PRAGMATIC CONSTRUCTIONS AND UNBOUNDED DEPENDENCIES IN JAPANESE[1]

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1. INTRODUCTION

This paper is an attempt to analyze 'Double Nominative Constructions' (DNC, henceforth), 'Double Object Constructions' (DOC), Topic Constructions, and Relative Constructions in Japanese. It will be shown that these constructions are generated by the same rules and are of unbounded dependencies. It will also be claimed that there are two different kinds of particles involved with the DNC and the DOC respectively and that different types of structures are contingent upon the double (or multiple) appearance of 'ga' and 'o'. In Section 1, the argument will begin by examining the DNC. The nature of the problem involving the DNC will be presented along with related data and the analyses of previous authors will be briefly discussed. Section 2 will be devoted to the preliminary work for a GPSG analysis. In section 3, a solution will be put forth within the GPSG framework. The analysis proposed in this paper, unlike previous ones reviewed, claims that each of these four constructions is not an isolated phenomenon but an output of general rules which extract NP out of X^2.

1.1 The nature of the problem

In Japanese, the subject of a sentence is considered to be marked by the postpositional particle 'ga'. It is not clear, however, whether every NP marked by 'ga' is a subject or not, since we can find apparent non-subjects being marked by 'ga' and some simplex sentences contain more than one 'NP-ga'. The DNC has been a thorny problem to Japanese transformationalists since their framework requires that there be only one subject NP in a simplex sentence. The same problem arises when we apply the GPSG model to the sentence structure of Japanese, since feature conventions and PS rules, as formulated in Gazdar *et al.* (1985)

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[1] This paper is a revised version of 'Double Nominative Constructions in Japanese' which was originally submitted to Henry J. Warkentyne. I am indebted to Thomas E. Hukari for the formal treatment of the data and to Henry J. Warkentyne and Yasu-Hiko Tohsaku for valuable comments and encouragement. My thanks also go to Miyamoto Tadao, who was a good informant. However, all the shortcomings are mine.

(GKPS, hereafter), label ordinary simplex sentences as well-formed if one and only one [+SUBJ] feature appears on the tree.

1.2 Different types of DNC

There are different types of DNC and any treatment of them should be able to account for the following data. The heading for each type is merely mnemonic.

(1) NP-POSS NP

a. Zo ga hana ga nagai.
elephant SM nose SM is-long (SM: subject marker)

'It is the elephant whose trunk is long.'

b. Ano gakusei ga otosan ga yumei da.
that student father famous-is

'It is that student whose father is famous.'

The above 'NP ga NP ga' can be alternatively expressed in 'NP-no NP-ga' (cf no: possessive marker).

(2) NP-OBLIQUE CASE MARKER

a. Kono mura ga takusan hito ga kuru.
this village many people come

'It is (into/from) this village that many people come.'

b. Koko ga Fuji san ga yoku mie-ru.
this place Mt. well is-seen

'It is (from) this place that Mt. Fuji is seen easily.'

For the sentences in (2) the unmarked forms are 'NP + OBLIQUE POSTPOSITION' as in 'Fujisan ga koko kara yoku mieru.'

The verbs illustrated in (3) and (4) are grouped together, since they share some syntactic features : the initial NP can be converted into NP-NI (Dative Marker), and the NP-NI appears to be a trigger of honorific expressions and reflexives.

(3) NP-SM NP-SM VERBS OF POSSESSION, DESIRE, COMPETENCE, ...

a. Boku ga kodomo ga aru.
I child have

'I have children.'

b. Watasi ga kokyo no machi ga koisii.
home of town be-homesick-for

'It is I that miss my hometown.'

c. Watasi ga okane ga hosii.

'I want money.'

d. John ga/*ni sugaku ga suki-da.

'John likes math.'

e. Mary ga otoosan ga kowai.
father fearful/fearsome

'Mary is afraid of her father.'

f. Anata wa/ni nihongo ga wakarimasu ka?
you Japanese understand QUES

'Do you understand Japanese?'

g. Dare ga/ni kokuban no zi ga mienai ka?
blackboard 's letter visible QUES

'Who cannot see the letters on the blackboard?'

h. Dare ga/ni nihongo ga dekiru ka?
who Japanese can(do)

'Who can (speak) Japanese?'

(4) NP-SM NP-SM verb + 'tai'/'reru' ('-want'/ '-can')

a. Boku ga osusi ga/o tabe-tai.
I sushi eat want

'I am anxious to eat sushi.'

b. Boku ga eiga o/ga mi-tai.
movie see want

'I want to see a movie.'

There are several different analyses of the DNC in Japanese. The analyses proposed by Kuno (1973), Tonoike (1975-76), Shibatani and Cotton (1976), and Hoji (1980) are briefly examined. First, Kuno's analysis comprises three different rules: Subjectivization, Ga/Ni Conversion, and Ga for Object

Marking. Subjectivization takes non-subject NPs and transforms them into "Subject". This rule is intended to cover the particle variation of the DNC in the following data.

(5) a. Zo no hana ga nagai.
elephant POSS nose SM is-long

b. Zo ga hana ga nagai. (= 1a)

c. Fuji san ga koko kara yoku mie-ru.

d. Koko ga Fuji san ga yoku mie-ru. (= 2b)

'Ga/Ni Conversion' and 'Ga for Object Marking' are related to stative verbal constructions as shown in (6):

(6) a. Boku ni kodomo ga aru.

'I have kids.'

b. Boku ga kodomo ga aru. (= 3a)

c. Dare ni nihongo ga dekiru ka?

'Who can (speak) Japanese?'

d. Dare ga nihongo ga dekiru ka? (= 3h)

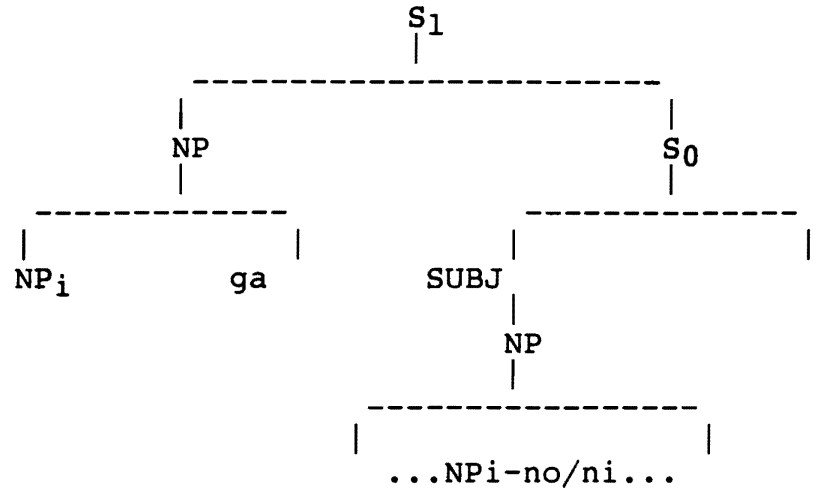
In (6b) and (6a), for example, 'Ga/Ni conversion' takes 'Boku ga', and converts it into 'Boku ni'. 'Ga for Object Marking' assigns an object status to 'kodomo' and marks it with 'ga' if the verbals are 'stative'. The shortcomings of Kuno's analysis are largely due to the 'Subjectivization' rule which changes non-subjects into subjects. The presence of two subjects makes some phenomena concerning subjects inconsistent. This transformation turns out to be incompatible with 'honorification' and 'reflexivization', which are controlled by subjects. That is, the two subjects on the surface are the source of the problem. Another deficit is that the first NP-ga in (6b) is base-generated, contrary to native speakers' intuition, which recognizes the NP as a marked form. There is still another problem, i.e., 'idiosyncratic' constructions which do not undergo the 'Ga/Ni conversion' as in (3d) (cf. Kuno 1973: 89).

Tonoike (1975-76) takes the opposite direction of Kuno in dealing with 'stative' verbal constructions and relieves himself of the 'idiosyncrasy' controversy. That is, he applies a 'Ni to Ga' rule to these constructions, which has the same effect as Kuno's 'Subjectivization'. Thus, (3d) is not problematic any more. However, Tonoike has to base-generate the NP-ni

separately, and apply the 'Ni to Ga' rule to the 'NP-ni Np-ga V' pattern. The same criticism which was directed at Kuno also applies to Tonoike since Tonoike's rule also introduces a separate subject into a sentence which already has one. There are still other problems with respect to agreement since Tonoike's treatment presupposes that NP-ni is not a subject in the stative verbal construction. On the contrary, Np-ni acts like a subject in this construction.

Shibatani and Cotton (1976) (S & C, henceforth) and Hoji (1980) propose a similar analysis along the following lines:

(7) S & C (1976: 276)



(8) Hoji (1980: 42)

(i) NP-ga NP-ga V , where V is subcategorized for two NP-ga's

(ii) NP-ga [S] , where 'ga' is subcategorized so as to select NP and S.

S & C base-generate every construction involving a DNC (four of them, which are found in (5) and (6)), whereas Hoji reduces the number to two. One of the common shortcomings of the two analyses is simply that there are many counterexamples as illustrated in (9):

(9) a. Boku(ni) GA Fuji-san wa koko(kara) GA yoku mieru.
I to Mt. here well is-seen

'It is by me that Mt. Fuji is easily seen from here.'

b. Bunmeikoku GA dansei GA heikinzyumyoo GA mizikai.
civilized country man average lifespan is-short

'It is (in) the civilized countries that, as for men, their average life span is short.'

These examples reveal only a portion of the hidden defects of the movement (or lexical) analysis which resembles the ones illustrated in (7) and (8). Their analyses ignore the sentence-medial GAs found in (9). (Also see (14) and (24).) Furthermore, the base-generation of NP-ga NP-ga V by Hoji (and by S & C in some sense) is not matched with any other independent motivation in Japanese syntax, and it is also incompatible with native speakers' intuition as pointed out previously in the discussion of Kuno's analysis.

2. A PROPOSAL FROM A GPSG POINT OF VIEW

In this section, a formal approach to the DNC, the DOC, Topic Constructions, and relative clauses will be attempted within the GPSG framework. It will be shown that these constructions are very similar to one another and can be covered by the same rules. I will also suggest that "Anti-Foot Features" be postulated as syntactic features in Japanese. I will assume with GKPS that an argument NP is a possible controller in control-agreement, and that control relations, whether they are local or non-local, can be accounted for by a well-formed condition on each local tree.[2] It will also be assumed, as it has been by previous authors, that honorifics and reflexives are triggered by the subject of a sentence.[3]

2.1 Preliminaries

The GPSG framework as formulated in GKPS consists of several components: Immediate Dominance (ID) rules, Linear Precedence

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[2] The candidate for a controller is an argument NP, or a displaced NP if it is introduced by the ID rule. See GKPS 85-89.

[3] The following sort of Subject Honorific Agreement Principle (SHAP) is assumed:

SHAP: if there exists a X[-N][+hon], there must exist a sister NP[p][+HON] such that p is the value of CM and the following algorithm obtains:
(i) If [HON] ε $DOM^{+}(H)$, then $C_o(HON) = H(HON)$, or
(ii) otherwise, $C_o(HON) = U\ C_i(HON)$,
where nouns are classified into N[+HON], N[-HON], and N[¬[HON]]. (¬ : undefined)
N[+HON]:terms for persons who have a higher position in the family, kinship hierarchy or in the societal strata.
N[-HON]: terms for animals and most inanimate things.
N[˜[HON]]: body parts, writings, pictures, etc.

(LP) rules, Metarules, Feature Cooccurrence Restrictions (FCR), and Feature Specification Defaults (FSD) (GKPS: 104). Basic sentence patterns are sanctioned by ID rules and LP rules. ID rules, if we ignore the projection function, are considered to be the same as the traditional PS rules except that linear order among constituents is missing. LP rules regulate the linear order among daughter nodes of a local tree. A Metarule is a kind of redundancy elimination mechanism which captures the relationship that holds among surface syntactic variants. All the rules are based on surface only. Passive forms, for instance, are generated by the metarule which operates on the active counterpart:

Passive Metarule (GKPS: 59)

VP ---> W , NP

⇓

VP[PAS] ---> W , (PP[by])

FCR and FSD will be introduced later. The rest of this section will be devoted to the formulation of ID rules, LP rules, relevant syntactic categories, and syntactic features in Japanese.

As I am not aware of any previous work in Japanese which deals with basic PS rules within the GPSG framework, the following is based on some of my empirical observations of various Japanese sentence structures.[4] In the following, the small letters will represent underdefined lexical categories, and the large letters, underdefined categories of both lexical and phrasal levels.

Non-lexical ID rules:

1. $S \rightarrow X^{2[P]}_{[+N]}\ H[-SUBJ]$

2. $Y^2 \rightarrow X^{2[P]}\ \ Y^{2/X2}$

3. VP --->XP[+ADV], H

4. NP ---> XP[P], H

...

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[4] I am aware of Gunji's work (1983), which is more on the semantics side. His work concentrates on semantic control.

Lexical ID rules:

X^2 ---> H, {<P, a>} where P ε { CM,Pn,Pv,DM } U
{ a| a = value of P }.

VP ---> H[1]

VP ---> H[2], NP

VP ---> H[3], NP[ga]

VP ---> H[4], NP[ni], NP

VP ---> H[5], NP, NP[Pn]

VP ---> H[6], NP[Pn]

VP ---> H[7], VP[Pv]
[AUX]

...

VP ---> H[i+1], NP[ni], VP

...

LP rules:

1. ~[SUBCAT] < [SUBCAT]

2. ~H < H

3. [+N][P] < [-N]

Syntactic Features:

features	*value range*	
N	+,-	
BAR	o, 1, 2	
SUBCAT	{ 1,2, ... n } U { CM, Pn, Pv, DM }	
NFORM	CM, Pn, DM.	*CM=Case Marker Pn=noun postposition Pv=verb postposition DM=Discourse Particle
SUBJ	+, -	
ADV	+, -	
SLASH	category	
CM AGR	NFORM	

HON	+, -
hon	+, -
nom	+, -
acc	+, -
dat	+, -
gen	+, -
CM	ga, no, o, ni
DM	wa, ga, o
Pn	kara, ni, de, e, made, ...
Pv	to, yoo-ni (=COMP) (See footnote 5.)

Syntactic Categories:

S[Pv] = [<N, ->, <BAR, 2>, <SUBJ, +>,<Pv, x>, ...]

VP[Pv]= [<N, ->, <BAR, 2>, <SUBJ, ->,<Pv, x>, ...]

NP[CM] = [<N, +>, <BAR,2>, <CM, x>, ...]

NP[Pn] = [<N,+>, <BAR, 2>, <Pn, x>, ...]

S = [<N, ->, <BAR, 2>, <SUBJ, +> ...] (=V^2[+SUBJ])

VP = [<N, ->, <BAR, 2>, <SUBJ, -> ...]

NP = [<N, +>, <BAR, 2>, [p], ...]

ga = [<nom, +>, <BAR, 0>]
or [<focus, +>,<nom, +>, <BAR, 0>]

o = [<acc, +>, <BAR, 0>]
or [<focus, +>,<acc, +>, <BAR, 0>]

no = [<gen ->, <BAR, 0>]

ni = [<nom, +>, <dat, +>], or [<acc, +>, <dat, +>]

wa = [<topic, +>, <BAR,0>]

kara = [[kara], <BAR, 0>] 'from'

...

Head Features = stative, hon, AGR, HON, AUX,...

Foot Features = SLASH, HON,

Anti-Foot Features = p, AUX, stative, where p = Value of P.
(See footnote 6.)

Feature Cooccurrence Restrictions:

FCR 1: DM[+focus][+nom] > ¬[acc]

FCR 2: [[+stative] [BAR2]] > CM AGR [ni]

FCR 3: [+null] > SLASH

FCR 4: ¬[P] > H

FCR 5: H[BAR 2] > ¬[P]

FCR 6: ¬[BAR 1][P]

FCR 7: $V^{2[+SUBJ]}$ > ¬[stative], ¬[AUX], ¬[hon],

FCR 8: [stative] U [AUX] > [-N]

FCR 9: [+stative][+AUX][BAR 0] > CM AGR[NForm[AGR[CM[ga V o]

FCR 10: DM[+focus,+acc] > ¬[nom]

FCR 11: [p] > [+N]

Feature Specification Defaults:

FSD 1: [-hon]

FSD 2: VP[CM AGR [ga]]

FSD 3: V [CM AGR [o]]

FSD 4: XP[¬[P]]

FSD 5: [-stative]

One of the breakthroughs developed in GKPS is on the notion of the syntactic category. Syntactic categories are considered to be a bundle of feature and feature value pairs, i.e., <feature, feature value>. A random choice of features and corresponding values may serve as a syntactic category if it constitutes the UNIFICATION of features. It should be also noted that case

markers are not treated as a primitive category, but as an analyzable unit consisting of features.[5, 6]

2.2 Pragmatic constructions

2.2.1 Two types of DNC

The DNC can be divided into two types according to the conditioning factors: one is structure-dependent and the other is verbal-dependent. The DNC in (1) and (2) are predictable from the syntactic structure and may as well be labelled as the S-DNC. The other is sanctioned by the presence of a certain class of verbals. Thus, the latter will be called the V-DNC.

This section will concentrate on the S-DNC only. As can be seen from the sentences in (1) and (2), possessive and oblique case markers are replaced by GA. This GA, apparently, is not a subject marker since there exists a more plausible subject marker in the same sentence. Considering the existence of the topic marker WA, I will conjecture that GA is a kind of discourse particle which has a focusing function.[7] Thus, possessive and oblique case markers are replaced by the discourse particle GA[+focus, +nom], through the following procedure.

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[5] Verbal infixes which are inserted before AUX are not included in Pv(=COMP), since they play no distinctive role in Japanese syntax. The definition of Pv is restricted as such, since Pv has the power of bringing the sentential complement into scrambling phenomena whereas infixes do not.

[6] Anti-Foot Features act in the opposite way that Foot Features do, i.e., the feature of the mother percolates down to each of the daughter nodes of the same major syntactic features. The motivation for this feature originates from the fact that the adnominal NPs in the domain of subjects and objects act in the same way as their head NPs respectively with regard to 'CASE'. This will become clear in the ensuing sections.

[7] I assume that 'ga' is not only a subject marker but also a focusing device which may be equivalent to sentential stress, 'It--that--'construction, passive construction, etc. of English. See Martin (1983) and Bloch (1946) for GA as an 'emphatic subject' marker, and Kuno (1973) for the 'exhaustive listing' property of GA. Further studies are needed on the side of pragmatics as to the discourse function of 'GA'. I am assuming "isomorphism" between 'Focus Construction' and 'Topic Construction'. Capital letters will be used to indicate the identity as a discourse marker.

(10) Focusing Metarule (First Approximation)

V^2 ---> N^2, W

V^2 ---> $N^{2/N2}$, $N^{2[DM[+foc,]]}$, W,

where W={{possible daughter nodes of V^2}-{defined categories}}.

This rule is intended to say that the adnominal NPs as well as head NPs are discharged from within N^2, pick up DM[GA], and attach to the [V] axis at the same time. The motivation for this movement analysis is related to the fact that adnominal NPs, which are not scrambled when they are marked by a POSS marker, can participate in the scrambling phenomenon when they are followed by GA, as shown in (11) (also see the scrambling rule in the last section):

(11) a. Zo no hana ga nagai.

b.*Hana ga zo no nagai.

c. Hana GA zo ga nagai.(=1a)

d. Zo ga hana GA nagai.

e. Ano toki John no kao ga akakatta.
that time face was-red

'At that time John's face was red.'

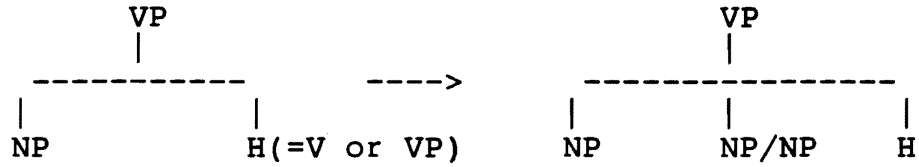
f.*Ano toki kao ga John no akakatta.

g. John GA ano toki kao ga akakatta.

h. Kao ga ano toki John ga okkatta.

The other motivation for the movement analysis is involved with unbounded dependencies, which will be introduced later along with a more general formulation of the Focusing Metarule. (11) reveals that a simple replacement of 'no' with GA is not enough of a solution. S & C (1976) and Hoji (1980), as was pointed out, account for only the subset of the DNC. Rule (10), in contrast, is compatible with all the above examples since the head NP as well as POSS-NP can, vacuously or unvacuously, be replaced from the original position to V-axis, being marked by GA at the same time. The structural change which rule (10) brings in is illustrated in (10').

(10')



There are some cases of overgeneration such as (12). That is, rule (10) incorrectly applies to NPs within the minimal VP. This situation is taken care of by FCR in the GPSG framework. FCR 1 (DM[+focus] > ¬[acc]) is formulated to block the generation cases in (12).

(12) a. *Okasi ga haha ga kodomo ni]e" watasi-ta.
sweets mother child to give PAST

'It is sweets that the mother gave to the child.'

b. *Kodomo ga haha ga]e" okasi o watasi-ta.

'It is (to) the child that the mother gave sweets.'

Note that control-agreement involving honorifics and reflexives which were problematic with Kuno and Tonoike is not troublesome any more in this analysis, since the displaced NP is not marked by CM but by DM which is irrelevant with the agreement problem. (See footnote 3 for 'SHAP' in this section.)

2.2.2 S-DNC and Topic Construction

If we substitute WA for GA in the rule 10, then what we call 'Topic Constructions' (TOPC) will be obtained without any additional provision. Rule 10 will be generalized as is shown in (13):

(13) Pragmatics Metarule (Second Approximation)

V^2 ---> N^2, W

⇓

V^2 ---> $N^{2/N2}$, $N^{2[DM]}$, W (W: as defined in (10))

Unlike the S-DNC, the TOPC is not constrained by any FCR. It seems natural that similar pragmatic constructions are generated by the same rule. Rule 13 will cover all the instances of the S-DNCs and TOPCs in (14).

(14) a. Koko GA Fuji-san ga boku ni yoku mieru.

b. Boku wa Fuji-san ga koko GA yoku mieru.

c. Boku GA Fuji-san ga koko GA yoku mieru.

e. Koko wa Fuji-san wa Boku wa yoku mieru.

f. Fuji-san wa boku wa koko ga yoku mieru.

...

All the 48 possible sentences in (14) are generated by the single rule (13). No previous analysis has ever come close to attaining this power. There are, however, some other data which cannot be grasped by (13). As is shown in (15), there are cases where a certain constituent of the subordinate clause appears, being marked by DM, in the domain of the main clause and the missing slot is either empty or filled with resumptive elements. That is, unbounded dependency constructions (UDC) are also involved with discourse particles. The following examples are the cases where NP is extracted out of S, being marked by DM.

(15) a. John wa boku ga [(kare no) otosan ga yumei] to
I S HE father is-famous COMP

omota.
thought

'As for John, I thought that (his) father was famous.'

b. John GA boku wa [(kare no) otsan ga yumei] to omota.
S
'It is John whose father, I thought, was famous.'

c. Koko kara GA/wa boku ga [Fuji-san ga __ yoku mieru]
S
to omota.

lit. 'It is this place from which/As for this place, I thought Mt. Fuji is easily seen.'

Furthermore, there are a set of interesting examples which show the same type of displacement from $V^{2}[-SUBJ]$:

(16) a. Sono hon wa [boku ga Mary ni [__ kau] yoo-ni
that book S I to VP buy VP COMP

sumumeta.]
advised S

'As for that book, I advised Mary to buy (it).'

b. Boku wa sono hon wa Mary ni [__ kau] yoo-ni
VP VP COMP
sumumeta.

lit.'As for me, concerning that book, I advised Mary to buy (it).'

The examples in (15) and (16) can be generated by a rule like (17). The presence of (16) gives symmetry to the extraction rule which would otherwise be stilted and could not cover relative constructions, as will be shown later, with one ID rule.

(17) Extraction Metarule

V^2 ---> W

⇓

V^2 ---> $X^{2[DM]}$, H/X^2

This formulation is essentially the same as the English counterpart which is "S ---> X^2, H/X^2". A slight change from S to V^2 enables us to account for the extraction from both $V^{2[+SUBJ]}$ and $V^{2[-SUBJ]}$.

At this point we might as well turn our attention to what is called "Double Object Constructions" (DOC). The DOC is also characterized by the double appearance of same case markers, i.e., 'o' in this case. The problem involving the DOC is very similar to the DNC. However, this construction has not been a popular topic among Japanese transformational linguists for good reasons. Now, we may take a further step and see if there is a syntactic or pragmatic device which focuses NPs within the minimal VP in Japanese. The following examples are very revealing in this respect:

(18) a. John ga Mary no kao o butta.
face OM hit OM:Object Marker
'John hit Mary's face.'

b. John ga Mary o kao o butta.
'It is Mary whose face John hit.'

c. Mary o [John wa __ kao o butta.]
S

d. John ga Mary ni hon o watasita.
to book gave

'John gave a book to Mary.'

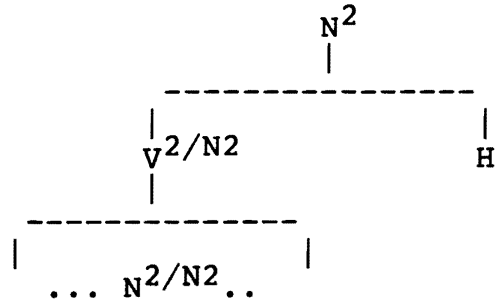
e. John ga Mary o hon o watasita.

f. Mary o [John ga __ hon o watasita].
S

g. Mary o [watasi wa [John ga (kanojo no) kao o butta]
I SHE face hit
to omota.
COMP thought
'It is Mary whose face, I think, John hit.'

These seemingly puzzling data are easily handled by (17), if we merely postulate that 'o' has the function of focusing NPs subcategorized for V. This move seems to be correct, since native speakers recognize the displaced 'NP-o' as emphasized, as reflected in the translation. FCR 10 will block 'subject-dominated' NPs from being emphasized by 'o'.(FCR 10: DM[+focus,+acc] > ¬[nom].)

Now, we turn to the last of the four unbounded dependency constructions in Japanese, i.e., the relative construction. Japanese relative clauses are different from English counterparts in that there are no overt 'relativizers' and that relative clauses precede head NPs. The structure of Japanese relative clauses is shown below.



This structure requires a rule like (19):

(19) N^2 ---> H, $V^{2/N2}$

Are these rules (i.e.,13, 17, and 19) to be stated separately as they are now? The rules (13) and (19) are related to each other since they generate pragmatic constructions, local and long-distance, respectively. On the other hand, the rules (17) and (19) give rise to UDCs which might as well be covered by one rule, if possible. The three rules are repeated:

(20) a. V^2 ---> $N^{2/N2}$, $N^{2[DM]}$, W (= 13)

b. V^2 ---> H/N2, $N^{2[DM]}$ (= 17)

c. N^2 ---> $V^{2/N2}$, H (= 19)

(20a) and (20b) can be reduced to one rule, (21). As we combine the two rules into (21), W is no longer needed since the output of the rules (20a) and (20b) is the subset of the output of (21).[8]

(21) V^2 ---> $X^{2/N2}$, $N^{2[DM]}$

Now, (21) and (20c) can easily be incorporated into one rule:[9]

(22) Y^2 ---> $X^{2/N2}$, $N^{2[P]}$, where P is a variable over DM or NIL.

At this point we should examine whether rule (22) generates unwanted strings which were not sanctioned by the previous two rules. According to the GKPS's formulation of "free instantiation of features" rule (22) is projected on the tree in one of the following ways.[10]

(23) a. N^2 ---> $N^{2/N2}$, $N^{2[P]}$

b. N^2 ---> $V^{2/N2}$, $N^{2[P]}$

c. V^2 ---> $N^{2/N2}$, $N^{2[P]}$

d. V^2 ---> $V^{2/N2}$, $N^{2[P]}$

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[8] This amalgamation adds a new power to the rule (i.e., the difference of the two output sets is desirably related to grammatical sentences). (20a) cannot generate the sentence (24c), whereas the portion of (21) which corresponds to (20a) can. See the argument involving 'vacuous extraction' in (24).

[9] (22) is more correctly 'Y^2 ---> $X^{2/N2}$, X[+N][P]', because the head of relative constructions is considered N[BAR 1]. I will not, due to limited space, explicate minor details involving this change. Readers will easily find that only correct bar levels are assigned to each case via FCRS 4, 5, and 6.

[10] Only major syntactic features were considered. Recall that Japanese has neither APs nor PPs.

(23c) is not what we want and is correctly ruled out by the HFC. (21a) has the effect of replacing the case markers with DM and extracting NP vacuously, if the head noun is not preceded by any adnominal NP. If a head noun is preceded by any number of adnominal NPs, a few options of extraction are possible. All the adnominal NPs can be cyclically extracted out of the NP into the initial sentence position.[11] Some other options of the rule application may vacuously move NPs into some position within the domain of the highest NP. It would be interesting if this vacuous operation was totally null. It is, in fact, independently needed since we find the following examples:

(24) a. Koko GA Fuji-san GA chojo ga yoku mieru.
here top
'It is here and it is Mt. Fuji that the top (of it) is seen easily.'

b. Bunmeikoku GA dansei GA heikinzyoomyo ga mizikai.

c. Ano toki wa Mary wa (zibun no) otosan ga kita.
that time father came

'At that time (of the event), as for Mary, her father came.'

d. Heikinzyoomyo GA dansei GA bunmeikoku GA mizikai.

If no vacuous extraction were allowed, no two NPs directly attached to any VP could be extracted from their original position in the sentence initial position. (24c) is the case which shows that two NPs immediately dominated by the VP node should be able to move simultaneously somehow. That is, the vacuous extraction is not syntactically null (see 25). (24c) provides further evidence for the extraction analysis since the presence of the resumptive element suggests that 'Mary' should be displaced from situ. Note that the path to the sentence initial position is already 'slash-instantiated' by 'ano toki.' Thus, in (25) the local tree T1 is sanctioned by (23d) and T2 by (23a).

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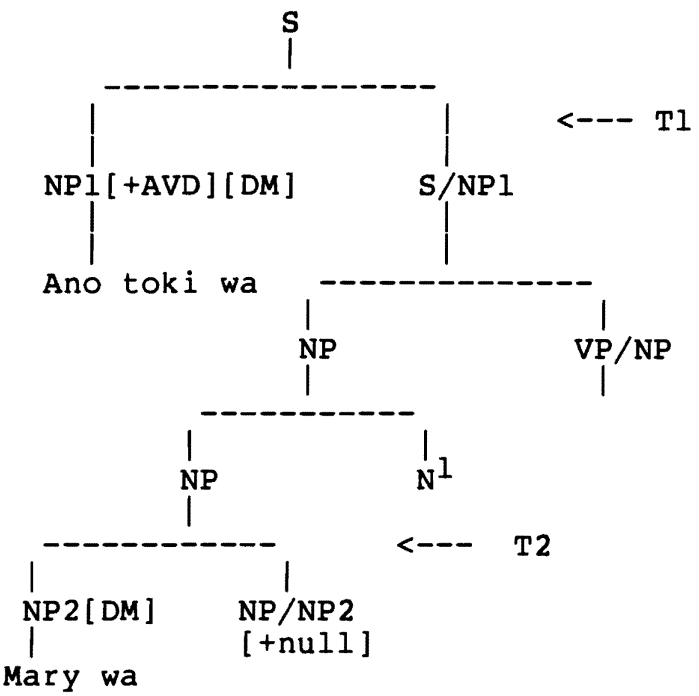
[11] A kind of cyclic extraction is needed if we consider that 'SLASH' only chooses the untrodden path. Only the cyclic option can generate (24d).

(25)



(23b) is responsible for the relative clauses and (23d) for long-distance pragmatic constructions. It should be noted that [P] of (23b) is matched with NIL but not DM, largely due to FCR 5 and FCR 6.

This analysis claims that all the unbounded dependency constructions are generated by a single ID rule ((22)= the second non-lexical ID rule) and LP rule (2). The only difference between TOPC and relative constructions is the constituent order which is handled by one LP statement. It would be interesting to turn to Kuno's statement that Relativization must involve Topicalization for some unknown reason: (Kuno 1973: 254).

> I shall suggest in conclusion that what is relativized in a relative clause is not an ordinary noun phrase but a noun phrase followed by the thematic particle 'wa'.

In this paper, it has been shown that the unknown coincidental phenomenon is plainly predictable and that 'Relativization' is not preceded by 'Topicalization'.

Up to now we have discussed the top part of the extraction rule. The bottom part will be accounted for by (26):

(26) Slash Termination Metarule(STM)

X ---> N^2, P P: particle

X ---> $N^{2[+null]}$

This rule says that N^2 which is sister to P can be extracted. The two effects of this rule are the extraction of N^2 and the deletion of particles. There are three main reasons for not extracting NP[P]. The STM is to operate on the lexical ID rule even in the cases where non-head NP can be missing in the noun phrase.[12] The second reason is involved with relative clauses where the head NP should not bear any particle which it used to bear in the adnominal clause. Otherwise, we need a deletion rule which obligatorily applies to the particles of the relativized NP. The third reason is that we do not find a 'koko-ga-kara' form which would be found if derived the other way, since [P] is simply a feature of NPs which can be freely branched off NPs. Still another reason is that we would need an additional deletion rule which applies to case markers such as 'ga' and 'o', since they do not show alternation. Thus, alternation (e.g. 'koko kara ga' and 'koko ga') becomes a matter of particle retrieval rather than deletion. Thus, the following formulation treats alternation:

(27) Particle Retrieval Metarule

X ----> NP[x], DM

X ----> NP[P[x]], DM where x= value of Pn or [+dat] .

The examples in (28) provide further evidence for the retrieval analysis and are also very clear pieces of evidence for the existence of the "Anti-Foot Feature" which was mentioned earlier.

(28) a. Sono yama no chojo (kara) GA Fujisan ga yoku mieru.
this mountain top from DM MT. Fuji CM well is-seen.

'It is (from) the top of this mountain that Mt. Fuji is easily seen.'

---

[12] This is a little different from its English counterpart since P is not considered the head of NP.

b. Sono yama wa chojo (kara) wa/GA Fujisan ga yoku mieru.

c. Sono yama (kara) wa chojo (kara) GA Fujisan ga yoku mieru.

'As for this mountain, it is from its top that Mt. Fuji is easily seen.' (= 28b)

The alternation between 'sono yama GA' and 'sono yama kara GA' is possible only if we assume that the case feature of the dominating NP is somehow related to (e.g. percolates down to) the non-head daughter NP as well. (Also note that FCR 1 and FCR 10 are filters even of the most deeply embedded adnominal NPs.) Furthermore, these examples almost nullify any kind of deletion analysis since no theory postulates an "underlying 'kara'" between 'yama' and 'chojo'.

2.2.3 Verbal Dependent DNC (V-DNC)

The sentences in (3) and (4) of Section 1 also have a derived structure although the multiple appearance of GA is sanctioned differently from the S-DNC. (The sentences are repeated here.)

(29) a. Boku GA kodomo ga aru.

b. Boku ni kodomo ga aru.

c. Mary GA otoosan ga kowai.

d. Mary ni otoosan ga kowai.

e. John ga sugaku ga suki-da.

f.*John ni sugaku ga suki-da.

I will assume, as previous authors have, that the second NP-ga is the object of the verb whose subcat feature is specified in the fourth lexical ID rule (i.e, VP ---> H[3], NP[ga]). I will also assume that most of the verbs of H[3] have a [+stative] feature.[13] As is suggested in Kim (1985), it will also be assumed that case markers (CM) are subject to a local well-formedness condition which is reflected in FSD 2 and FSD 3. Thus, VP will take NP[CM[ga]] as its argument unless specified otherwise, as V will take NP[CM[o]]. Adverbial NPs are freely introduced into any point of the VP axis as far as the denotation of the new sentence

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[13] A slight difference can be seen between Kuno's classification and mine, since some verbals such as 'suki', 'hosi', etc. are not considered containing [+stative] in this paper.

is the subset of the semantic denotation of the original sentences.

As is observed by Kageyama(1978:46), 'NP-ni' is considered an unmarked expression of 'NP-GA' in (29). Thus, 'NP-ni' will be regarded as basic and NP-GA as emphatic (i.e., focusing), and they will be generated as such respectively. By postulating the FCR 2, we can easily take care of the 'NP-ni' versions:

(30) FCR 2:[+stative][BAR 2] > [CM AGR[NFORM[CM[+nom, +dat]]]]

FCR 2 is intended to say that if a phrasal category has a [+stative] feature, the category takes 'NP-ni' as its sister. This FCR correctly sanctions all the NP[CM[ni]]'s which are sisters of VP[+stative]. It should also be noted that the "idiosyncratic" sentences, which made Tonoike take the opposite direction of Kuno, are accounted for by simply omitting [+stative] from the related lexical entries (i.e., as for the cases like (29f)). Then FSD 2 will take care of the remaining portion. NP-GA versions will be sanctioned by the extraction rule which is formulated in the preceding sections.

There is still another problem which was rarely touched upon in previous analyses of the DNC, i.e., that is, the alternation between 'ga' and 'o', as illustrated in (31):

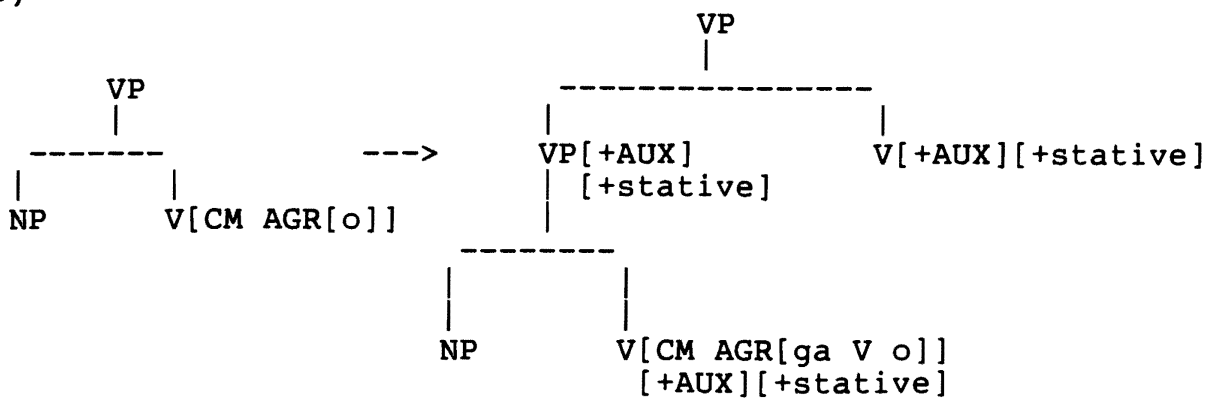
(31) Boku ga osusi o/ga tabe-tai. (=4.a)

The problem is a little complicated because the root verb 'tabe' is a transitive verb and only admits NP[o] in normal instances. In this paper the following FCR is proposed:

(32) FCR 8:[+AUX][+stative][BAR 0] > CM AGR[NFORM[CM[ga V o]]]

FCR 8 says that if a lexical V contains [+AUX] and [+stative] features the verb can take either NP-ga or NP-o as its argument (cf. FSD 5: ¬[+stative]). This solution is possible only if we treat [stative] and [AUX] as an "Anti-foot Feature". Otherwise, a kind of restructuring analysis becomes an alternative which is least preferred for various reasons. The effect of FCR 8 is realized in constructions like (33):

(33)



3. CONCLUSION

One of the most advantageous results of the GPSG approach seems to be that it accounts for the DNCs, the DOC, and topic and relative constructions simultaneously, without appealing to extra rules or *ad hoc* provisions. That is, the isomorphism which exists among those constructions is desirably represented in this analysis. Secondly, the analysis proposed in this paper is compatible with all the DNCs including the ones which used to be considered 'idiosyncratic'. Thirdly, this analysis reflects the general principle that a sister NP of VP is a controller of agreement concerning honorifics and reflexives. Fourthly, it is shown that 'Anti-foot Features' are recognized as syntactic features in Japanese. Fifthly, the treatment proposed in this paper is also in line with the ambiguous use of sentences, i.e., sentences which have basically different structures may take on the same appearance. (34) can be interpreted in three different ways according to context.

(34) Mary ga inu ga kowai.

Sixth, this analysis also recognizes different uses of 'ga' and 'o', i.e, as a focusing device and as an ordinary subject marker. Finally, in this paper I have assumed the existence of VP, which might be controversial. The strongest motivation for the flat analysis seems to be to avoid the problem involved with "scrambling". However, I conjecture, simplifying somewhat, that scrambled word order is formally derivable either by (35a) or by (35b).

(35) a. $V^{2[+SUBJ]}$ ---> $[V^{2/H]*}$, H[BAR 0]

b. VP ---> W

VP ---> N^2, W
[+SUBJ]

(35a) is a more plausible solution than (35b), since information involving VP (or V) and its argument is not lost in (35a) whereas it is in (35b).[14] Another reason is that (35b) should iteratively apply to its own output, which is less preferred, whereas (35a) need not.

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[14] We do not want to lose any information about slash features and AGR. Nor do we want to have those features scrambled as a result of the application of the rule. It should be noted that H is not a variable but an underdefined multiset.

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