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N′-deletion in Japanese

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1. Introduction

One of the central questions in the generative syntax of Japanese has been whether this language has the "major transformational operations." The research so far indicates that movement operations are abundant in this language. For example, Harada (1977) shows that scrambling has the properties of A′-movement, and Kikuchi (1989) argues convincingly that Japanese comparative sentences involve movement to the SPEC of CP.[1] Huang (1982), and Lasnik and Saito (1984) demonstrate that although Japanese lacks syntactic *WH*-movement, LF *WH*-movement does apply in this language. And, Miyagawa (1988) shows convincingly that Japanese also has A-movement, in addition to the A′-movement operations mentioned above.

On the other hand, it has been known since Hinds (1973) that Japanese lacks VP-deletion. Hence, for VP-deletion, the problem has been to explain why it is absent in this language. A partial explanation of this fact is given in Kuno (1978). VP-deletion requires a stranded auxiliary verb, as shown in (1).

(1) I left because John *(did) [$_{VP}$e]

Kuno points out that Japanese auxiliary verbs are suffixes, and hence, can never be stranded as independent words. Thus, if it can be explained why a deleted VP needs to be licensed by an auxiliary verb, we may have a principled account for the fact that Japanese lacks VP-deletion.[2]

Among the "transformational operations" that have not been investigated by the generative syntacticians of Japanese is N′-deletion. If Japanese has N′-deletion, its properties must of course be clarified and explained. On the other hand, if Japanese lacks N′-deletion, it must be explained why this is the case. This paper is a report of our preliminary study of N′-deletion in Japanese. We suggest that Japanese in fact has N′-deletion, and discuss the properties of N′-deletion in both Japanese and English. In the following section, we present some data indicating that Japanese has N′-deletion. Then, in Section 3, we argue that the N′-deletion phenomenon provides support for the DP hypothesis, proposed by Fukui and Speas (1987), Abney (1986), and Kuroda (1986), among others. We propose, accordingly, that N′-deletion should be reanalyzed as NP-deletion. In the remaining two sections, we discuss some Japanese specific phenomena in relation to N′(NP)-deletion. In Section 4, we consider the so called adjunct genitive phrases, and show that their pattern of interaction with N′ (NP)-deletion may constitute further evidence for the DP hypothesis. In Section 5, we consider what has been called the pronoun *no*, and discuss a remaining problem for our analysis of N′(NP)-deletion in Japanese.

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1 See also Haig (1976), which contains very important discussion on both scrambling and comparative deletion in Japanese.

2 Zagona (1982, 1986) proposes to explain this requirement on VP-deletion in terms of the Empty Category Principle (ECP). We will briefly discuss her proposal in Section 3.

2. N′-Deletion in Japanese

A typical English example of N′-deletion is shown in (2).

(2) Lincoln's portrait didn't please me as much as [$_{NP}$Wilson's [$_{N'}$e]]

The N′-deletion phenomenon in English is studied extensively in Jackendoff (1971). He shows that N′-deletion in NPs has the same basic properties as VP-deletion in Ss. First, in both cases, the "predicate" is deleted as shown in (3).

(3)a. [$_{S}$NP [$_{VP}$e]]

b. [$_{NP}$NP [$_{N'}$e]]

Secondly, N′-deletion, like VP-deletion, requires a linguistic antecedent. The following examples from Hankamer and Sag (1976) show that VP-deletion is subject to this condition:[3]

(4)a. Context: [Sag produces an uncooked egg and goes into a wind up motion as if in preparation for throwing the egg into the audience.]

b. Hankamer: #Don't be alarmed, ladies and gentleman. He never actually does.

(5)a. Audience member: I'm afraid Sag will throw an egg.

b. Hankamer: He never actually does.

The following examples from Lasnik and Saito (in prep.) confirm that N′-deletion is also subject to this condition:

(6)a. Context: [Lasnik and Saito are in a yard with several barking dogs belonging to various people.]

b. Lasnik: #Harry's is particularly noisy.

(7)a. Saito: These dogs keep me awake with all their barking.

b. Lasnik: Harry's is particularly noisy.

Another well known property of N′-deletion is that the "deleted N′" must be preceded by a genitive phrase. That is, for N′-deletion to apply within an NP, the NP must have a genitive phrase in its specifier position. The following examples, together with the well-formed (2) and (7b), illustrate this generalization:

(8)a. *I wanted to read a book, so I bought [$_{NP}$(a) [$_{N'}$e]]

b. *I read about that person, and now, I want to see [$_{NP}$(the) [$_{N'}$e]]

Thus, an example of N′-deletion always has a stranded genitive NP, i.e., a genitive NP not followed by an overt head N.

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3 # indicates incompatibility of the utterance with the specified context.

It seems then that if a genitive NP can appear without an overt head N in Japanese, we have good evidence that the language has N'-deletion. And in fact, we find examples such as the following:

(9) Kono hon -wa John-no da
this book-top -gen is

(This book is John's)

However, it is much too hasty to conclude on the basis of (9) that Japanese has N'-deletion. The situation is complicated by the fact that *no* is ambiguous between the genitive Case Marker and a pronoun. The following is a typical example of the pronoun *no*, which corresponds roughly in meaning to *one* in English:

(10) Akai no -o mittu kudasai
red one-acc three give-me

(Please give me three red ones)

In fact, according to the standard analysis, due to Okutsu (1974), (9) would be derived from (11) by a minor rule which reduces two successive *no*'s to one.[4]

(11) Kono hon -wa John-no no da
this book-top -gen one is

If this analysis is correct, then (9) does not have anything to do with N'-deletion.

If we are to examine whether or not Japanese has N'-deletion, it is thus necessary to come up with an example which is like (9), but which be analyzed in terms of the pronoun *no*. Here, there is a generalization on the pronoun *no* that may enable us to construct examples of this kind. Kamio (1983) points out that the pronoun *no* occurs as a pro-form of concrete nouns, but not as a pro-form of abstract nouns. One of his examples is shown in (12).

(12)a. [$_S$katai sinnen -o motta] hito
firm conviction-acc have person

(a person with a firm conviction)

b. *[$_S$katai no -o motta] hito

The pronoun *no* in (12b) stands for the abstract noun, *sinnen* (*conviction*), and hence, the example is ill-formed. Note that the pronoun *no* in (11) stands for the concrete noun *hon* (*book*).

Kamio's (1983) generalization is confirmed further by the examples in (13).

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4 An attractive alternative analysis of the pronoun *no* phenomenon is proposed in Kitagawa and Ross (1982). We will for the moment assume Okutsu's (1974) standard analysis, but will briefly discuss Kitagawa and Ross's alternative analysis in Section 5. For discussion on the semantic properties of the pronoun *no*, see McGloin (1985). For discussion of the syntactic parallelism between the Japanese *no* and English *one*, see Murasugi (1989).

(13)a. *[$_{NP}$Sono toki-no Yamada sensei-e -no izon] -wa Taroo-no datta
that time-gen prof. -on-gen reliance-top was

(*The reliance on Prof. Yamada at that time was Taro's)

b. *[$_{NP}$Sono yokunai kenkyuu -ni taisuru taido] -wa Hanako-no da
that good-not research-toward attitude-top is

(*That bad attitude toward research is Hanako's)

If these examples involve the pronoun *no*, then according to the standard analysis, they are derived from (14a-b) by the *no-no* reduction rule.

(14)a. ... Taroo-no no datta
-gen one was

b. ... Hanako-no no da
-gen one is

The pronoun *no* in (14a) stands for *izon* (*reliance*), and that in (14b) for *taido* (*attitude*). Given Kamio's generalization, we expect the examples in (13) to be ungrammatical, since both *izon* and *taido* are abstract nouns.

Let us now consider the following examples:

(15)a. [$_{NP}$Gakubusei -no sensei -e -no izon] -wa yuruseru
undergraduate-gen teacher-on-gen reliance-top can-tolerate

ga, [$_{NP}$insei -no]-wa yurusenai
though grad. student-gen-top cannot-tolerate

(I can tolerate the undergraduates' reliance on the faculty,
but not the graduate students')

b. [$_{NP}$Taroo-no kenkyuu -ni taisuru taido] -wa ii ga,
-gen research-toward attitude-top good though

[$_{NP}$Hanako-no]-wa yokunai
-gen-top is-not-good

(Taro's attitude toward research is good, but Hanako's is not)

The examples in (15) are perfect, and contrast sharply with those in (13). However, given Kamio's generalization, they cannot be analyzed in terms of the pronoun *no*. If they involve the pronoun *no*, they are derived from (16a-b).

(16)a. ... [$_{NP}$insei -no no] -wa ...
grad. student-gen one -top

b. ... [$_{NP}$Hanako-no no] -wa ...
-gen one -top

The pronoun *no* in (16a) stands for *izon* (*reliance*), and that in (16b) for *taido* (*attitude*). But we have seen in (13) that the pronoun *no* cannot stand for these abstract nouns.

(15a-b), then, seem to be exactly the kind of examples we were looking for. They contain a genitive NP not followed by an overt head N, and further, they cannot be analyzed in terms of the pronoun *no*. Hence, they seem to be examples of N′-deletion. We conclude, then, that Japanese has N′-deletion, and that the structures of (15a-b) are more precisely as in (17a-b).

(17)a. [$_{NP}$Gakubusei -no [$_{N'}$sensei-e-no izon]] -wa yuruseru
undergraduate-gen teacher-on-gen reliance-top can-tolerate

ga, [$_{NP}$insei -no [$_{N'}$*e*]]-wa yurusenai
though grad. student -gen -top cannot-tolerate

b. [$_{NP}$Taroo-no [$_{N'}$kenkyuu -ni taisuru taido]] -wa ii ga,
-gen research-toward attitude-top is-good though

[$_{NP}$Hanako-no [$_{N'}$*e*]]-wa yokunai
-gen -top is-not-good

In both of these examples, the "deleted N'" has an antecedent in the same sentence; '[$_{N'}$sensei-e-no izon]' in (17a), and '[$_{N'}$kenkyuu-ni taisuru taido]' in (17b).

The data considered so far, we argued, indicate that N′-deletion applies in Japanese exactly as in English. At the same time, they raise an interesting empirical problem for the analysis of the N′-deletion phenomenon. If (15a-b) are grammatical because of N′-deletion, as we argued above, then why is it that (13a-b) cannot be grammatical for the same reason? If Japanese has N′-deletion, then it is not at all clear why (13a), for instance, cannot have the structure shown in (18), and be a well-formed example of N′-deletion.

(18) [$_{NP}$Sono toki-no [$_{N'}$Yamada sensei -e -no izon]] -wa
that time-gen Prof. -on-gen reliance-top

[$_{NP}$Taroo-no [$_{N'}$*e*]] datta
-gen was

The "deleted N'" in (18) has an antecedent in the same clause, i.e., '[$_{N'}$Yamada sensei-e-no izon],' exactly as those in (17).

This empirical problem arises not only with respect to the Japanese examples considered above, but for their English counterparts as well. English examples like the Japanese (15a-b) are well-formed, as shown by the English translations of those examples and also by (19).

(19)a. [$_{NP}$John's [$_{N'}$reliance on the faculty]] is more problematic

than [$_{NP}$Mary's [$_{N'}$*e*]]

b. [$_{NP}$Mary's [$_{N'}$attitude toward research]] is more impressive

than [$_{NP}$John's [$_{N'}$*e*]]

And the English counterparts of Japanese (13a-b) are ill-formed, as the English translations of those examples indicate. In fact, the ungrammaticality of the English exam-

ples like the Japanese (13a-b) has already been noted by Anderson (1983), who discusses the following paradigm:[5]

(20)a. This book is John's

b. *That reliance on friends is Mary's

c. *That destruction of the city is the barbarians'

Given that English has N′-deletion, the grammaticality of (19a-b) and (20a) is expected. (20a), like (19a-b), can be analyzed as an example of N′-deletion, as shown in (21).

(21) $[_{NP}$This $[_{N'}$book$]]$ is $[_{NP}$John's $[_{N'}e]]$

However, (20b-c) pose the same problem as the Japanese (13a-b). That is, it is not clear why they cannot be assigned the structures in (22), and be well-formed examples of N′-deletion.[6]

(22)a. $[_{NP}$That $[_{N'}$ reliance on friends$]]$ is $[_{NP}$Mary's $[_{N'}e]]$

b. $[_{NP}$That $[_{N'}$destruction of the city$]]$ is $[_{NP}$the barbarians' $[_{N'}e]]$

In the following section, we will show that the DP hypothesis proposed in Fukui and Speas (1987), Abney (1986), and Kuroda (1986), among others, provides a straightforward solution to this problem.

3. N′-Deletion and the DP Hypothesis

As noted above, Jackendoff (1971) points out that N′-deletion in NPs has the same basic properties as VP-deletion in Ss. However, the parallelism is not quite complete in two major respects. First, VP is a maximal projection, while N′ is not. Secondly, VP-deletion requires a stranded auxiliary verb, as shown in (1), and as confirmed further by the examples in (23)-(24) from Lasnik (1984).

(23)a. I left because John did

b. *I left because John

(24)a. I can do it because John can

b. *I can do it because John

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5 Actually, Anderson (1983) is the work which directed our attention to the Japanese examples in (9) and (13).

6 Anderson (1983) does not discuss the examples in (20) with respect to N′-deletion. She hypothesizes that those examples have an empty N, and attributes the contrast to the properties of this empty N and the genitive marker *'s*. Given that English has N′-deletion, a question of course can be raised as to whether we want to assume Anderson's empty N to account for examples like (20a). However, the problem pointed out in the text arises independently of this question. That is, whether English has empty N or not, a problem remains as to why (20b-c) are not well-formed as examples of N′-deletion.

However, there does not seem to be any parallel requirement in the case of N′-deletion.[7]

The second difference noted above, in particular, provides an interesting problem for the analysis of N′-deletion. Zagona (1982) argues that the contrast in (23)-(24) follows from the ECP, if we assume that empty VPs, like any other non-pronominal empty categories, are subject to this licensing condition. According to her analysis, the empty VPs in (23)-(24), in particular, must be licensed (properly governed) by INFL, as illustrated in (25).

(25) $[_{IP}(=_{S})\text{NP}\quad [_{I'}\text{I}\ [_{VP}e]]$
(arrow from I to e)

If we may somewhat simplify Zagona's analysis for the purpose of exposition, the contrast in (23)-(24) can be accounted for as follows. In the embedded clauses in (23a) and (24a), an auxiliary verb is present in INFL, carrying Tense and AGR. Thus, the INFL node is clearly present, and licenses the empty VP. On the other hand, nothing outside the "deleted VP" bears Tense and AGR in the embedded clauses in (23b) and (24b). It seems then that there is no INFL node that licenses the empty VP, and hence, the examples are ungrammatical.[8]

If Zagona's account for (23)-(24) is correct, the very existence of the N′-deletion phenomenon is quite puzzling. If "deleted VPs" are subject to the ECP, and must be licensed, we expect "deleted N′s" to be subject to the same requirement. However, there is no licensing element like INFL in the case of "deleted N′s", as shown in (26), and yet, N′-deletion is possible.

(26) $[_{NP}\text{NP}\ [_{N'}e]]$

Here, the DP hypothesis proposed, for example, in Fukui and Speas (1987) and Kuroda (1986), enables us to make the parallelism between N′-deletion and VP-deletion complete. According to this hypothesis, the structures of *the book* and *John's reliance on Mary*, for example, are as in (27a-b) respectively.

(27)a. $[_{DP}[_{D'}[_{D}\text{the}][_{NP}[_{N'}[_{N}\text{book}]]]]]$

b. $[_{DP}[_{DP}\text{John}]_{i}[_{D'}[_{D}\text{'s}][_{NP}t_{i}[_{N'}[_{N}\text{reliance}][_{PP}\text{on Mary}]]]]]$

DPs are headed by Ds such as *the*, *a*, and *'s*, which take NPs as their complements. In (27b), the subject of the complement NP, *John*, receives a θ-role in the NP SPEC position, and moves to the DP SPEC position to receive genitive Case from D. According to the VP-internal subject hypothesis, proposed in Koopman and Sportiche (1986), Kuroda (1986), and Fukui and Speas (1987), among others, the subject of a tensed clause receives a θ-role VP-internally, and moves to the IP SPEC position to receive Case from INFL, as shown in (28).

(28) $[_{IP}[_{DP}\text{John}]_{i}[_{I'}[_{I}\text{+AGR}][_{VP}t_{i}[_{V'}[_{V}\text{relies}][_{PP}\text{on Mary}]]]]]$

Thus, given the DP hypothesis, "sentences" such as *John relies on Mary* and noun phrases such as *John's reliance on Mary* can be assigned completely parallel structures.

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7 This fact is already noted by Jackendoff (1971).

8 Zagona (1986) argues, more specifically, that the tense feature in INFL licenses the null VP. We regret that we cannot discuss her analysis in detail and in a more precise way.

Now, if the DP hypothesis is correct, the structure of (2), repeated below as (29), is as in (30).

(29) Lincoln's portrait didn't please me as much as $[_{NP}$Wilson's $[_{N'}e]]$

(30) Lincoln's portrait didn't please me as much as $[_{DP}$Wilson's $[_{NP}e]]$

Hence, N'-deletion can be straightforwardly reanalyzed as NP-deletion, as illustrated in (31).

(31) $[_{DP}[_{DP}$Wilson$][_{D'}[_{D}$'s$][_{NP}\varepsilon]]]$

And given this reanalysis of N'-deletion as NP-deletion, the two differences between VP-deletion and "N'-deletion" noted above disappear. First, both VP-deletion and NP-deletion involve maximal projections. Secondly, NP is a complement of D, exactly as VP is a complement of I. Thus, extending Zagona's (1982) analysis of VP-deletion, we can hypothesize that empty NPs, such as the one in (31), are licensed (properly governed) by D, in the same way that empty VPs are licensed by I.[9]

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9 As stated in the text, the DP hypothesis clearly enables us make a step forward toward a unified account of the VP-deletion and the N'(NP)-deletion phenomena. It should be noted, however, that if we are to adopt Zagona's (1982,1986) ECP analysis, two major problems still remain to be solved.

First, Ds such as *the*, *a* do not license NP-deletion, as illustrated in (8), and this fact must be explained. One difference between *'s* and *the/a* is that only the former agrees with and licenses an item in the DP SPEC position, as shown in (i).

(i)a. *$[_{DP}[_{DP}$John$][_{D'}[_{D}$the/a$]$ NP$]]$

b. $[_{DP}[_{DP}$John$][_{D'}[_{D}$'s$]$ NP$]]$

Phenomenally, then, only [+AGR] D licenses NP-deletion. We tentatively assume here that the item in the DP SPEC position gives the head D, through SPEC/Head agreement, "enough lexical content" so that the D can license (properly govern) the empty NP.

This speculation of course must be stated more precisely if it is to be brought up to the level of a serious hypothesis. But if we can continue the discussion at the rather loose level, the idea does receive some support from the phenomenon of sluicing, discussed in Ross (1967) and Levin (1983). Consider the following examples:

(ii)a. I know that Mary bought something, but I don't know $[_{CP}$what $[_{C'}C\ [_{IP}\varepsilon]]]$

b. I know that Mary left early, but I don't know $[_{CP}$why $[_{C'}C\ [\ _{IP}\varepsilon]]]$

(iii) *Mary said that she was going to Boston, but I don't know $[_{CP}[_{C'}[_{C}$whether$][_{IP}\varepsilon]]]$

The examples above show that an empty IP is possible only when the SPEC position of the CP is filled. Hence, it seems that functional heads such as D and C in general can license an empty complement only when they agree with an item in the SPEC position. Given this hypothesis, we are naturally led to the assumption that in examples like (iv), the PRO subject "agrees with" and allows the embedded I (*to*) to license the empty VP.

(iv) Mary wants me to go to college, but I_i don't want $[_{CP}[_{IP}PRO_i[_{I'}[_{I}to][_{VP}\varepsilon]]]]$

The second problem that remains to be solved has to do with the lack of NP-preposing. Zagona (1982) proposes that empty VPs created by VP-preposing, as in (v), are licensed in the same way as those created by VP-deletion.

(v) ..., and $[_{VP}$win the race$]_i$, he *(did) $[_{VP}t_i]$

Thus, if *'s* as a D licenses NP-deletion, we would expect it to license NP-preposing as well. But this

We have seen so far that the reanalysis of N′-deletion as NP-deletion is well motivated on conceptual grounds. The NP-deletion analysis, as opposed to the N′-deletion analysis, seems well motivated on empirical grounds as well. Here, recall that the examples in (20b-c) are problematic for the N′-deletion analysis. The examples in (19) and (20) are repeated below in (32) and (33), with the structures assumed in Section 2.

(32)a. [$_{NP}$John's [$_{N'}$reliance on the faculty]] is more problematic than [$_{NP}$ Mary's [$_{N'}$*e*]]

b. [$_{NP}$Mary's [$_{N'}$attitude toward research]] is more impressive than [$_{NP}$John's [$_{N'}$*e*]]

(33)a. [$_{NP}$This [$_{N'}$book]] is [$_{NP}$John's [$_{N'}$*e*]]

b *[$_{NP}$That [$_{N'}$reliance on friends]] is [$_{NP}$Mary's [$_{N'}$*e*]]

c. *[$_{NP}$That [$_{N'}$destruction of the city]] is [$_{NP}$the barbarians' [$_{N'}$*e*]]

As noted above, given the N′-deletion analysis, it is not at all clear why (33b-c) are not grammatical, since the empty N′ has an antecedent in these examples, exactly as in the grammatical (32a-b) and (33a).

However, if we assume the NP-deletion analysis, which is based on the DP hypothesis, the contrast in (32)-(33) is straightforwardly accounted for. Let us first consider the examples in (32). Given the DP hypothesis, their structures are as in (34).

(34)a. [$_{DP}$John's$_i$ [$_{NP}$*t*$_i$ reliance on the faculty]] is more problematic than [$_{DP}$Mary's$_j$ [$_{NP}$*e*]]

b. [$_{DP}$Mary's$_i$ [$_{NP}$*t*$_i$ attitude toward research is more impressive than [$_{DP}$John's$_j$ [$_{NP}$*e*]]

If NP-deletion did not apply, the second DPs in (34a-b) would be as in (35a-b) respectively.

(35)a. [$_{DP}$Mary's$_j$ [$_{NP}$*t*$_j$ reliance on the faculty]]

b. [$_{DP}$John's$_j$ [$_{NP}$*t*$_j$ attitude toward research]]

Thus, in both (34a-b), the empty NP in the second DP has an antecedent in the first DP. That is, in both of these examples, the first DP contains an NP which has exactly the same form as the "deleted NP".

Let us next consider (33a), whose structure is shown in (36).

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prediction is not borne out, as shown in (vi).

(vi) *[$_{NP}$Book]$_i$, I like [$_{DP}$John's [$_{NP}$*t*$_i$]]

We do not have an account to offer for this fact at the moment.

(36) [$_{DP}$This [$_{NP}$book]] is [$_{DP}$John's [$_{NP}$e]]

If we assume, as seems reasonable, that possessors are base-generated in the SPEC of DP position, then the "deleted NP" in (36) does not contain a trace, and is as in (37).

(37) [$_{NP}$book]

Then, the empty NP in (36) also has an antecedent, and it is not surprising at all that (36) is a well-formed example of NP-deletion.

Let us now consider the ungrammatical (33b-c). According to our hypothesis, their structures are as in (38a-b).

(38)a. [$_{DP}$That [$_{NP}$reliance on friends]] is [$_{DP}$Mary's$_i$ [$_{NP}$ε]]

b. [$_{DP}$That [$_{NP}$destruction of the city]] is [$_{DP}$the barbarians'$_i$ [$_{NP}$e]]

Here, since *Mary* in (38a) and *the barbarians* in (38b) bear the subject θ-role, the "deleted NPs" in (38a-b) must contain their traces, and be as in (39a-b) respectively.

(39)a. [$_{NP}$ t_i reliance on friends]

b. [$_{NP}$ t_i destruction of the city]

But if this is the case, there are no antecedents for the empty NPs in (38a-b), since the first NPs in those examples do not contain a trace. Thus, given that NP-deletion, like VP-deletion, requires a linguistic antecedent, we predict correctly that (38a-b) are ungrammatical. Thus, once we reanalyze N'-deletion as NP-deletion, the problem posed by (32)-(33) disappears. Since the NP-deletion analysis is made possible by the DP hypothesis, the examples in (32)-(33) constitute evidence not only for the NP-deletion analysis, but also for the DP hypothesis itself.

Let us now turn to the Japanese examples discussed in Section 2. We argued in Section 2 that N'(NP)-deletion takes place in Japanese exactly as in English. And we argued above in this section that the N'(NP)-deletion facts in English provide evidence for the DP hypothesis. Given these conclusions, it seems that the DP hypothesis is correct not only for English, but also for Japanese.

In order to see how the Japanese data lead us to this conclusion more precisely, let us consider the Japanese examples (13a) and (15a), repeated below as (40) and (41).

(40) *[$_{NP}$Sono toki-no Yamada sensei-e -no izon] -wa Taroo-no datta
that time-gen Prof. -on-gen reliance-top was

(*The reliance on Prof. Yamada at that time was Taro's)

(41) [$_{NP}$Gakubusei -no sensei -e -no izon] -wa yuruseru ga,
undergraduate-gen teacher-on-gen reliance-top can-tolerate though

[$_{NP}$insei -no]-wa yurusenai
grad. student-gen-top cannot-tolerate

(I can tolerate the undergraduates' reliance on the faculty, but not the graduate students')

As pointed out in Section 2, these examples, exactly like their English counterparts in (20b) and (19a), pose a problem for the N′-deletion analysis. According to this analysis, the structures of these examples are as in (42)-(43).

(42) [$_{NP}$Sono toki-no [$_{N'}$Yamada sensei-e -no izon]] -wa
that time-gen Prof. -on-gen reliance-top

[$_{NP}$Taroo-no [$_{N'}$*e*]] datta
-gen was

(43) [$_{NP}$Gakubusei -no [$_{N'}$sensei -e -no izon]] -wa yuruseru ga,
undergraduate-gen teacher-on-gen reliance-top can-tolerate though

[$_{NP}$insei -no [$_{N'}$*e*]]-wa yurusenai
grad. student-gen -top cannot-tolerate

Since the empty N's in (42) and (43) both have antecedents in the same sentence, it is unclear why (40), in distinction with (41), is not a well-formed example of N′-deletion.

However, if we adopt the DP hypothesis and the NP-deletion analysis, the contrast between (40) and (41) can be accounted for straightforwardly, in exactly the same way as the contrast between their English counterparts. The structures of (40) and (41) will then be as in (44) and (45) respectively.

(44) [$_{DP}$Sono toki-no [$_{NP}$Yamada sensei-e -no izon]] -wa
that time-gen Prof. -on-gen reliance-top

[$_{DP}$Taroo-no$_i$ [$_{NP}$*e*]] datta
-gen was

(45) [$_{DP}$Gakubusei -no$_i$ [$_{NP}$*t*$_i$ sensei -e -no izon]] -wa yuruseru ga,
undergraduate-gen teacher-on-gen reliance-top can-tolerate though

[$_{DP}$insei -no$_j$ [$_{NP}$*e*]]-wa yurusenai
grad. student-gen -top cannot-tolerate

Taroo in (44) and *insei* in (45) both bear the subject θ-role. Hence, the "deleted NPs" in (44) and (45) are as in (46) and (47) respectively.[10]

(46) [$_{NP}$*t*$_i$ Yamada sensei-e-no izon]

(47) [$_{NP}$*t*$_j$ sensei-e-no izon]

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10 *Sono toki-no* (*that time-'s*) in (44) may not be in the DP SPEC position, but may be inside the NP. If this is the case, the "deleted NP" in this example should contain this phrase.

Thus, the empty NP in (45) has an antecedent, but that in (44) does not.

The analysis of (42)-(43) presented above is, needless to say, made possible by the DP hypothesis. Thus, if it is correct, then the DP hypothesis should hold for Japanese, exactly as it does for English. This is a particularly interesting conclusion, since it flatly contradicts one of the hypotheses proposed in Fukui (1986). Fukui discusses the phenomenal differences between Japanese and English in detail, and argues that some of those differences can be explained if Japanese, in distinction with English, lacks functional categories such as C(omp) and D. Thus, according to his proposal, Japanese should not be subject to the DP hypothesis. If our analysis of (42)-(43) is correct, we must, then, look for an alternative way to explain the differences between Japanese and English considered in Fukui (1986).

4. Adjunct Genitive Phrases in Japanese

In the remainder of this paper, we examine some Japanese specific phenomena in the light of the preceding discussion on NP-deletion. This section is concerned with the so called adjunct genitive phrases. We first show that they, unlike other genitive phrases, cannot be stranded by NP-deletion. We then point out that this fact may lead us to another argument for the DP hypothesis.

As noted above, NP-deletion is licensed by the D, *'s*. Since *'s* requires an item in the SPEC position, which shows up as a genitive phrase, examples of NP-deletion always contain a stranded genitive phrase. Thus, we may say, somewhat loosely, that the genitive phrase in the DP SPEC position licenses NP-deletion. In English, it seems that NP-deletion can be licensed by any genitive phrase, regardless of the semantic role it assumes, as shown in (48).

(48)a John's reliance on friends is more problematic than [Mary's *e*]

b. [Rome's destruction] was more horrible than [Kyoto's *e*]

c. [John's car] is more expensive than [Mary's *e*]

The stranded genitive phrase has the subject (experiencer) θ-role in (48a), the object (theme) θ-role in (48b), and the possessor θ-role in (48c).

In Japanese also, it appears that any genitive phrase can license NP-deletion. The examples in (49) show that the licensing genitive phrase can have the subject, the object, or the possessor θ-role.

(49)a. [$_{DP}$Taroo-no$_i$ [$_{NP}t_i$ kenkyuu -ni taisuru taido]] -wa
-'s research-toward attitude-top

[$_{DP}$Hanako-no [$_{NP}e$]] yorimo yoi
-'s than good

(Taro's attitude toward research is better than Hanako's)

b. [$_{DP}$Rooma-no$_i$ [$_{NP}t_i$ hakai]] -wa [$_{DP}$Kyooto-no [$_{NP}e$]]
-'s destruction-top -'s

yorimo hisan datta
than horrible was

(Rome's destruction was more horrible than Kyoto's)

c. [$_{DP}$Hanako-no [$_{NP}$kuruma]]-wa [$_{DP}$Taroo-no [$_{NP}e$]]
-'s car -top -'s

yorimo seinoo -ga ii
than quality-nom good

(Hanako's car is better than Taro's)

However, the distribution of the Japanese genitive Case marker *no* is somewhat wider than that of its English counterpart *'s*. In particular, *no* appears with adjunct modifiers, as shown in (50).

(50)a. ame -no hi
rain-'s day

(*rain's day = rainy day)

b. hutakire -no hamu
two slices-'s ham

(*two slices' ham = two slices of ham)

And interestingly enough, those adjunct genitive phrases do not license NP-deletion, as shown in (51).

(51)a. *saikin -wa [$_{DP}$hare -no hi]-ga [$_{DP}$ame -no *e*] yorimo ooi
recently-top clear-'s day-nom rain-'s than plentiful

(Recently, there have been more clear days than rainy days)

b. *[$_{DP}$hutakire -no hamu]-wa yuusyoku-ni naru ga,
two slices-'s ham -top supper -to make-up though

[$_{DP}$hitokire -no *e*]-wa naranai
one slice-'s -top not-make-up

(Two slices of ham make up a supper, but one slice of ham does not)

Thus, in Japanese, it is not the case that any genitive phrase licenses NP-deletion. Considering the contrast between (49) and (51), Murasugi (1989) draws the generalization that only those genitive phrases in Japanese that have an English counterpart, that is, only those genitive phrases which assume the subject, the object, or the possessor θ-role, license NP-deletion. This generlization seems to be of much theoretical interest, since it shows that NP-deletion cannot be characterized simply as deletion of the item following a genitive phrase, but instead, is governed by rather deep principles which are manifested in both English and Japanese.

The facts in (50)-(51) pose two specific problems. First, we must explain why adjunct modifiers can appear with the genitive Case marker in Japanese. Second, it must be explained why those adjunct genitive phrases in Japanese do not license NP-deletion. The answer to the first problem is already provided in the literature. It is generally assumed that the English *'s* is assigned to a specific position. According to the standard NP hypothesis, the position is the SPEC of NP, and according to the DP hypothesis, it is the SPEC of DP. On the other hand, it has been noted that the Japanese *no* is not assigned to an item in any specific position, but appears on any NP(DP) or PP that is immediately dominated by a projection of N. Thus, Japanese has the so called multiple genitive construction, as shown in (52)-(53).

(52)a. yuubokumin-no tosi-no hakai
nomad -'s city-'s destruction

(the nomad's destruction of the city)

b. Hanako-no Taroo-no hihan
-'s -'s criticism

(Hanako's criticism of Taro)

(53)a. Taroo-no genzitu-kara-no toohi
-'s reality-from-'s escape

(Taro's escape from the reality)

b. Taroo-no Hanako-e -no izon
-'s -on-'s reliance

(Taro's reliance on Hanako)

Based on this kind of data, it has been assumed that the distribution of *no* is governed by an insertion rule of the following form:[11]

(54) $\emptyset$ --->*no* / $[_X Y \_ Z]$, where Y is NP or PP, and X, Z are (projections of) N.

Here, we assume the following slightly modified version of this rule, which is more in accord with the DP analysis.

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11 See, for example, Bedell (1971), Kitagawa and Ross (1982), Saito (1982, 1985), Fukui (1986), and Murasugi (1988). Given a *no*-insertion rule of this kind, genitive Case is not, or at least need not be, assigned by D, and hence, D is not required as a Case assigner. This observation constitutes one of the motivations for Fukui's (1986) hypothesis that Japanese lacks D.

(55) 0 ---> *no* / $[_X Y \_ Z]$, where Y is DP or PP, and X, Z are (projections of) N or D.

(55) states that *no* is attached to any DP or PP immediately dominated by a projection of N or D.[12] Hence, given this *no*-insertion rule, we predict correctly that the adjunct modifiers in (50) appear with *no* if they are of the category DP.[13]

If the distribution of *no* is determined by the insertion rule in (55), then in examples such as (56), the object *Kyooto* need not move to the DP SPEC position to receive Case.

(56) $[_{DP}$Kyooto-no hakai]
-'s destruction

(Kyoto's destruction)

(55) inserts *no* after *Kyooto* even if it stays in the object position of the head N *hakai.* But at the same time, nothing seems to prevent this phrase from moving to the DP SPEC position. If *Kyooto* is in the DP SPEC position, (55) will still attach *no* to it. Hence, the movement of a genitive phrase to the DP SPEC position seems to be in principle optional in Japanese. (57a-b), then, are both possible representations of (56).[14]

(57)a. $[_{DP}[_{NP}$Kyooto-no hakai]]

b. $[_{DP}$Kyooto-no$_i$ $[_{NP} t_i$ hakai]]

However, there is one context in which the movement to the DP SPEC position is forced. Consider again the structure of (49b), repeated below as (58).

(58) $[_{DP}$Rooma-no$_i$ $[_{NP} t_i$ hakai]] -wa $[_{DP}$Kyooto-no$_j$ $[_{NP} e]]$
-'s destruction-top -'s

yorimo hisan datta
than horrible was

(Kyoto's destruction was more horrible than Boston's)

In the second DP, the NP is "deleted" and the genitive phrase *Kyooto-no* is stranded. Hence, the genitive phrase clearly must have moved out of the NP to the DP SPEC position. In addition, since the null NP is "deleted" under identity with the NP in the first DP, *Rooma-no* in the first DP must also have moved to the DP SPEC position. Thus, movement to the DP SPEC position seems to be required even in Japanese in the kind of NP-deletion examples that we have been considering.

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12 We assume tentatively that this rule applies at S-structure. Then, *no* is attached to DPs and PPs that are immediately dominated by a projection of N at this level, and also to DPs and PPs that appear, either by movement or by base-generation, in the DP SPEC position at this level. But as far as we can see, it is quite possible that (55) turns out to be a D-structure or even a PF rule.

13 It seems possible that adjunct modifiers such as *ame (rain)* in (50a) are of the category NP. If this is the case, then (55) must be revised so that *no* is attached not only to DPs and PPs, but also to NPs of the appropriate kind.

14 It has been proposed, for example, by Kuroda (1986) that in Japanese sentences, the subject can receive nominative Case VP-internally, and hence, only optionally moves to the IP SPEC position. Our analysis of Japanese DP parallels this analysis of Japanese IP.

The observation on the NP-deletion examples above enables us to state the second question on the adjunct genitive phrases, i.e., why those genitive phrases do not license NP-deletion, in a more specific way. If movement of a genitive phrase to the DP SPEC position is required in the examples of NP-deletion, then the adjunct genitive phrases also must move to the DP SPEC position to license NP-deletion. Thus, the structure of (51a), for example, should be as in (59).

(59) *saikin -wa [$_{DP}$hare -no$_i$ [$_{NP}t_i$ hi]]-ga [$_{DP}$ame -no$_j$ [$_{NP}e$]]
recently-top clear-'s day -nom rain-'s

yorimo ooi
than plentiful

Hence, if such movement of an adjunct genitive phrase is in some way blocked, i.e., if the configuration in (60) is ruled out on independent grounds, we have an explanation for the fact that adjunct genitive phrases do not license NP-deletion.

(60) [$_{DP}$Adjunct$_i$ [$_{NP}$...t_i..]]

The problem is now made more concrete, and is reducible to an already well known one. It has been known that modifiers, or more precisely, non-expletives without a θ-role, are in general unable to undergo NP-movement.[15] The following example of passive illustrates this generalization:

(61) *Two pounds$_i$ are weighed t_i by this book

Since adjunct genitive phrases are not expletives, and do not bear any θ-role, the ill-formedness of (60) falls under this generalization.

Here, we do not have an account for why NP-movement of modifiers are disallowed in general. It should be noted, however, that the reduction of our specific problem, i.e., why adjunct genitive phrases do not license NP-deletion, to this general one was made possible by the DP hypothesis and the NP-deletion analysis, as opposed to the N'-deletion, analysis. Suppose we assume the N'-deletion analysis. Then, the structure of (51a) can be as in (62).

(62) *saikin -wa [$_{NP}$hare -no [$_{N'}$hi]]-ga [$_{NP}$ame -no [$_{N'}e$]]
recently-top clear-'s day -nom rain-'s

yorimo ooi
than plentiful

Hence, the ungrammaticality of (51a) cannot be related to the general inability of modifiers to undergo NP-movement. On the other hand, the DP hypothesis and the NP-deletion analysis assigns the structure in (59) to this example. Thus, as noted above, we expect this example to be ungrammatical, provided that modifiers are not subject to NP-movement. Consequently, if a principled explanation can be provided for the inability of modifiers to NP-move, examples such as (51a) constitute further evidence for the DP hypothesis and the NP-deletion analysis.

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15 This generalization and its relevance in the present context were brought to our attention by N. Chomsky.

5. The Pronoun *No* and Problems for Future Research

In this section, we briefly discuss the pronoun *no*, mentioned in Section 2 above, and then, point out a potential problem for the analysis proposed in the preceding sections.

As noted in Section 2, it is assumed that Japanese has the so called pronoun *no*, which corresponds roughly to *one* in English in meaning. The example of the pronoun *no* in (10) is repeated below in (63).

(63) Akai no -o mittu kudasai
red one-acc three give-me

(Please give me three red ones)

An interesting alternative analysis of examples of this kind is proposed in Kitagawa and Ross (1982). They propose that the *no* in (63) is the genitive Case marker, and that the example has the structure shown in (64).

(64) $[_{NP}[_{AP}$akai] -no $[_{NP}e]]$-o mittu kudasai

Here, we will not go into Kitagawa and Ross's analysis in detail. However, it should be already clear that if (63) contains an empty NP, as shown in (64), then there arises the possibility that the examples that have been assumed to involve the "pronoun *no*" are really examples of NP-deletion.

This possibility, however, must be rejected if our discussion of the adjunct genitive phrases in the preceding section is on the right track. Suppose that (63) is an example of NP-deletion. Then, its structure should be more precisely as in (65).

(65) $[_{DP}[_{AP}$akai] $-no_i$ $[_{NP}e]]$ -o mittu kudasai

In (65), the modifier, *akai-no* (*red-'s*), is moved from within the NP to the DP SPEC position. But we have already seen that such movement is not allowed. Hence, even if we adopt Kitagawa and Ross's hypothesis that examples like (63) involve an empty NP, the phenomenon of "pronoun *no*" must be analyzed independently of NP-deletion.

This conclusion receives further support from examples such as (66).

(66) *[Taroo-ga Hanako-ni yoseru sinrai]-wa [Ziroo-ga Akiko-ni
-nom -to have trust -top -nom -to

yoseru no] yorimo atui
have than deep

(The trust that Taro has in Hanako is deeper than the trust
that Jiro has in Akiko)

If modifiers can move into the DP SPEC position as in (65), then nothing seems to prevent relative clauses from moving into this position. But then, the second DP in (66) can have the structure shown in (67), and the example can be a well-formed example of NP-deletion.

(67) $[_{DP}[_{CP}$Ziroo-ga Akiko-ni yoseru]$-no_i$ $[_{NP}e]]$

Thus, the unacceptable status of (66) confirms the generalization that modifiers cannot move into the DP SPEC position. This example, unlike (63), is ill-formed not only as

an example of NP-deletion, but also as an example of the "pronoun *no*," since it involves the abstract noun *sinrai* (*trust*).[16]

The ungrammaticality of (66) is exactly what we expect, given that modifiers cannot undergo NP-movement to the DP SPEC position. However, the grammaticality of the similar (68) is somewhat surprising.[17]

(68) [[Taroo-ga Hanako-ni yoseru] sinrai]-wa [Ziroo-no e]
-nom -to have trust -top -'s

yorimo atui
than deep

(The trust that Taro has in Hanako is deeper than Jiro's)

Since this example, like (66), involves the abstract noun *sinrai*, it cannot be an example of the "pronoun *no*." Hence, it seems to be an example of NP-deletion. But it is not clear why NP-deletion could have applied to this example. Since *Ziroo-no* bears the subject θ-role, it must have moved from within the "deleted NP" to the DP SPEC position, as shown in (69).

(69) $[_{DP}$Ziroo-no$_i$ $[_{NP}t_i$ sinrai]]

But then, the "deleted NP" must contain a trace, and consequently, the empty NP in (68) does not seem to have an antecedent.

If NP-deletion requires an exact linguistic antecedent, as we have assumed throughout this paper, then the only possible "pre-deletion structure" for (68) seems to be the one in (70).

(70) $[_{NP}[_{CP}$Taroo$_j$-ga Hanako-ni yoseru$][_{NP}$PRO$_j$ $[_{N'}$sinrai]]]-wa

$[_{DP}$Ziroo$_i$-no $[_{NP}$PRO$_i$ $[_{N'}$sinrai]]] yorimo atui

In (70), the two NPs are identical, and hence, NP-deletion can apply to the second one. However, once we accept the structure in (70), and in particular, the partial structure in (71), we must in general allow the phrase that seemingly bears the subject θ-role to be base-generated in the DP SPEC position, and to control PRO in the subject position of the NP.

(71) $[_{DP}$Ziroo$_i$-no $[_{NP}$PRO$_i$ $[_{N'}$sinrai]]]

But then, a new problem arises as to the analysis of examples like (20b), which is repeated below as (72).

(72) *That reliance on friends is Mary's

That is, nothing seems to prevent (72) from having the "pre-deletion structure" in (73), and hence, it becomes unclear again why (72) cannot be a well-formed example of NP-deletion.

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16 Recall Kamio's (1983) generalization discussed in Section 2 that examples of the pronoun *no* cannot involve an abstract noun.

17 The English counterpart of (68) also seems to be well-formed, as shown in the translation.

$[_{DP}$Mary's$_i$ $[_{NP}$PRO$_i$ $[_{N'}$reliance on friends$]]]$

Note that the two NPs in (73) are identical in structure. Thus, unless the structure in (73), in distinction with that in (70), is ruled out on independent grounds, examples such as (68) poses a problem for the analysis proposed in this paper.[18]

6. Summary

In this paper, we discussed the N′(NP)-deletion phenomenon in both English and Japanese. We first argued that N′(NP)-deletion applies in Japanese exactly as in English. If this conclusion is correct, Japanese has a deletion phenomenon, in addition to the various movement phenomena discussed in the literature. We then presented an argument for the DP hypothesis on the basis of the N′(NP)-deletion facts. We argued, in particular, that the DP hypothesis is correct not only for English but also for Japanese. In Section 4, we considered the adjunct genitive phrases in Japanese, and showed that unlike other genitive phrases, they do not license NP-deletion. We pointed out there that this fact may constitute further evidence for the DP hypothesis, if a principled account is provided for the inability of modifiers to undergo NP-movement. In Section 5, we discussed the pronoun *no* and pointed out a potential problem for the analysis proposed in this paper.

As noted in the introduction, this paper is a report of our preliminary study of the N′(NP)-deletion phenomenon in Japanese. Hence, the problematic fact discussed in Section 5 and other new facts will undoubtedly soon force us to revise the analysis in this paper. But we hope that we succeeded in showing that N′(NP)-deletion in Japanese is potentially a rich area for research, and that the facts in this domain may be of great theoretical significance.

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18 There are of course some differences between (73) and (70), which we may use to distinguish these two examples. For example, (73), but not (70), is an equative sentence. Thus, in (73) the PRO in the first DP should be coindexed with *Mary* in the second DP. But it seems that in an equative sentence, a pronominal in the first DP cannot be coindexed with a name in the second DP, as shown in (i).

(i) *His$_i$ book is John's$_i$

Thus, (73), in distinction with (70), may be ruled out exactly for this reason. But we leave the examination of the exact implications of this hypothesis for future research.

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