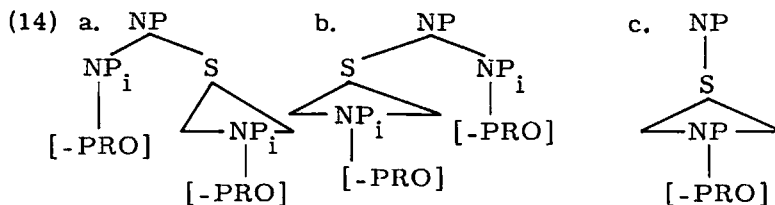
- (13) [inu wo nagasase - tamafi - keru] ga kaerimawiri-taru
 dog desert honorific perfect come back

to te tyoozi - tamafu.
 that because beat

'(The Emperor) makes (his inferiors) beat the dog because it came back though (the Emperor) made (his inferiors) desert it.'

The underlined NP's are those NP's which would correspond to the HEAD if such were present.

The current practice of transformational analysis of English (or Japanese) is to assume the structure in (14a) or (14b) to be the underlying structure of an RNP. However, if we assume the same structure for the headless relative construction discussed above, we will be forced to postulate in the grammar of Navajo or that of Old Japanese a very strange transformation that deletes a matrix constituent under identity with an element in the embedded sentence.*



* Such rules may not be as strange as I first imagined, for, as I argued elsewhere (Harada 1973b), there is considerable evidence for a rule in Modern Japanese that deletes a matrix constituent under identity with a complement constituent.

However, neither does it seem plausible to assume the structure in (14c) for RNP's at the underlying level of representation. * If the superficially headless RNP's were headless in underlying structure, we would have to modify the theory of selectional restriction in a complicated and otherwise unmotivated way. Consider, for example, the following Navajo sentence:**

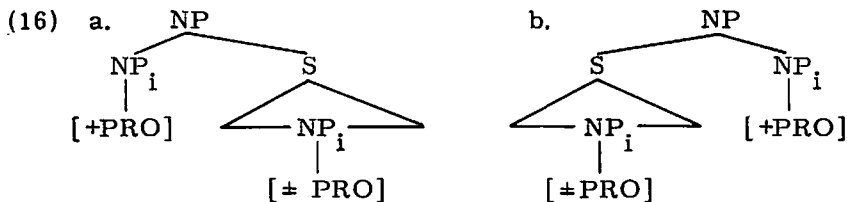
(15) [ʔashkii ʔatʔééd yiyiiLtsán-éé] ʔawééʔ yishchí
 baby gave-birth-to

(a) *'The boy who saw the girl gave birth to a baby.'

(b) 'The girl who the boy saw gave birth to a baby.'

Though (15) is structurally parallel to (9), (15) is unambiguous. The ungrammaticality of the (a)-sense of (15) is obviously due to a violation of the selectional restriction imposed by the matrix main verb. But if the subject of the matrix sentence has the structure in (14c) at the underlying level, we are forced to allow a verb to impose a selectional restriction on an NP which is not in the same clause but in an embedded sentence. What is worse, in the Old Japanese examples (10) and (11), a full-fledged NP occurs only in the innermost embedded sentence, so that the verb in the topmost clause must bear a selectional relation with an NP two sentences down. From this we would have to inevitably assume that selectional restriction is an unbounded phenomenon, which is clearly absurd.

Having rejected all of the structures in (14), I now propose the structure in (16) as the universal underlying structure for RNP's. That is, an RNP consists of a HEAD NP plus an RC, but the HEAD is restricted to a PRO with an index. The RC is constrained to contain an NP (=REL), but this NP is not required to be a full-fledged NP. If REL is a PRO, what will result is a free relative construction.***



No serious problem will arise as to the selectional restriction, for there is a HEAD NP concerning which the restriction can be stated.

* Schachter (to appear) seems to favor such an underlying configuration.

** Taken from Akmajian and Anderson (1970).

*** For the derivation of free relative constructions in English, see Nakau (1973), whose analysis can be made compatible with my proposal in a straightforward way.

3. I have claimed that all the relative clause constructions come from the structures in (16), but such a claim cannot of course be taken seriously unless it is demonstrated that they can be converted to well-formed surface structures.

In languages like Navajo or Old Japanese, the structures in (16) undergo only one rule, which freely deletes the PRO in the embedded clause. Following Perlmutter (1972), I will refer to this rule as "Pronoun Drop". Pronoun Drop is an independently motivated rule, for in the languages being discussed nonemphatic pronouns do not appear in surface structure in other environments.

To derive the more usual construction, with a full-fledged NP in the position of the HEAD, we need an ad hoc rule which I call Pro Head Substitution. This rule copies the REL onto the PRO HEAD, leaving behind a PRO-form of the REL, which I shall refer to as "Shadow Pronoun", borrowing a terminology (but in a slightly different sense) from Perlmutter (1972). Pro Head Substitution is usually obligatory, but in languages like Navajo or Old Japanese, it is optional.

In some languages, e. g. Maltese, no further transformation is applied to the output of Pro Head Substitution, and the surface structure of the form: HEAD [RM ... SH-PRO ...] results.*

(17) il-habel [li tghallaq bi-h]
 the rope RM he-hanged-himself with-it

'the rope with which he hanged himself'

(18) il-kexxun [li qeghid il-maktur fi-h]
 the-drawer RM I-placed handkerchief in-it

'the drawer in which I put the handkerchief'

But in a number of languages, the shadow pronoun undergoes a further transformation which moves it to the clause-initial position. I will refer to this rule as REL Fronting". Thus in English, we can derive (20) from (19):

(19) the man_i [that Velma adores him_i]

(20) the man_i [who_i Velma adores]

Alternatively, the shadow pronoun may simply be deleted. Thus we can also derive (21) from the structure in (19), erasing the PRO "him_i" in the RC.

(21) the man [that Velma adores —]

Perlmutter (1972) argues, assuming the structure in (14a), that REL Fronting leaves behind a shadow pronoun which is later deleted by what he calls the "Shadow Deletion" transformation. According to his proposal,

* Maltese examples are taken from Aquilina (1965). The same situation seems to hold for Classical Arabic, though the relative clause marker in Classical Arabic agrees with the HEAD in case.

there must be an intermediate stage of derivation like (22) between the stages (19) and (20):

(22) the man_i [who_i Velma adores him_i]

This proposal encounters at least the following two problems, however.

In the first place, notice that there is no language in which the fronted relative pronoun and the shadow pronoun can occur in the same REL in surface structure. Thus the structure schematically shown in (23) is not an allowable surface structure, despite the diversity of surface realizations of RNP's.

(23) *HEAD_i [REL-PRO_i SH-PRO_i]

Shadow pronouns can appear if, and only if, REL Fronting has not applied. But to express this fact in Perlmutter's framework, it is necessary to say that Shadow Deletion is obligatory if REL Fronting has applied. Although such an interaction of particular rule applications is describable in terms of such notions as 'global derivational constraint', it is much simpler to say that REL Fronting is not a copying rule but a chopping rule that moves a shadow pronoun.

Moreover, consider the that-REL construction as illustrated by (21). Though Perlmutter says nothing about the derivation of such sentences, there is some evidence that their derivation does not involve movement. The most persuasive argument is suggested by the fact that that-REL's are not subject to Pied Piping. Thus, while we have

(24) the data_i [on which_i my analysis is based]

we do not have

(25) *the data_i [on that_i my analysis is based]

instead we have to say

(26) the data [(that) my analysis is based on]

The ungrammaticality of (25) clearly demonstrates that that-relative clause constructions are not formed through movement.

If this is the case, it will pose a serious problem to Perlmutter's hypothesis. Perlmutter claims that there is no chopping rule in syntax, and that all the rules that used to be formulated as chopping rules in fact consist of a pair of rules, a copying rule and a deletion rule. The island constraints are, according to this hypothesis, imposed rather on (unbounded) deletion rules than on copying rules.

That-relative constructions, however, obey the island constraints, even though the deletion rule which is allegedly involved in their formation is a free deletion rule rather than an unbounded deletion rule in Perlmutter's framework.

No such problems will arise in our framework, however. Shadow pronouns are introduced in our analysis by Pro Head Substitution rather than by REL Fronting. Shadow Deletion is now a rule that deletes the shadow pronoun under identity with the substituted Head. REL Fronting and Shadow Deletion are not ordered with respect to each other. In languages like English, they form a pair which as a whole is obligatorily applied. One can of course apply them in a certain fixed order, but in that case the one that comes first is always optional and the second one is obligatory. In either case, structures like (22) never occur as well-formed surface structures.

In some languages, e. g. Japanese, REL Fronting does not exist, but this is fully predictable from Bresnan's (1970) Complementizer Substitution Universal:

(27) Complementizer Substitution Universal

Only languages with clause-initial COMP(lementizer) permit a COMP-substitution transformation.

Since languages like Japanese have complementizers in the clause-final position, the above universal correctly predicts that such languages do not have REL Fronting in their grammars.

The rules that we have set up thus far are the following four:

- (28) Pro Head Substitution
REL Fronting
Shadow Deletion
Pronoun Drop

The interaction of Shadow Deletion and Pronoun Drop is still left largely unspecified. We shall discuss this matter in the next section.

4. Ross (1967) has shown that English relativization is subject to a set of constraints which he named "island constraints". In brief, the constraints prevent any chopping transformation making a crucial use of variables* from extracting an element out of an "island", where an "island" is either one of the following constructions:

- (29) a. a complex NP
b. a coordinate structure
c. a possessive NP
d. a sentential subject

As I argued elsewhere, (Harada 1973a), the following can be added to this list

* i. e. any rule that moves an element across a variable, without leaving any trace in the original position.

- (30) an adverbial subordinate clause, i. e. an embedded sentence marked with such subordinate conjunctions as because, as, though, if, when, etc.

However, a number of amendments have been shown to be made on Ross's particular theory.

Observe, for instance, that the that-REL construction in English obeys the island constraints, though (as I argued above) no movement is involved there.

- (31) a. *the ecologist [that I believe the rumor that President himself has consulted]
 b. *the girl [that I say my brother and]
 c. *the star [that I listened to Welk's interview of]
 d. *the place [that that Susan has once been to is obvious]
 e. *the pills [that you won't get pregnant if you take. . . .]

It thus appears that the island constraints constrain not only movement rules but also deletion rules. As a first approximation of the characterization of rules that are subject to the island constraints I would like to suggest the following:

- (32) The island constraints constrain any rule that:
 (i) makes a crucial use of variables, and
 (ii) annihilates the operand in the original position.

The condition (32i) distinguishes, for example, Shadow Deletion from Pronoun Drop. The condition (32ii), on the other hand, correctly distinguishes such rules as REL Fronting, Shadow Deletion, Topicalization, and so on, from rules like Pronominalization, Dislocation, and Pro Head Substitution, which are not subject to the island constraints precisely because they all leave behind a pro-form in the original position of the operand.

We can demonstrate the correctness of the characterization in (32) with examples of relativization from various languages. Thus in English relative clause formation is always subject to the island constraints because in this language it always involves either REL Fronting or Shadow Deletion, both of which satisfy the characterization in (32). On the other hand, those languages that have neither of the two rules do not obey the island constraints, as expected. The following is an example from Classical Arabic.

- (33) Raʔ aytu sayyaratān [ʔa9rifu raʒulan [sa-yaʒtarī-ha]].
 I saw car-Acc I know man-Acc will-buy-it
 'I saw a car such that I know a man who will buy it.'

Consider now the following sentences from Modern Japanese:

- (34) [. . . . kayot-te i-ta gakkoo ga taihuu de kowas-are-ta] kodomo-
 go be school typhoon destroy Pass child
 tati
 Plural
 '(Lit.) the children who the school went to was destroyed
 by the typhoon'
 'the children whose school has been destroyed by the typhoon'
- (35) [. . . . siyoo ga hooritu de kinsi-s-are-te i-ru] kusuri
 use law prohibit pill, tonic
 'the pill whose use is officially prohibited'
- (36) [. . . . san-do-me no rikon o si-ta koto ga syuukan-si no
 three times divorce weekly magazine
 wadai ni nat-ta] haiyuu
 topic actor
 '(Lit.) the actor who that has got divorced for the third
 time was the topic of the weekly magazines'
 'the actor whose third divorce has been the topic of weekly
 magazines'
- (37) [. . . . nom-eba ninsin-si-naku nar-u] kusuri
 take if pregnant not
 '(Lit.) the pill that you won't get pregnant if you take. . . .'
 'the pill such that you won't get pregnant if you take it'

At first glance, these examples may seem to illustrate the point that Modern Japanese is simply *not* subject to the island constraints. I contend, however, that that is not the case. My hypothesis is that Japanese relative clause formation also involves Shadow Deletion and is thus subject to the island constraints. Notice first that corresponding to the sentences (34)-(37) we have sentences in which the REL overtly occurs in surface structure as a pronoun:

- (38) [zibun-tati/?kare-ra ga kayot-te i-ta gakkoo ga taihuu de kowas-
 are-ta] kodomo-tati
- (39) [so-no siyoo ga hooritu de kinsi-s-are-te i-ru] kusuri
- (40) [zibun/?kare/sono-hito ga san-do-me no rikon o si-ta koto ga
 syuukan-si no wadai ni nat-ta] haiyuu
- (41) [sore o nom -eba ninsin-si-naku nar-u] kusuri

This is not the case, however, with normal relative clause constructions.

- (42) [(*zibun/*kare ga) masu o tut-ta] syoonen*
 trout fish boy
 'a boy who caught
- (43) [Kita Morio ga (*sore o) kai-ta] syoosetu
 write novel
 'a novel which Kita Morio wrote'
- (44) [Taroo ga (?*soko ni) tui-ta] eki**
 arrive station
 'the station at which Taro arrived'
- (45) [Tokugawa Ieyasu ga (?*sore de) gohan o tabe-ta] hasi
 rice eat chopsticks
- (46) [(?*soko ni) hana ga ippai sai-te i-ru] kooen
 flower full bloom park
 'the park where there are a lot of blooming flowers'

The difference seems to stem from the difference in the position of REL. That is, in the first set of sentences REL is in an island, whereas in the second set it is not contained in an island. The distributional asymmetry in question can be neatly accounted for by my hypothesis. All the structures in (34)-(46) undergo Shadow Deletion. Since this rule is obligatory, structures (42)-(46) all undergo its operation, and hence the REL's cannot overtly occur in surface structure. On the other hand, the other structures fail to undergo the operation of Shadow Deletion because of the island constraints. At the stage in the derivation immediately after Shadow Deletion, then, we have structures like (38)-(41). These structures are further subject to Pronoun Drop, which gives us structures like (34)-(37). Since Pronoun Drop is an optional rule, both (34)-(37) and (38)-(41) are well-formed surface structures.

5. We have argued that the relative clause constructions are derived from underlying structures of the sort shown in (16), through the rules Pro Head Substitution, REL Fronting, Shadow Deletion, and Pronoun Drop. We have also discussed some of the major differences in the relativization processes in various languages, and shown that they can be accounted for in terms of the currently available universal restrictions on possible grammars with slight modifications.

* The reflexivization of REL in this example is indicative of the need for Backward Reflexivization, which would not require the subjecthood of the antecedent of the reflexive.

** The fact that overtly occurring REL's in (44)-(46) are not as bad as my hypothesis predicts is perhaps due to some perceptual reasons. It remains a mystery in the present state of my investigation.

References

- Akmajian, Adrian, and Stephen Anderson (1970) "On the use of fourth person in Navajo, or Navajo made harder" International Journal of American Linguistics 36. 1-8.
- Aquilina, Joseph (1965), Teach Yourself Maltese. The English Universities Press.
- Bresnan, Joan W. (1970) "On complementizers: toward a syntactic theory of complement types" Foundations of Language 6. 297-321.
- Greenberg, Joseph H. (1963) Universals of Language. The MIT Press.
- Harada, S. I. (1973a) "Constraints on binding" Studies in English Literature, English Number 1973, 41-72.
- (1973b) "Counter Equi NP Deletion" Annual Bulletin of the Research Institute of Logopedics and Phoniatics, University of Tokyo, 7. 113-147.
- Langacker, Ronald W. (1972) Fundamentals of Linguistic Analysis. Harcourt, Brace and Jovanovich.
- Nakau, Minoru (1973) "The deep structure of English free relative clauses" Studies in English Literature, English Number 1973, 117-141.
- Perlmutter, David M. (1970) "Relative clauses" MIT class handout.
- (1972) "Evidence for shadow pronouns in French relativeization" Paul M. Peranteau et al. (eds.), The Chicago Which Hunt (Chicago Linguistic Society), 73-105.
- Ross, John Robert (1967) Constraints on Variables in Syntax. Unpublished Ph. D. dissertation, MIT.

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