

**NOUN PHRASES IN JAPANESE AND ENGLISH:  
A STUDY IN SYNTAX, LEARNABILITY AND ACQUISITION**

**Keiko Murasugi**

**The University of Connecticut**

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A STUDY IN SYNTAX, LEARNABILITY AND ACQUISITION**

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# APPROVAL PAGE

Doctor of Philosophy Dissertation

**NOUN PHRASES IN JAPANESE AND ENGLISH:  
A STUDY IN SYNTAX, LEARNABILITY AND ACQUISITION**

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## Chapter I

### Introductory Remarks

#### 1.1. Theoretical Assumptions

This dissertation is a study of the principles concerning the structure of Noun Phrases. Noun Phrases (NPs) in Japanese and English are investigated from three angles: syntax, learnability and acquisition.

The backbone of this dissertation is the theoretical assumption that a large part of knowledge of grammar is innate. This putatively innate component of the mind is termed Universal Grammar (UG). Evidence for innateness comes from the fact that the principles of UG are specifically linguistic, and apply in all natural languages. (Chomsky, 1965, 1981, 1986a) Knowledge of language, however, does not consist simply of these principles of UG. Given that languages differ, how and why these differ-

ences exist also have to be explained. Hopefully, language variation can be accounted for in a way that does not contradict the theory of Universal Grammar. In order to *explain* (not merely to *describe*) the differences and commonalities among languages, the Principles and Parameters approach to linguistic research has been developed. (Chomsky, 1981, 1986a)

The Principles and Parameters approach holds that along with the principles of UG, a limited amount of parameteric variation is allowed. That is, there are some parameters of UG that allow for a limited set of options; the grammars of particular languages include the basic principles of UG and specific values set for these parameters. Given this approach, the common features among languages are attributed to the general principles of UG, and the differences are attributed to the selection of different values of the parameters. By examining the commonalities and differences between the grammars of languages, in this instance, English and Japanese, the hypothesized Principles and Parameters theory can be empirically tested.

The Principles and Parameters model also provides a key to the solution of several problems concerning grammar acquisition. Given this theory, a highly idealized picture of language acquisition is drawn. First, the principles of UG serve as the child's initial state. Here, two logical possibilities arise. One possibility is that the values for the parameters in particular grammars start out being underspecified. That is, certain parameters are set by the child according to the linguistic data s/he is exposed to. The other possibility is based on markedness theory. That is,

the first setting is predetermined by the markedness of the value of the parameter, and children start out with the "default" value, i.e., unmarked value, of the setting. Whichever possibility the theory takes, the Principles and Parameters approach assumes the following: Instead of selecting grammatical rules from a space of infinitely many rules of some rule writing system, or going through hypothesis-testing strategies in attaining the final grammar, the child simply sets the values of parameters in the principles given in UG, and thereby derives the language particular principles. Through studies on the intermediate stages of the language acquisition process, the psychological reality of the proposed principles, the proposed parameters, and the initial values of those parameters can be empirically examined. For this reason, not only cross-linguistic analysis but also acquisition research is important in the Principles and Parameters approach.

Many acquisition studies based on the Parameter theory assume a continuous model, which states that the initial and final grammars, and the intermediate grammars as well, are all based on UG. In particular, each intermediate grammar is a possible human language, according to the principles of UG. Many studies based on this model assume innate knowledge of UG principles, and this model does not necessarily contradict the instantaneous model in the sense of Chomsky's (1965).<sup>1</sup> The instantaneous model does not imply that the child in fact instantaneously

<sup>1</sup> It should be noted here that not all of the studies based on Principles and Parameters model assume that all intermediate stage of language acquisition are possible human languages. See Lebeaux's (1987) non-continuous model for example.

acquires his/her grammar. It does not mean that children in fact know fully the adult grammar of the given language from the birth or shortly thereafter. The instantaneous model is, rather, an idealization. It is a hypothesis that the construction of syntactic theory is not affected even if we ignore the actual acquisition process and consider the initial stage and the final stage of the grammar, as if the acquisition took place instantaneously. That is, "instantaneous" does not mean that the acquisition in fact takes place instantaneously, but rather, it is a term of scientific methodology.

## *1.2. Basic Differences between Noun Phrases in English and Japanese*

Before going into the detailed analysis of Japanese and English NPs, I will briefly illustrate in this section the basic commonalities and differences between NPs of the two languages. Assuming that phrase structures in general and NP structures in particular are to a large extent determined by Universal Grammar (UG), one would expect a number of universal properties in the syntax of NPs. This expectation has indeed been borne out. One common property between NPs in the two languages is that the structures of NP are configurational.

The configurationality of Japanese NPs can be evidenced in conjunction with the Binding Conditions, which are illustrated below:

(1) Binding Condition A: An Anaphor must be bound  
in its Governing Category.

B: A Pronoun must be free  
in its Governing Category.

C: An R-expression must be free.

(Chomsky, 1981)

Condition A says that anaphors must be bound within its Governing Category. Condition B says that pronouns can never be bound in that same domain. Condition C says that R-expressions can never be bound. The notion of "bind" is specified by (i) co-indexation of two nominal elements and (ii) the structural relation of "c-command," as shown in (2).

- (2) A binds B  
=df. (i) A and B are coindexed, and  
(ii) A c-commands B.

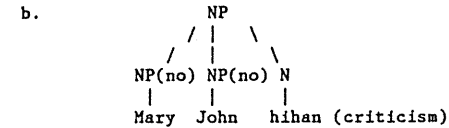
According to Reinhart (1976:32), the notion of c-command is defined as follows:

- (3) Node A c-commands node B  
=df. neither A nor B dominates the other and the  
first branching node dominating A dominates B.

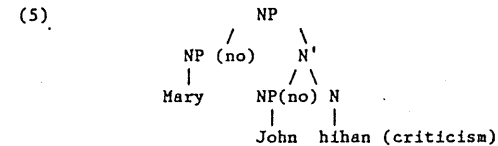
If Japanese NPs are non-configurational, and lack the hierarchical structure assumed for English NPs, Japanese (4a), for example, should have the structure in (4b).

- (4) a. Mary no John no hihan  
Gen Gen criticism

(Mary's criticism of John)



According to this assumption, then, the two NPs in (4a), *Mary* and *John*, c-command each other. On the other hand, if Japanese NPs are configurational, then the structure of (4a) is as follows:



With the Binding Conditions and the two possible structures in mind, let us consider the following examples:<sup>2</sup>

- (6) a. [<sub>NP</sub>John no habaoya] no kare no hihan  
Gen mother Gen he Gen criticism

(John's mother's criticism of him)

- b. John<sub>i</sub> no zibun<sub>i</sub> no hihan  
Gen himself Gen criticism

(John's criticism of himself)

<sup>2</sup> The examples in (6) are from Saito (1984). There, he assumes that Japanese NPs are configurational, and discusses these examples as evidence for Reinhart's (1976) definition of c-command over Aoun and Sportiche's (1981), which is shown below:

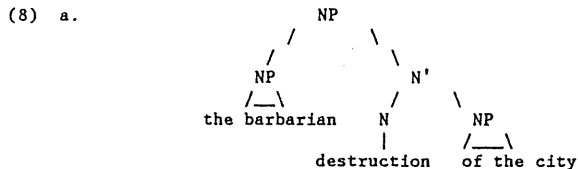
- (i) Node A c-commands node B  
=df. neither A nor B dominates the other and every maximal  
projection dominating A dominates B.

Given the definition of c-command in (3), *zibun* (*himself*) in (b) and *kare* (*him*) in (a) c-command the antecedent *John*, if the structure of NP is non-configurational as in (4b). Hence, Binding Condition C incorrectly rules out the examples. On the other hand, if the structure of NP is configurational, then the R-expression *John* is free in both (6a) and (6b). Hence, Binding Condition C correctly rules in the examples. Thus, if Binding Conditions are part of Universal Grammar, and if Japanese obeys the conditions, then NPs in Japanese should be configurational, exactly as those in English.<sup>3</sup>

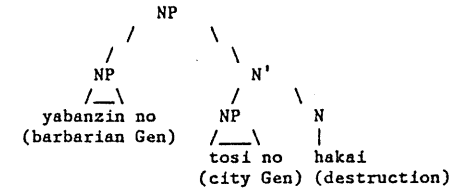
Another commonality between English and Japanese is that NPs in both languages can have an object as well as a subject, as shown in (7).

- (7) a. the barbarians' destruction of the city  
(subject) (object)
- b. yabanzin no tosi no hakai  
the barbarian Gen city Gen destruction  
(the barbarians' destruction of the city)

The structures of (7a-b) are schematized in (8a-b) respectively:



b.



In addition to the commonalities discussed above, there are also some notable differences between English NPs and Japanese NPs. As we can observe in the tree-diagrams in (8), there is a structural difference between the NPs in English and Japanese. In English, the object *the city* is preceded by the theta-role assigning noun *destruction*. In Japanese, on the other hand, the object *tosi* (*the city*) precedes the theta-role assigning noun *hakai* (*destruction*). The Government and Binding theory incorporates a particular theory of phrase structure, called X-bar theory, which expresses generalizations about the phrase structures of all human languages. For example, Chomsky (1970) suggests that the position of heads (e.g., noun (N) in an NP) can be specified once and for all for the phrases in a given language. The parametric variation in the position of the head is attributed to the "head parameter". Languages have heads either to the left or to the right of their complements: English is a head-initial language, while Japanese is a head-final language. Hence, in (8a), the N, the head of the NP, appears before its object under N', and in (8b), the N appears after its object under N'.

Another difference between English NPs and Japanese NPs is observed in the possible number of genitive Case marked NPs within an NP. As

<sup>3</sup> See Whitman (1982) and Saito (1983, 1985) for evidence that Condition (C) holds in Japanese. They argue on the basis of this evidence that Japanese sentences are configurational, and have the hierarchical structure assumed for English sentences.

shown in (9a), the object NP can be marked by the genitive Case 's in English. However, as shown in (9c), it is impossible to mark both the subject and the object of a noun by the genitive Case. In Japanese, on the other hand, this is possible, as shown in (9d).<sup>4</sup>

- (9) a. the city's destruction  
 b. tosi no hakai  
     city Gen destruction  
     (the city's destruction)  
 c. \*the barbarian's the city's destruction  
     Cf. the barbarian's destruction of the city  
 d. yabanzin no tosi no hakai  
     barbarian Gen city Gen destruction  
     (the barbarian's destruction of the city)

A difference such as this cannot be captured by the head parameter. The difference in (9c-d) ties in with the differences in the Case marking system in the two languages.

Japanese relies heavily on morphological Case to mark the roles of argument NPs. But, the genitive *no* marks several relations, including those of possessor, subject, object, modifier, and quantifier. This is illustrated by the following examples:

<sup>4</sup> The following example similar to (5c) is grammatical in English:

- (i) the barbarian's city's destruction

This, however, is not a case of "multiple genitive Case marking". In this case, genitive Case is marked only on one argument (i.e., *the barbarian's city*) of the noun *destruction*. And only inside this argument does the other genitive 's appear. By "multiple genitive Case marking," I mean that the genitive Case marker appears on more than one argument of the same noun.

- (10) a. John no hon (Possessor)  
           book  
           (John's book)  
 b. yabanzin no tosi no hakai (Subject and Object)  
     barbarian city destruction  
     (the barbarian's destruction of the city)  
 c. ame no hi (Modifier)  
     rain day  
     (a rainy day)  
 d. ikutuka no uti (Quantifier)  
     a few house  
     (a few houses)  
 e. sanbon no biiru (Quantifier)  
     three-CL beer  
     (three bottles of beer)

Thus, in Japanese NPs, quite a wide range of relations are expressed by the genitive Case marker *no*. Furthermore, *no* appears not only on Noun phrases but also on Postpositional Phrases (PPs) as shown below:

- (11) a. [NP[PP Boston de] no gakkai]  
                                 at Gen conference  
           (a conference at Boston)  
 b. \*[NP[PP at Boston]'s conference]  
 (12) a. [NP[PP koko kara] no miti]  
                                 here from Gen road  
           (the road from here)  
 b. \*[NP[PP from here]'s road]

The genitive *no* has attracted the attention of many Japanese grammarians. It is extensively analyzed in Bedell (1972), Kitagawa and Ross

(1982), Saito (1982) and Fukui (1986), among others. Saito (1982) discusses examples such as those in (9)-(12), and concludes that the Japanese genitive Case marker *no* is inserted in an NP contextually. He suggests, following Bedell (1972), that there is a rule of *no*-insertion, which inserts the genitive Case marker after any NP or PP that is immediately dominated by a projection of N.<sup>5</sup>

The genitive Case marker 's in English, on the other hand, is assigned to a unique position, i.e., the NP SPEC position. The fact that 's can appear on only one NP, i.e., the fact that multiple genitive marking is impossible in English, has led researchers to the hypothesis that 's is a realization of an abstract Case. An abstract Case is, by definition, uniquely assigned to NPs by categories which have Case assigning ability. For example, a transitive verb assigns objective Case to its NP object and a finite INFL assigns nominative Case to the subject of a sentence. Chomsky (1986a) hypothesizes that 's is a realization of an abstract Case assigned by N, and the proponents of the DP hypothesis propose that 's is assigned by the head D of a D(eterminer) P(hrase).<sup>6</sup>

Under either hypothesis on 's, the mechanisms governing the Japanese *no* and the English 's would be quite different. *No* is inserted by a contextual insertion rule, while 's is a realization of an abstract Case assigned by a specific Case assigner. And this difference seems to be responsible,

<sup>5</sup> See Kitagawa and Ross (1982) and Fukui (1986) for similar proposals.

<sup>6</sup> See Brame (1982), Abney (1986), Fukui and Speas (1986), and Kuroda (1988) for discussion of the DP hypothesis.

at least in part, for the fact that "multiple *no*," but not "multiple 's," is possible, as illustrated in (9). I will discuss the mechanism of *no*-insertion in more detail in Chapter II.

The third major difference between English and Japanese NPs is found in the properties of relative clauses. First, as observed in Kuno (1973), relativization in Japanese, in contrast to that in English, does not exhibit Subjacency effects. Thus, as shown in (13), relativization out of a relative clause is impossible in English, but it is possible in Japanese.

- (13) a. \*[<sub>NP</sub>the book<sub>i</sub> [<sub>S</sub>which<sub>i</sub> [<sub>S</sub>John saw  
[<sub>NP</sub>a person<sub>j</sub> [<sub>S</sub>who<sub>j</sub> [<sub>ST</sub><sub>j</sub> read t<sub>i</sub>]]]]]]]  
b. [<sub>NP</sub>[<sub>S</sub>[<sub>NP</sub>[<sub>S</sub> e<sub>i</sub> e<sub>j</sub> kiteiru] yoohuku<sub>j</sub>] ga  
wearing suit Nom  
yogorete iru] sinsi<sub>i</sub>]  
dirty gentleman  
(Lit. the gentleman that the suit that he is wearing  
is dirty.)

The movement of *which* in (13a) crosses three bounding nodes, one NP and two Ss, and hence, violates Subjacency. But the equivalent Japanese example, (13b), is perfectly grammatical.<sup>7</sup> Secondly, neither a complementizer nor a relative pronoun appears in Japanese relative clauses, as shown in (13b), and also in (14).

<sup>7</sup> See Chomsky (1973, 1977, 1981, 1986b) for discussion on the precise formulation of the Subjacency Condition.

- (14) a. [NP[s e<sub>1</sub> hon o katta] hito<sub>1</sub>]  
           book Acc bought person  
           (a person who bought a book)
- b. [NP[sTaroo ga e<sub>1</sub> katta] hon<sub>1</sub>]  
           Nom bought book  
           (the book that Taro bought)

Given this fact, Saito (1985) conjectures that Japanese relative clauses may be S (=IP), and not S' (=CP).<sup>8</sup> I will discuss the structure of Japanese relative clauses in detail in Chapter III.

### 1.3. Acquisition Puzzle

One of the most perplexing overgeneralization phenomena which has been observed in previous acquisition studies (Harada, 1980; Clancy, 1985, among others) is that Japanese-speaking children overgenerate *no* in NPs, as shown in (15).

- (15) a. [NP[AP ao<sub>i</sub> ] no buubuu]  
           blue (+present) \*NO car  
           (the blue car) (Clancy, 1985: 459)
- b. [NP[s usatyan ga tabeta] no ninzin]  
           rabbit Nom eat (+past) \*NO carrot  
           (the carrot that the rabbit ate) (Harada, 1980)
- c. [NP[stigau ] no outi]  
           differ \*NO house  
           (a different house) (Emi, 3;0)
- d. [NP[s gohan tabeteru] no buta san]  
           food eating \*NO piggy  
           (the pig that is eating the food) (Nagisa, 3;2)

<sup>8</sup> Sakai (1990) also draws this conclusion on independent grounds.

One of the factors which make this overgeneration so perplexing is that, as will be shown in detail in Chapter II, there are several homophonous *no*'s in Japanese. That is, in addition to the genitive Case marker discussed above, *no* serves as nominal pro-form and a complementizer, and it is not clear at first glance which type of *no* is overgenerated.

The most intuitively natural hypothesis, which is entertained by Harada (1980) and Clancy (1985), is that the overgenerated *no* is the genitive Case marker. As noted above, the *no*-insertion rule inserts the genitive *no* after NP and PP prenominal elements. As shown in (16), however, it does not insert *no* after prenominal APs and relative clauses.

- (16) a. [NP[AP ao<sub>i</sub> ] (\*no) kuruma]  
           blue (+present) car  
           (the blue car)
- b. [NP[s Taroo ga katta] (\*no) hon]  
           Nom bought (+past) book  
           (the book that Taro bought)

Then, the overgeneration of *no* in (15) can be considered as a result of an analogical overapplication of the *no*-insertion rule to prenominal APs and relative clauses.

If this hypothesis is correct, an interesting question arises as to why we do not find a similar overgeneration in English.

- (17) a. \*the red's book  
       b. \*the man of who is running

In fact, as reported in Brown (1973: 196) and Tomasello (1987), 's and of which roughly correspond in their functions to the Japanese genitive *no* are undergenerated initially, as shown in (18).

- (18) a. Daddy chair  
(Daddy's chair) (late one year) (Brown, 1973)
- b. picture cat  
(a picture of the cat) (1;7) (Tomasello, 1987)

The second possibility is that the overgenerated *no* in (15) is an N. In Japanese, there is a pro-form *no*, which roughly corresponds to *one* in English.<sup>9</sup>

- (19) a. [NP[Apakai] no]  
red one  
(the red one)
- b. [NP[sTaroo ga katta] no]  
Nom bought one  
(the one that Taro bought)

And interestingly enough, the overgeneration of *one* is reported in the literature. Brown and Bellugi (1971), for example, report that Andrew, at around the time when he started to mark possessor NPs with 's, produced forms such as (20d).

(20) Andrew (27 months)

- a. more
- b. more bread
- c. other one
- d. \*other one pants

Note that in (20d), *one* appears after the prenominal modifier *other*. Fletcher (1972) also observes this kind of "error" in Sophie's (2;4) production.

(21) Sophie (2;4)

- > F : you've got Zeldy's piano/  
S : why/  
you get 'nother one Zeldy
- > F : another one  
S : you get -- 'one [e] Zeldy  
F : what sort shall I get for Zeldy then/

In fact, an example quite similar to (20d) was elicited from a Japanese speaking child.

(22) (Requesting from Mother the other kind of tea)

- hoka no no kootya (Emi, 3;0)  
another tea  
(another tea)

The adult form of (22) is (23).

- (23) [NP[Nphoka] no kootya]  
another Gen tea  
(another tea)

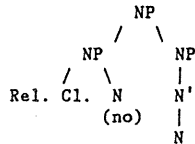
Thus, it is likely that the second *no* in (22) is the pro-form corresponding to *one* in English. This utterance, then, suggests that the pro-form *no*, like

<sup>9</sup> See Okutsu (1974) and McGloin (1985) for discussions of the pro-form *no*. The existence of the pronoun *no* in Japanese is negated in the influential article by Kitagawa and Ross (1982). In Chapter II, some supporting evidence for its existence, and the syntactic properties of it, will be presented.



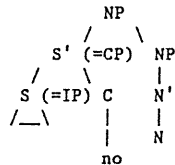
its English counterpart *one*, is overgenerated prenominally. Hence, it makes the hypothesis that *no* in (15) is the pro-form *no* plausible. According to this hypothesis, the structure of (15b), for example, would be as in (24).

(24)



The third possibility is that *no* in (15) is of the category C.<sup>10</sup> This suggests that children at one acquisition stage conjecture that the prenominal modifier with tense, typically, relative clauses and adjectives, are categorized as CP, in which C is phonetically realized as *no*. According to this hypothesis, the structure of the examples in (15) would be as follows.<sup>11</sup>

(25)



<sup>10</sup> The existence of C in Japanese is one of the problems unsolved in Japanese syntax. Fukui (1986) argues that C does not exist in Japanese. On the other hand, it is proposed in Hoji (1990) that *no* appears as C in cleft sentences. I will present further evidence for this proposal in Chapter II.

<sup>11</sup> The structure of (15a), then, would be as in (i).

(i) [<sub>NP</sub> [<sub>S</sub> [<sub>S</sub> e<sub>1</sub> [<sub>AP</sub> aoi]]] *no* buubu<sub>1</sub>]

Interestingly enough, the structure in (25) is, aside from the linear order of the constituents, identical to the one assumed for relative clauses in English. This hypothesis suggests, then, that the overgeneration of *no* in (15) is not based on any kind of "analogy" with grammatical strings such as those in (10)-(12) or those in (19). It would, instead, be based on innate knowledge that (25) is a possible structure for relative clauses, and also on the fact that C can be realized lexically as *no* in Japanese.

This hypothesis, like the others, poses an interesting learnability problem. As noted above, an overt complementizer never appears in the adult grammar of Japanese relative clauses. Thus, the Japanese speaking children must somehow acquire this knowledge so that they can retreat from the overgeneration of *no*. But how do they acquire this knowledge? Is there positive evidence that enables them to know that relative clauses in Japanese cannot contain an overt complementizer?

Here, we clearly have an interesting puzzle. Given the analysis in Chapter II that there are three types of *no* in Japanese, is the overgenerated *no* in (15) the genitive Case marker, or the pro-form corresponding to *one*, or a complementizer? Which hypothesis explains the overgeneration phenomenon? That is, which hypothesis is consistent with the principles of UG, and at the same time, meets the learnability criteria? One of the main goals of this dissertation is to solve this puzzle.

In the following chapter, I will provide further evidence that there are three distinct *nos* in Japanese. By discussing each of the three *no*'s in detail and clarifying their syntactic properties, I provide counter evidence

to Kitagawa and Ross (1982) and Fukui (1986), who negate the existence of the pro-form *no* and *no* of the category C, respectively. In Chapter III, I will discuss the syntax of Japanese relative clauses in detail. There, I will argue for the IP hypothesis, which states that all prenominal sentential modifiers are of the category IP, but not CP, in Japanese. Then, in Chapter IV, I will examine the relevant acquisition data in detail. On the basis of the analysis in Chapter II, three possibilities for the syntactic status of the overgenerated *no* are pointed out. Then, I propose a solution to the puzzle posed by the overgeneration phenomenon in (15). I will argue that the overgenerated *no* is a complementizer, and show how it is possible for children to retreat from the overgeneration. This chapter provides support for the IP hypothesis proposed in Chapter III, on the basis of the examination of acquisition data and the consideration of learnability problems. In Chapter V, I will present the results of the experimental studies, conducted to gather acquisition data discussed in this dissertation.

## Chapter II

### Japanese "No"

This chapter is a study of a set of modern Japanese NPs which have in common a certain superficial similarity: the morpheme *no* appears in them. Despite the apparent uniformity, the syntactic status of *no* shows considerable variations, typically having both lexical and functional variation which differ from one another in revealing ways.

Partly because of its syntactic richness and complexity, the syntax of Japanese *no* has been extensively studied in the previous literature. In particular, the status of *no* as a genitive Case marker has received a great deal of attention by generative grammarians because it contrasts with the Case marking mechanism of English.

This chapter is concerned with two main issues: (i) The types of *no* in NPs, and (ii) the properties of each type of *no*. The present study focuses on three types of *no*. In Section I, the mechanism governing the distribution of *no* as a genitive Case marker will be investigated. In Section II,

the syntactic status of the so-called *pronoun no* will be discussed. And Section III discusses the property of *no* as a Complementizer. This chapter will contribute to our understanding of the different mechanisms underlying the unique phonetic form *no*. Together with Chapter III, this will provide direction for the study of overgeneration of *no* in NPs by Japanese speaking children. The child language data and its analysis will be presented in Chapters IV and V.

### 2.1. Genitive Case Markers

#### 2.1.1. 'Of', 'S', and 'No'

It is typical in languages for the grammatical relationship marked by genitive Case to characterize more than one kind of semantic relationship (Freeze, 1976). Among the prenominal/postnominal modifications inside NPs, one of the most typical modification relations is "possessive." In English and Japanese, the possessive relation, alienable and inalienable, is marked by the genitive Case marker, 's and *no*, respectively.

- (1) a. John's cup
- b. John no kappu  
Gen cup
- (John's cup)
- (2) a. John's foot
- b. John no asi  
Gen foot
- (John's foot)

Time- and Place- NPs, or bare adverbial NPs, can modify the head nominal in the sense of Anderson's (1983) extended possessive.<sup>12</sup>

- (3) a. Yesterday's lecture  
       b. kinoo     no   koogi  
           yesterday Gen lecture  
           (Yesterday's lecture)
- (4) a. Connecticut's best hotel  
       b. konetikatto no   ichiban ii hoteru  
           Connecticut Gen best     hotel  
           (Connecticut's best hotel)

Furthermore, the subject of N, and the object of N in an NP are related to the head by genitive Case markers 's and *no*.

- (5) a. the barbarian's destruction (of the city)  
       b. yabanjin     no   (tosi no) hakai  
           the barbarian Gen   city Gen destruction  
           (the barbarian's destruction (of the city))
- (6) a. the city's destruction  
       b. tosi     no   hakai  
           the city Gen destruction  
           (the city's destruction)

NPs such as (6) correspond to Sentence in that they can contain a subject as well as an object, but unlike in the case of Sentence, the arguments of an N need not be obligatorily represented, and NPs lack tense.<sup>13</sup> In any

<sup>12</sup> See Larson (1985) for discussion of this type of NP.

<sup>13</sup> The NP-S parallelism originated in Chomsky (1955), Lees (1965) and Chomsky (1970).

case, NPs can assume argument theta-roles (e.g., agent, patient, "possessor", etc.), associated with 's in English, and *no* in Japanese. And for this reason, it has been commonly assumed that *no* has quite similar properties to those of 's in English. (See, for example, Saito, 1982.)

However, Japanese *no* has a wider distribution than English 's. The attributive nominal, the pseudo-partitive and quantifier modifying the head nominal are marked by *no* as well.

- (7)    men     no   shatsu  
        cotton Gen shirt  
        (a shirt of cotton)
- (8)    shuukyoo no hito  
        religion Gen person  
        (a man of religion)
- (9)    ichi mai   no kami  
        one piece Gen paper  
        (one piece of paper)
- (10)   ichi mai   zutu no kami  
        one piece each Gen paper  
        (one piece of paper each)

Thus, genitive NPs in Japanese can assume argument theta roles and other types of semantic roles, and are related to the head nominal by the genitive Case marker *no*. As the translations of (7) through (10) indicate, in the cases of modifiers, Japanese *no* is analogous to English *of*. Then, it appears that Japanese *no* is analogous to English 's in examples of argument NPs and to *of* in examples of other types of NPs (e.g., quantifiers

and pseudo-partitives). As Japanese is strictly a head-final language, modifiers always precede the head noun in an NP structure.

As noted above, *no* has been commonly assimilated with 's in English. But suppose that it is not 's that "corresponds to" Japanese *no*, but it is *of* that "corresponds to" it. If it is so, then all the cases where 's corresponds to *no* could be subsumed in the distribution of *of*. Let us see if this is the case.

Notice first that *of*-insertion is possible in possessives.

- (11) a. John's sister
- b. a sister of John
- (12) a. the book's cover
- b. the cover of the book

In the case of subjectives, *of* can be inserted between the head nominal and the subject NP.<sup>14</sup>

- (13) a. the barbarian's destruction (of the city)
- b. the destruction of the barbarian
- c. the destruction by the barbarian

<sup>14</sup> Judgement of (13b), (15d) and (16d) varies among the individuals of English native speakers. Anderson (pers. comm.) pointed out to me that a pause between the *destruction* and *of the barbarian* saves the NP in (13b) from the ambiguity in the meaning of the NP. Stowell (1981) points out that the *no*-insertion is blocked where genitive Case is assigned. According to Stowell's analysis, such NPs as (13b), (15d) and (16d) may sound degraded to some English native speakers, because this is the case where abstract Case is available.

- (14) a. the musician's composition (of the Waltz)
- b. the composition of the musician
- c. the composition by the musician

*Of* can indicate the objective grammatical relation, as shown in (15)-(16).

- (15) a. the city's destruction
- b. the destruction of the city
- c. the barbarian's destruction of the city
- d. the destruction of the city of the barbarian
- (16) a. the musician's composition
- b. the composition of the Waltz
- c. the musician's composition of the Waltz
- d. the composition of the Waltz of the musician

To summarize, the subjective NP as well as the objective and possessive NPs can undergo *of*-insertion. Hence, we may say that, as far as its distribution is concerned, Japanese *no* may appear in the position where *of* may appear in English. That is, the distributions of 'no' and 'of' coincide with each other. Here, we have reached the point at which we can compare the mechanisms of *of*-insertion and *no*-insertion in their respective languages.

First, let us examine the mechanism of *of*-insertion in English. Anderson (1983) proposes that there are two different *of*s, which are inserted between two nominal elements: one is a dummy Case marker, which is inserted between the head N and an NP argument; the other is a seman-

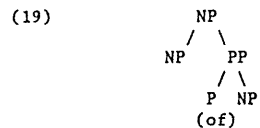
tically significant preposition.<sup>15</sup> Anderson (1983) points out that in such cases as (17), nouns do not assign Case, but the preposition *of* assigns Case to the bare NP following the noun. In prepositional phrases which modify nouns, the lexical preposition is the Case assigner.

- (17) a. a shirt of cotton  
b. a shirt of plaid flannel

The *of* in the following examples, like those in (17), belong to the second type.

- (18) a. a man of property  
b. a man of religion  
c. a book of importance  
d. a matter of great delicacy

Anderson (1983) proposes the following structure for the examples in (17) and (18).



<sup>15</sup> The first *of* is, in Chomsky's (1986a) terms, the realization of the Inherent Case marker which is semantically empty. An example of the first *of* is shown in (ia) and that of the second in (ib).

- (i) a. the destruction of the city  
b. the shirt of plaid flannel

Anderson discusses certain contrasts as evidence that the two types of *of* must be distinguished. For example, if the dummy *of* is inserted between the head noun and its NP argument within the projection of the head noun, the result is ungrammatical as (20) shows. *The city* and *the barbarian* in these examples do not appear within a projection of *destruction*. On the other hand, the grammaticality of (21) indicates that the second type of *of* can occur independent of the dummy *of* insertion process.

- (20) a. \*The destruction was of the city  
b. \*The destruction was of the barbarian  
(21) a. The shirt is of plaid flannel  
b. the matter is of great delicacy  
cf. c. A doll is on the table

Let us now examine Japanese NPs in light of Anderson's (1983) analysis, and consider whether or not Anderson's (1983) analysis for English NPs can be directly extended to Japanese NPs. Examining the Japanese counterparts of the relevant English examples, we discover that the attributive *no* phrase can never appear in the predicative position, as shown in (22a-b) and (23a-b).

- (22) a. syuukyoo no hito  
religion person  
(a man of religion)  
b. \*kono hito wa syuukyoo no e da  
this person Top religion is (COP)  
(This person is of religion.)

- (23) a. oka no ue no hito  
hill on person  
(a man on the hill)
- b. \*sono hito wa oka no ue no e da  
that person Top hill on iw (COP)  
(That person is on the hill.)

Note here that this is also true for the subjective and objective. That is, there is no contrast between the subjective/objective and attributive *no*'s.

- (24) a. tosi no hakai  
city Gen destruction  
(the destruction of the city)
- b. \*sono hakai wa tosi no da  
that destruction Top city is (COP)  
(That destruction is the city's.)

This paradigm can be interpreted as follows: there is only one Japanese genitive *no*, unlike English *of*. In terms of Anderson's (1983) theory, Japanese *no* is similar to the dummy *of*, rather than the semantically significant preposition *of*. In the next section, I will investigate the mechanisms of dummy *no*-insertion and dummy *of*-insertion.

### 2.1.2. Genitive Case Marker Insertion Rule

Abstract Case assignment is essentially invariant across languages in its formulation (Stowell, 1981). It has been claimed that the same is true of the rule inserting the dummy Case marker in an NP. The dummy preposition rule, or the *of*-insertion rule, is proposed in Chomsky (1972), and Stowell (1981), among others. Stowell (1981) notes that *de* in French, *di* in

Italian, *se/* in Hebrew, may also be governed by the same mechanism, and claims that the rule applies in the structural environment defined in (25).

#### (25) *of*-insertion

- In the environment [ $\alpha \dots \beta \dots$ ], adjoin *of* to  $\beta$   
where  
(i)  $\alpha$  is some projection of [+N], and  
(ii)  $\beta$  is an immediate constituent of  $\alpha$ , and  
(iii) for some  $\gamma$ ,  $\gamma$  the head of  $\alpha$ ,  $\gamma$  precedes  $\beta$ .

This formulation states that the rule applies to an NP which is directly dominated by some projection of A or N, and which is preceded by the governing head.

This rule may be directly rewritten as follows for Japanese.

#### (26) *no*-insertion

- In the environment [ $\alpha \dots \beta \dots$ ], adjoin *no* to  $\beta$   
where  
(i)  $\alpha$  is some projection of [+N], and  
(ii)  $\beta$  is an immediate constituent of  $\alpha$ , and  
(iii) for some  $\gamma$ ,  $\gamma$  the head of  $\alpha$ ,  $\gamma$  follows  $\beta$ .

As Japanese is a head-final language, the head follows the modifier, in contrast with English.

In fact, as mentioned in Chapter 1, the following mechanism of *no*-insertion has been widely assumed in the literature (Bedell, 1972, Saito, 1982, Fukui 1986, among others.) In effect, this rule inserts *no* between NP or PP and the projection of N, or in the following context:

- (27) [ $X Y$  \_\_\_\_], where Y is NP or PP, X immediately dominates Y,  
and X is a projection of N.

In this section, I examine whether Stowell's generalization is true for the Japanese *no*-insertion rule, and discuss the nature of a Case marker in-

section rule, taking into consideration the traditional *no*-insertion rule in Japanese and Stowell's *of*-insertion rule applied to Japanese.

First, there is good evidence that *no* is not simply a phonetic realization of abstract Case as in (26), but instead, is inserted by a rule like (27). One of the diagnostics to distinguish between abstract Case and contextually inserted Case is considered to be the Case drop phenomenon (Saito, 1985). Japanese is a language in which Case is in general overtly morphologically realized. Consider the following examples:

- (28) a. Mary *ga* booru *o* ketta  
           Nom ball Acc kicked

(Mary kicked the ball.)

- b. Mary *no* booto  
       Gen boat

(Mary's boat)

Nominative Case is *ga*, Accusative is *o*, and Genitive is *no*. At the same time, in Japanese, there is a phenomenon called Case drop. Saito (1985) notes that the Case marker *o*, unlike the other Case markers such as *no* and *ga*, is optionally morphologically realized in Japanese.<sup>16</sup> Consider the following contrast.

<sup>16</sup> Counterexamples to this proposal are given in Takezawa (1988). There are cases where the *ga* can also be dropped, leading Takezawa to propose that INFL assigns an abstract Case in Japanese.

- (29) a. John *\*(ga)* aruku  
           <sup>\*</sup>(Nom) walk

(John walks)

- b. Sakana (*o*) nikonda  
    fish (Acc) cooked

((pro) cooked the fish.)

Saito (1985) suggests that this contrast reflects different basic Case assignment mechanisms between accusative Case and nominative Case.

According to Saito's analysis, overt realization of an abstract Case is optional in Japanese. A transitive verb assigns abstract accusative Case to its object. Hence, *o*, which is a realization of this abstract case, is optional. On the other hand, the nominative Case marker *ga* is contextually inserted in the projection of S (or in the projection of V, according to Fukui (1986)). Since it is itself required for the Case marking of the NP, it can never be dropped.

Further, Saito (1985) notes that the contrast with *o* with respect to the Case drop phenomenon is more clearly observed in the case of the genitive Case marker *no*, than the nominative Case marker *ga*. There are cases where the "deletion" of *ga* seems to be marginally allowed. (See Kuno (1973) and Takezawa (1987).) But when *no* is dropped in NPs, the resulting strings become ungrammatical with no room for marginality. The two cases, i.e., the case where the genitive Case is dropped, and the case where the accusative Case is dropped, make a clear-cut contrast as shown below:



- (30) a. John \*(no) mise  
          \*(Gen) store

(John's store)

- b. John ga gohan (o) tabeta  
      Nom food (Acc) ate

(John ate the food.)

If the Case drop phenomenon directly reflects the existence of abstract Case assignment in such languages as Japanese, then the clear contrast between the lack of Case drop for genitive Case *no* compared to its acceptability for accusative Case *o* indicates that the mechanism governing the distribution of *no* is different from abstract Case marking. Hence, as Saito (1985) suggests, the Case drop phenomenon provides a piece of evidence that *no*-insertion is a phenomenon independent of abstract Case assignment.

Another piece of evidence that distinguishes a Case Insertion Rule from abstract Case assignment is the fact that the former does not require adjacency. According to Stowell's (1981) proposal given in (25), the [+N] element, i.e.,  $\gamma$ , and the NP to which a dummy Case marker is adjoined need not be adjacent. This is supported by the following contrast (Stowell, 1981: 128):

- (31) a. Anyone who is [fearful - beyond reason - of  
          traffic lights] should not be allowed to drive  
      b. Sarah is [considerate - in every respect - of her  
          neighbors] wishes]

The following examples indicate that *no* patterns with *of* in not requiring adjacency.

- (32) John no siroi kuruma  
      Gen white car

(John's white car)

More striking confirmation of this parallelism is found in examples of double genitive Case marking, as in (33d) and (34b). This clearly indicates that this insertion rule does not require any adjacency between the Case marker and the Case assignee. The question is whether or not this requirement is in fact true in both English and Japanese. The diagnostic for this can be found in the phenomenon of multiple genitive Case marking.

In Chapter I, I discussed briefly that one difference between English NPs and Japanese NPs is observed in the number of genitive Case markers possible in an NP. As shown in (33c), it is impossible to mark both the subject and the object of a noun by the genitive Case 's in English. But as shown in (33d), it is possible to mark the subject and the object simultaneously by *no*.<sup>17</sup>

<sup>17</sup> This multiple Case marking is also observed parallelly in Sentences. In Japanese, multiple nominative Case marking as well as multiple genitive Case marking is possible.

(i) yama ga ki ga kirei da  
    mountain Nom tree Nom pretty is

(As for the mountain, the tree is pretty.)

- (33) a. the city's destruction  
       b. toshi no hakai  
           city Gen destruction  
           (the city's destruction)  
       c. \*the barbarian's the city's destruction  
           (Cf.  $\sqrt{\text{the barbarian's destruction of the city}}$ )  
       d. Yabanjin       no toshi no hakai  
           the barbarian Gen city Gen destruction  
           (the barbarian's destruction of the city)

In (33d), the subject is clearly not adjacent to the head N. Yet, it can be marked by *no*. This fact clearly indicates that adjacency is not required for *no*. Note that the possibility of double *no* is in fact predicted by Stowell's rule in (26), since two  $\beta$ 's can simultaneously satisfy the context within a simple NP. The rule, then, also predicts that double *of* should be possible in English NPs. And this prediction is borne out as shown below:<sup>18</sup>

- (34) a. the destruction of the city by the barbarians  
       b. the destruction of the city of the barbarians  
       (35) a. the book of recipes by the cook  
           b. the book of recipes of the cook

The facts considered above clearly show the parallelism between the mechanism of *of*-insertion and that of *no*-insertion. Suppose that the Case

<sup>18</sup> According to Mona Anderson (pers. comm.), a pause should be inserted between *the city* and *of the barbarian*. This is to avoid the ambiguity. (a) and (b), although (a) is more natural in the sense that the subjective is clarified by *by*, rather than *of*, they are identical in terms of the grammaticality.

insertion rule is characterized by not requiring adjacency, thereby creating a sharp contrast with the requirement for the abstract Case assignment. Then the fact that multiple *of* marking is allowed in English (as well as double *no* marking in Japanese) indicates that the insertion rule functions independent of an abstract Case assignment. Thus, the generalization Stowell (1981) found not only correctly describes the structural position that *of* may appear in, but also shows the general property as an "insertion rule", which is an independent mechanism from abstract Case assignment.

I have shown above that the distribution of *no* is quite similar to that of *of*, and argued that it must be accounted for by such an insertion rule as that proposed in Stowell (1981). However, there are also differences between the distribution of *no* and that of *of*. First, adjectives trigger *of*-insertion in English, but they do not trigger *no*-insertion in Japanese. Second, in Japanese, unlike in English, the *no*-insertion applies to PPs, as well as to NPs. These differences can be readily observed from the formulations of *of*-insertion and *no*-insertion in Stowell's account (25)–(26) compared to the traditional *no*-insertion rule (27). Examples are shown in (36).

- (36) a. Watasi wa kodomo ga /\*no kawaii  
           I       Top child Nom/\*Gen be-fond  
           (I am very fond \*(of) the child.)  
       b. [NP[PP Tokyo kara] no [N' denshai]  
                                   from Gen train  
           (a train \*(of) from Tokyo)

In the following section, I will discuss the nature of the *no*-insertion rule in Japanese, focusing on the two factors that indicate cross-linguistic differences.

### 2.1.3. 'No'-Insertion Rule

First, I will examine the first apparent exceptional case, i.e., that Japanese adjectives, unlike English ones, do not trigger the *no* insertion rule.

When we encounter crosslinguistic differences such as those noted above, there are two possible approaches to take. First, it is possible to parameterize the rule. Second, we may assume that the rule itself is not parameterized, but that the difference follows from the interaction of the rule and some independent difference between the two languages. In Murasugi (1988), I pursue the second possibility to explain why adjectives in Japanese do not trigger *no*-insertion. More precisely, I used the fact that adjectives do not trigger *no*-insertion to argue for independent differences between English and Japanese. First, I will briefly summarize the analysis proposed there.

#### 2.1.3.1. Syntactic Status of Japanese Adjectives

It has been commonly assumed that there are two kinds of adjectives in Japanese which exhibit morphologically and syntactically different behavior. One is called an "adjective", and the other is called an "adjectival verb" in traditional Japanese linguistics. Examples of each type are shown in (37).

(37) (i) Adjective:	kawai-i	'cute'
	utsukushi-i	'beautiful'
	isamashi-i	'brave'
	mazushi-i	'poor'
	oishi-i	'delicious'

(ii) Adjectival Verbs :	kirei-na	'beautiful'
	yuukan-na	'brave'
	binbou-na	'poor'
	shizuka-na	'quiet'
	hen-na	'strange'

Adjectives are accompanied by the tense markers *i* (non-past) and *katta* (past), whereas adjectival verbs are followed by the copula in its non-past form (*da*) or in its past form (*datta*).<sup>19</sup> Both types of "adjectives" precede a noun, and taken together, these constitute a noun phrase, as illustrated in the examples in (38). Note that adjectival verbs are distinguished from adjectives by the attachment of the so-called attributive form of the copula, *-na*, in prenominal modification.

<sup>19</sup> Verbs take the tense markers *ru* and *ta*. For example:

- (i) a. John ga pan o taberu  
Nom bread Acc eat

(John eats the bread.)

- b. John ga pan o tabeta.  
Nom bread Acc ate

(John ate the bread.)

(38)

## a. Adjective:

kawai-i onna no ko  
cute girl

(a cute girl)

utsukushi-i hana  
beautiful flower

(a beautiful flower)

## b. Adjectival Verb:

kirei -na hana  
beautiful flower

(a beautiful flower)

shizuka-na yoru  
quiet night

(a quiet night)

I will discuss the two types of Japanese adjectives in turn.

Let us first consider adjectives, as represented by the examples in (37i).

It is clear that adjectives share certain syntactic properties with verbs.<sup>20</sup>

For example, NPs and PPs can be followed by the copula *da*, but VPs and APs cannot, as shown in (39).

<sup>20</sup> Some traditional Japanese linguists did not even regard 'adjective' and 'verb' as different categories, but assumed that both formed a single category. For example, Matsushita (1930) is one linguist who assumed that the category 'verb' includes both what we now call verbs and adjectives.

(39)

a. Noun: Kore ga hana da  
this Nom flower is (COP)

(This is a flower.)

b. PP : Tokyo wa koko kara da  
Top here from is (COP)

(Tokyo is from here.)

c. Adj.: Hana ga utsukushi-i \*(da)  
flower Nom beautiful is (COP)

(The flower is beautiful.)

d. Verb: Hana ga saku \*(da)  
flower Nom blooms is (COP)

(The flower blooms.)

Further, transitive adjectives such as *hosi-i* (want) mark their objects by *ga*, exactly like stative verbs, as shown in (40).

(40) a. Mary ga mizu ga hosi i  
Mary Nom water Nom want

(Mary wants water.)

b. John ga eigo ga wakaru  
Nom English Nom understand

(John understands English.)

The object of an active verb is marked by *o*, the object of a noun is marked by *no*, and the object of a postposition is not accompanied by any Case marker, as shown in (41).

(41) a. Taroo ga hon o yonda  
Taro Nom book Acc read (+past)

(Taro read the book.)

- b. tosi no hakai  
city Gen destruction  
(the city's destruction)
- c. Pekin ni iku  
Beijing to go  
(pro goes to Beijing.)

Thus, adjectives and stative verbs clearly form a natural class with respect to the Case marking of the object.

On the other hand, there are many notable differences between adjectives and verbs. For example, the subject-honorific forms of verbs and adjectives are formed in different ways, as shown in (42) and (43).<sup>21</sup>

- (42) a. Tennoo ga hon o yonda  
Emperor Nom book Acc read (+past)  
(The Emperor read the book.)
- b. Tennoo ga hon o o-yomi ni natta  
Emperor Nom book Acc read (+past)  
(The Emperor read the book.) (Respect for the Emperor)
- (43) a. Tennoo ga waka-i  
Emperor Nom young (+present)  
(The Emperor is young.)
- b. Tennoo ga o-wakai  
Emperor Nom young (+present)  
(The Emperor is young.) (Respect for the Emperor)

<sup>21</sup> A speaker's respect for the referent of the subject is typically expressed by prefixing the gerundive form of a verb with *o* (honorific suffix) and adding *ni nar(-u)* (meaning *become being*) to the right of the form." (Kuno, 1987: 68) As for adjectives, the honorific expression is formed by prefixing the adjectival stem with *o*.

The fact in general that adjectives share some, but not all properties with verbs is explained under the feature system proposed in Chomsky (1970), where adjectives are [+V, +N], and verbs are [+V, -N]. However, it is pointed out in Miyagawa (1987) that Japanese adjectives do not seem to share any notable properties with nouns. If adjectives are [+V, +N], this is not expected since they share the feature [+N] with nouns, which are [-V, +N]. On the basis of this, Miyagawa speculates that Japanese adjectives are associated with the lone feature [+V], being neutral as to [+/-N].

Although Miyagawa does not offer any empirical evidence that Japanese adjectives lack the feature [+N], the fact that they do not trigger *no*-insertion can be taken as evidence for this claim. Consider again Stowell's *of*-insertion rule and its Japanese counterpart, repeated below in (44):

- (44) a. *of*-insertion
- In the environment [ $\alpha \dots \beta \dots$ ], adjoin *of* to  $\beta$   
where  
(i)  $\alpha$  is some projection of [+N], and  
(ii)  $\beta$  is an immediate constituent of  $\alpha$ , and  
(iii) for some  $\gamma$ ,  $\gamma$  the head of  $\alpha$ ,  $\gamma$  precedes  $\beta$ .
- b. *no*-insertion
- In the environment [ $\alpha \dots \beta \dots$ ], adjoin *no* to  $\beta$   
where  
(i)  $\alpha$  is some projection of [+N], and  
(ii)  $\beta$  is an immediate constituent of  $\alpha$ , and  
(iii) for some  $\gamma$ ,  $\gamma$  the head of  $\alpha$ ,  $\gamma$  follows  $\beta$ .

According to (44a), both nouns and adjectives trigger *of*-insertion because they both have the feature [+N] in English. Now, suppose, as Miyagawa

proposed, that nouns are [-V, +N] and adjectives are [+V] in Japanese. Then, (44b) predicts correctly that nouns but not adjectives trigger *no*-insertion. Thus, if the insertion rule, as instantiated in (44a)-(44b), applies universally, as suggested in Stowell (1981), the fact that adjectives do not trigger *no*-insertion constitutes evidence for Miyagawa's proposal that Japanese adjectives lack the feature [+N].

Let us now turn to adjectival verbs, the other type of adjectives in Japanese. Examples of adjectival verbs were shown in (37ii), which is repeated below.

(45) Adjectival Verbs :	kirei-na	'beautiful'
	yuukan-na	'brave'
	binbou-na	'poor'
	shizuka-na	'quiet'
	hen-na	'strange'

Here, in order to make the argument clear, let us make a distinction between the stem of the adjectival verb without the copula *na*, the whole word containing the copula. We term the former, or the stem of the adjectival verb as a nominal adjective, and the latter, or the whole word, as adjectival verb.

As noted in Miyagawa, adjectival verbs, unlike adjectives, seem to share some properties with nouns. For example, unlike verbs and adjectives, but like nouns, they can occur with the copula *da*, as shown below.

- (46) a. Verb : \*Mary ga hasiru da.  
                     Nom run is (COP)  
                     (Mary runs.)
- d. adj. : \*Mary ga kawaii da.  
                     Nom cute is (COP)  
                     (Mary is cute.)
- c. N.Adj.: Mary ga kirei da.  
                     Nom pretty is (COP)  
                     (Mary is pretty.)
- d. N : Mary ga sensei da.  
                     Nom teacher is (COP)  
                     (Mary is a teacher.)

Based on examples such as these Miyagawa (1987) concludes that adjectival verbs (nominal adjectives in his terms) have nominal properties, and hence, are associated with the feature matrix [+V, +N].

However, I argued in Murasugi (1988) that, first, nominal adjectives cannot appear with nominative Case; while nouns can, as shown by the following example.

- (47) a. \*sizuka ga ii  
                     quite Nom good  
                     (Lit The quietness is good.)
- b. Bitoku ga taisetsu da  
                     virtue Nom important is (COP)  
                     (Virtue is important.)

In this respect, nominal adjectives, which seem to be like (abstract) nouns with respect to their meaning, reveal a different syntactic characteristic from usual nouns. In Japanese, only maximal projections, (for example,

NP, but not N,) can be accompanied by a Case particle such as *ga*. It is conjectured that the nominal adjective cannot by itself be an NP that gets Case, because it is a bound morpheme. The features of the nominal adjective bound morphemes happen to be [+N, -V]. So, although it functions like an N in some respects, it cannot be projected to an argument NP, thus, the nominative Case particle cannot accompany it. This is one piece of empirical evidence supporting the hypothesis that the nominal adjective is a bound morpheme. Only when *-sa* (*-ness*) is affixed to a nominal adjective can the nominal adjective appear with nominative Case, as examples (48) and (49) indicate.<sup>22</sup> The fact that a noun can be formed by the attachment of the nominal suffix *-sa* to the stem of adjectives and of adjectival verbs, but that the suffix *-sa* cannot be attached to adjectives and adjectival verbs themselves, e.g., \**utsukushi-i-sa*, and \**klrei-na-sa*, nor to nouns or verbs, suggests some common property between the stem of adjectives such as *utsukushi* in (48a) and that of nominal adjectives such as *shizuka* (48b). The common property between them is proposed to be that they are not free morphemes, but bound morphemes. In order for the bound noun which is associated with the features of nouns to function as a grammatical noun, *-sa* is attached. In other words, in Japanese, *-sa*, or a nominal suffix, is attached to a bound noun, which cannot function as a regular noun as it is, forming a free noun.

<sup>22</sup> Miyagawa (1987: 45) points out that *-sa* attaches to adjectives and what he calls adjectival nouns, turning both to nouns. Adjectival nouns, in this analysis, do not include the copula.

Lieber (1980) proposes that all morphemes, stems and affixes alike, have lexical entries which contain information about their category and about what sort of lexical item, if any, they must attach to, their semantic representation, argument structure, and so on. Within her framework, an affix is defined as a morpheme which subcategorizes other morphemes; the suffix *-ness* must attach to adjectives, like the prefix *un-*. Interestingly, empirical evidence in favor of Lieber's account can be provided from Japanese. On the assumption that the stem of adjectives and nominal adjectives make a natural class, Lieber's theory can be directly applied to Japanese morphology. The stem of Japanese adjectives and nominal adjectives (i.e., the stems of adjectival verbs) are followed by the suffix *-sa*, which corresponds to English *-ness* in function, and turns them to nouns. This interpretation predicts a proper consequence explaining the reason why *sa* never attaches to (the stems of) verbs, nouns, the full form of adjectives, and adjectival verbs. *Sa* attaches only to bound morphemes which have the feature [-V].

- (48) a. Adj.: utukushi -sa  
 beautiful -ness  
 (beauty)  
 (cf. \*utsukushi-i-sa)
- b. N.Adj.: shizuka-sa  
 quiet -ness  
 (quiteness)  
 (cf. \*shizuka-na-sa)
- c. N.: \*conpuutaa-sa  
 computer -ness
- d. V.(Action verb): \*tabe-sa  
 eat -ness
- e. V.(Stative verb): \*waka -sa  
 understand -ness

After suffixation, nominal adjectives and adjectives can be a subject,  
 being accompanied by the nominative Case marker *ga*.

- (49) a. Adj.: utukushi -sa ga ii  
 beautiful-ness Nom good  
 (Beauty is good.)
- b. N.Adj.: shizuka -sa ga ii  
 quiet -ness Nom good  
 (Quietness is good.)
- c. N.: \*conpuutaa-sa ga ii  
 computer -ness Nom good
- d. V. (Action verb):  
 \*tabe-sa ga ii  
 eat -ness Nom good
- e. V. (Stative verb):  
 \*waka -sa ga ii  
 understand-ness Nom good

(48d-e) are bad because verb stems have the feature [+V], and (48c) is impossible because the N is a free morpheme. Hence, the data in (48)

provide us with another piece of evidence that nominal adjectives are bound morphemes.

This argument is also supported from the morphological analysis by Kageyama (1982) on word formation in Japanese. Kageyama (1982) argues that *-sa* is a category-changing (from Adjective/Nominal Adjective to Noun) suffix. He claims that *-sa* is the N-creating suffix and it is attached to stems rather than full-fledged words, and that this suffix has no effect on the accentuation of the whole derived word. That is, he proposes that *-sa* is a suffix belonging to the morpheme level, or in Allen's extended ordering level, it belongs to Level 1 (+affixation). Thus, Kageyama's morphological analysis also provides supportive evidence for our claim that nominal adjectives, and stems of adjectives are bound morphemes.

Once we ignore the properties of the stem and restrict our attention to the whole word, adjectival verbs seem to have the same essential properties as adjectives. First, like transitive adjectives, transitive adjectival verbs mark their objects by *ga*, as shown below:

- (50) a. Mary ga John ga kirai na koto  
 Nom Nom hateful COP fact-that

(The fact that Mary hates John)

- b. Mary ga John ga shimpai na koto  
 Nom Nom worrying COP fact-that

(The fact that Mary is worrying about John)

In the case of transitive adjectival verbs, both the subject and the object are accompanied by the nominative Case particle *ga* as in the cases of stative verbs and adjectives, as shown in (40). In other words, a transitive



adjectival verb does not assign accusative Case. Secondly, like adjectives, adjectival verbs do not trigger *no* insertion.

- (51) a. \*Mary ga John no suki da  
           Nom     Gen like is (COP)

(Mary likes John.)

- b. Mary ga John ga suki da  
       Nom     Nom like is (COP)

(Mary likes John.)

I argued above that the fact that adjectives do not trigger *no*-insertion supports Miyagawa's proposal that Japanese adjectives do not have the feature [+N]. And if we pursue this line of reasoning, examples such as (51) indicate that, contrary to Miyagawa (1987), adjectival verbs also do not have the feature [+N].

The general picture of Japanese Case marking that emerges from the discussion above can be summarized as follows. First, transitive verbs and postpositions, which share the feature [-N], assign abstract Case to their objects. The Case assigned by a verb can be realized as *o*, while the Case that is assigned by a postposition cannot be lexically realized, as shown below:

- (52) a. Taro ga susi (o) tabeta  
           Nom susi Acc ate

(Taro ate susi.)

- b. Taro ga Tokyo (\*o) kara kita  
       Nom         Acc from came

(Taro came from Tokyo.)

Second, *ga* is adjoined to the object NP of a [+V] head, if the object is not assigned abstract Case (Ga-insertion). This accounts for the fact that the object of stative verbs, adjectives, and adjectival verbs are marked by *ga*.<sup>23</sup> Finally, [+N] categories trigger *no*-insertion according to the rule in (44b). In Japanese, both adjectives and adjectival verbs lack the feature [+N]. Hence, only nouns trigger *no*-insertion.

<sup>23</sup> Here, I touch the treatment of the nominative Case insertion rule in the previous literature. Saito (1985) proposed *ga*-insertion, and Fukui (1986) revised the analysis of nominative Case of Saito (1982) as follows: the Nominative Case marker *ga* is attached to any NP directly dominated by V', i.e., [NP, V'] if abstract Case is not assigned to NP. [i.e., if objective Case is not assigned to the NP by the verb]. (Fukui, 1986)

- (i) [<sub>V</sub>Yamada ga [<sub>V</sub>eigo ga wakarui]  
       Yamada Nom English Nom understand

(Yamada can understand English.)

In fact, there are similar examples with adjectives and adjectival verbs which take nominative objects.

- (ii) (a) [<sub>A</sub>Yamada ga [<sub>A</sub>mizu ga hoshii]  
           Yamada Nom water Nom want

(Yamada wants water.)

- (b) [<sub>V</sub>Yama ga [<sub>Adj.V</sub>ki ga kirei desu]  
       mountain Nom tree Nom pretty

(Speaking about the mountain, the trees are pretty.)

Pursuing Fukui's analysis, examples (i) and (ii) show that the nominative Case marker *ga* is attached to an NP directly dominated by V', A' and Adj.V'. We propose that these three categories share the feature [+V], and propose the following generalization of Fukui's rule.

- (iii) the Nominative Case marker *ga* is attached to the NP which is directly dominated by the maximal projection of [+V], [NP, [+V]].

According to this analysis, the insertion rule within NP, as instantiated in (44a)-(44b), is not parameterized according to which categories correspond to English adjectives, which are [+V, +N], in triggering the insertion. We can instead maintain that [+N] categories trigger the insertion universally.

Then, is it possible to explain the fact that *no*-insertion applies to PPs in a similar way? Recall that *of*-insertion applies only to NPs, while *no*-insertion applies to PPs as well as NPs.

- (53) a. the destruction of the city  
       b. the train (\*of) from New York
- (54) a. sono tosi no hakai  
       the city Gen destruction  
       (the destruction of the city)  
       b. Tokyo kara no densha  
           from Gen train  
       (a train from Tokyo)

The answer at the moment seems negative. One possibility that can be entertained is that Japanese postpositions (and PPs) are like nouns, and have the feature matrix [-V, +N]. However, if we assume that Japanese Ps assign abstract structural Case, as in (52b), then they must have the feature [-N]. I will, hence, tentatively assume that Japanese Ps, like the English ones, have the feature matrix [-V, -N].<sup>24</sup> The *no*-insertion rule, then, is formalized precisely as follows:

<sup>24</sup> We will come back to the problem regarding the property of Japanese postpositions briefly in Chapter III.

(55) *no*-Insertion Rule

- In the environment [ $\alpha \dots \beta \dots$ ], adjoin *no* to  $\beta$   
 where  
 (i)  $\alpha$  is some projection of [+N], and  
 (ii)  $\beta$  is an immediate constituent of  $\alpha$ , and  
 (iii)  $\beta$  is some projection of [-V], and  
 (iv) for some  $\gamma$ ,  $\gamma$  the head of  $\alpha$ ,  $\gamma$  follows  $\beta$ .

2.1.3.2. An Insertion Rule as a Case Marking Mechanism

The conclusions drawn above in connection with Stowell's (44) implies that there is an insertion mechanism as a means of Case marking in English and Japanese. Stowell's (1981) *of*-insertion rule can be extended to the *no*-insertion in Japanese, with one variation that the Japanese *no*-insertion adjoins *no* not only to NPs, but also to PPs. I turn finally to a brief discussion of the status of the insertion rule in light of the general conception of Case marking.

The discussion above implies that there are two independent mechanisms of Case Marking in languages. One is abstract Case assignment. The other is the contextual Case marking by the insertion of a morphological element. The different mechanism can even co-exist in a language. This was evidenced from Japanese, for instance, in which the accusative Case *o* cannot appear multiply, but the genitive Case *no* can.

One question about the status of the insertion rule is still left open. One should question why the operation is obligatory. The obligatoriness of the operation and the marked property of the operation may not be a coincidence. The obligatoriness seems to relate crucially to the Case Filter. The theory of abstract Case, which was first proposed by J.-R. Vergnaud, and

which was developed further in Chomsky (1980), contains the Case Filter, which specifies that every lexically realized NP must have Case.

(56) \*NP if NP has phonetic content and has no Case  
(Chomsky, 1981: 49)

In languages such as English, abstract Case assignment typically makes NPs satisfy the Case Filter.<sup>25</sup> And in such cases, the abstract Case assignment must apply for otherwise the Case Filter would be violated. Then what about the cases where abstract Case assignment does not take place for some reason? As already assumed (Chomsky, 1981; Stowell, 1981), the Case Filter is a part of the Universal Grammar, and regardless of whether or not abstract Case assignment takes place, this principle must be obeyed. Then, how is the Case Filter satisfied in cases where abstract Case is not assigned? As Stowell (1981) points out, this is where the insertion mechanism, such as *of*-insertion, comes into play.

The relevant situation typically arises in languages like Japanese. It is argued in Saito (1982, 1985), Kuroda (1986) and Fukui (1986) that there is no abstract Case assignment in the cases of nominative and genitive in Japanese. Fukui (1986) attempts to explain the difference between English and Japanese from the parameterization of phrase structure. Whether or not the language possesses functional categories is one of the fundamen-

<sup>25</sup> In Chomsky (1980), the environments for abstract Case assignment are specified as follows:

- (i) a. NP is Nominative if governed by AGR.
- b. NP is Objective if governed by V.
- c. NP is Oblique if governed by P

tal differences between the two languages. In English, there are functional categories.<sup>26</sup> In Japanese, on the other hand, there are no functional categories. Hence, there are no abstract Case assigner for nominative and genitive Cases. Kuroda (1986) also proposes a Japanese specific mechanism of Case assignment, but seeks the parameterization in the syntactic module of agreement, and not in phrase structure. He proposes that what is parameterized is whether the agreement, including abstract Case assignment, is obligatory or optional. English chooses the value "obligatory" in agreement. On the other hand, Japanese chooses the "optional" value in agreement. Fukui (1986), in line with Saito (1982), he concludes that there is a *no*-insertion rule or genitive Case marker insertion, and *ga*-insertion rule or the nominative Case marker insertion.

If the Case Filter is a universal principle, then, in languages where the abstract Case assignment is typically absent, as Japanese, how could Case be assigned to NPs? Here we arrive at the original motivation for a genitive Case marker Insertion rule assumed in Chomsky (1981), Stowell (1981), Jaeggli (1981), Saito (1982, 1985) and Fukui (1986), among others. Where abstract Case is not assigned to an NP, an insertion rule applies in order to save the NP from the Case Filter violation. That is, the Insertion rule functions when abstract Case is not assigned. This reasoning is of

<sup>26</sup> Under the DP hypothesis, the determiner *the* and the possessive marker *'s* are under the category of D, with the opposite agreement feature. The former does not induce agreement; but the latter does. The latter maximally projects to DP, and assigns abstract Case to its SPEC position. In Japanese, on the other hand, the category D is absent. That is, neither *no* (*'s*) nor *kono* (*this*) is of the category D.

course based crucially on the assumption that the Case Filter is a part of the UG.

The discussion above implies that an insertion rule does not apply when the abstract Case is assigned. As Stowell (1981: 245) observes, in English, *of*-insertion is blocked in the position where genitive Case is assigned.

- (57) a. \*[ of - [the city]<sub>i</sub> [<sub>N</sub> destruction [e]<sub>i</sub>]  
 b. [ of - [Paul]<sub>i</sub> [<sub>N</sub> discovery of - [the pills]<sub>i</sub>]]

And this is the exact motivation of Stowell's (iii) of (44a), in which the *of*-insertion is formulated so as to apply only in the post-head position. This leads us to conjecture that in the position where abstract Case is assigned, the *of*-insertion simply fails to apply. If it applies, then it results in ungrammaticality.<sup>27</sup>

Give this conclusion, why is it that *no*-insertion applies to PPs in Japanese? As noted before, Japanese PPs, except for those with postposition *ni* (which corresponds roughly to *to*), appears with *no*. Before we address this question, let us first consider why PPs in English and Japanese differ in this respect. One possibility is that while Japanese P is associated with the same syntactic features as English P, i.e., [-N, -V], it is different from English P in that it functions as a Case particle, being cliticized to the N. Thus, the postpositions in Japanese, except for *ni*, can be considered not

<sup>27</sup> This may be relevant to the fact that there is no "*o/no*-conversion," or "accusative Case-genitive Case conversion," in Japanese. When the abstract (accusative) Case is assigned, even if it is the context for *no*-insertion is satisfied, it does not apply.

to be a lexical category on a par with nouns, verbs, and adjectives, etc., but are particles attached to NPs.<sup>28</sup>

Then, is it that a PP, or an NP with a cliticized P needs Case? The answer is obviously negative as is clear from the grammaticality of the following:

- (58) Taroo wa Tokyo kara hon o toriyoseta  
           Top      from book Acc orderd and gained  
 (Taro ordered and gained the book from Tokyo.)

But let us examine (58) more closely. To observe the Case Filter, the NP, *Tokyo*, in (58) must have Case. It should be noted, however, that the Case is not overtly marked on the complement NP of the P. This leads us to conjecture that Japanese P can be a Case marker as it is, by cliticizing onto N. In other words, the Case assigned by P is not overtly realized on the complement NP of P, because P itself is the Case marker. Let us then assume that after P cliticizes onto N, it is no longer the head of NP, and the PP is realized as an NP. And let us suppose further that the *no*-insertion applies blindly to NPs. Then, *no*-insertion rule will apply to "PPs" in Japanese. In English, on the other hand, P is a lexical category on a par with nouns, verbs and adjectives, and is always a lexical head. Hence, *of*-insertion does not apply to PPs.

If this speculation is correct, it is possible to assert that there is no difference between English and Japanese with respect to the categories to which the *of*-insertion/*no*-insertion rule applies. In both languages, only

<sup>28</sup> In this sense, Japanese PPs are "nominal".

NPs are subject to the insertion process. However, it does not provide an answer for why *no*-insertion obligatorily applies to "PPs" in Japanese. As observed in (58), Japanese PPs do not need Case. And it was hypothesized above that the cliticized P itself functions as a Case marker in this example, and thus, makes its NP complement satisfy the Case Filter. Given this analysis, the prenominal PPs also must also satisfy the Case Filter without any additional Case marker. Hence, the obligatoriness of *no*-insertion to PPs does not follow from the Case Filter, and it appears that it must be stipulated. I will leave this problem unsolved at this point.

## 2.2. 'No' as Nominal Category

So far, I have discussed the genitive Case marker *no*, and the *no*-insertion rule. In this section, I will turn to the so-called pronoun *no*, which is widely assumed to be of the category N.

Let us consider the following examples:

- (59) a. siroi no  
white one  
(the one which is white)
- b. Arizona kara no  
from one  
(the one from Arizona)
- c. hasitte iru no  
running one  
(the one which is running)

It is widely assumed that the *no* in these examples is an N and is in the head position of the NP. This type of *no* has been called the pronoun *no*

in Japanese linguistics. Roughly speaking, it is analogous to English *one*.

Kamio (1983), for example, assumes the following structure for (59a):

- (60) [NP[N<sup>\*</sup>[AP siroi][N<sub>no</sub>]]]  
white  
(the white one)

Against the position that admits the existence of *no* as a nominal category, Kitagawa and Ross (1982) attempt to unify the two types of *no*, i.e., the genitive Case marker and the pronoun *no*, into one type. They argue that all the *nos* are the genitive Case marker, and that there is no pronoun *no* in Japanese. More specifically, they propose that the structures of the NPs in (59) are as in (61).

- (61) a. [NP[AP siroi] no e]  
white Gen
- b. [NP[PP Arizona kara] no e]  
from Gen
- c. [NP[S hasitte iru] no e]  
running Gen

This section examines syntactic evidence that supports the existence of the pro-form *no* in Japanese. More precisely, I will defend its existence on the basis of the following facts: (i) the pronoun *no* has semantic properties that distinguish it from the genitive Case marker, and (ii) in some dialects, the pronoun *no* is phonetically realized by a form distinct from that of genitive Case marker *no*. After I defend the existence of the pronoun *no*, I will briefly compare it with *one* in English.

### 2.2.1. The Standard Analysis

This section summarizes the major findings obtained through the studies, generative and traditional, of the 'formal nominal', or the pro-form *no*, and discuss the analysis proposed in Okutsu (1974).

This type of *no* can be modified by adjective(s), prepositional phrases, and relative clauses, as shown in (59) repeated below as (62).

- (62) a. siroi no  
white one  
(the one which is white)
- b. Arizona kara no  
from one  
(the one from Arizona)
- c. hasitte iru no  
running one  
(the one which is running)

In fact, the pro-form *no*, unlike the other pronouns such as *kare* (*he, that male person*), *kanojo* (*she, that female person*), and *sore* (*it, that one*), obligatorily requires some modifier.<sup>29</sup>

<sup>29</sup> Note here that all of these pronouns can be associated with modifiers, unlike *he, she* and *it* in English. In English, *he, she, it* cannot be modified, but *one* needs to be (except for the case where it is used as a numeral form). In this sense, in English the former pronouns and the latter pro-form are in the complementary distribution. In Japanese, on the other hand, all of the pro-forms can be associated with modifiers. The difference between the two pro-forms is that while the former type is optionally associated with modifiers, and the latter type is obligatorily associated with modifiers.

- (63) a. Taroo wa \*(hidoi) no o mita  
Taro Top horrible one Acc saw  
(Taro saw a \*(horrible) one.)
- b. Taroo wa (hidoi) sore o mita  
Taro Top horrible it Acc saw  
(Taro saw a (\*horrible) it.)
- c. Taroo wa (hidoi) kare o mita  
Taro Top horrible him Acc saw  
(Taro saw a (\*horrible) him.)
- d. Taroo wa (hidoi) kanojo o mita  
Taro Top horrible her Acc saw  
(Taro saw a (\*horrible) her.)

The following example also shows that *no*, even when it takes the discourse antecedent, cannot appear without a modifier:

- (64) Context: Watasi wa siroi fuku<sub>1</sub> ga sukida.  
I Top white clothes Nom like  
(I like the white suits.)
- a. Kare mo siroi fuku ga sukida.  
He also white clothes Nom like  
(He also likes the white suits.)
- b. Kare mo siroi no<sub>1</sub> ga sukida.  
He also white one Nom like  
(He also likes the white one.)
- c. \*Kare mo no<sub>1</sub> ga sukida.  
He also one Nom like  
(He also likes (the) one.)

*No* as a pro-form is associated with some peculiar semantic properties as well. First, Japanese *no* cannot refer to human beings. If *no* is used to



Given (70), the ungrammaticality of (67b) implies that demonstratives are placed outside NP' (N'). On the other hand, the grammaticality of (62a-c) indicates that AP and PP modifiers and the restrictive relative clauses are placed inside NP'. As for quantifiers, Kamio (1983) claims that there are in fact two types of quantifiers: one appears outside NP' (N'), and the other is placed inside the NP' (N'). The difference in the positions of the quantifiers is directly reflected in their interpretation. Observe the following examples:

- (71) a. Taroo ga nihon no bin o katta  
 Nom two Gen bottles Acc bought  
 (1. Taroo bought a package of bottles  
 that contained two.)  
 (2. Taroo bought two bottles.)  
 b. Taroo ga nihon no o katta  
 Nom two-CL one Acc bought  
 (Taroo bought a package that contained two.)

Kamio notes that (71a) is two-ways ambiguous, as indicated in the translation. In this example, *nihon-no* (two-CL-gen) can be a modifier restricting the head *bin* (bottle, or more precisely, a set or package of bottles). In this case, we obtain the first interpretation. But *nihon-no* in this example can also be interpreted as a quantifier specifying the quantity of the head *bin* (bottle). Under this interpretation, we obtain the second reading. On the other hand, Kamio notes that (71b) is unambiguous; it has only the first interpretation. He concludes that a "quantifier" appears inside an NP' (N') when it functions as a modifier, but is outside the NP' (N') when it functions as a quantifier.

We have thus far argued for the existence of the pronoun *no*, and considered its properties. The postulation of the pronoun *no* does not cause any problem when we limit our attention to examples like (72a) and (72b).

- (72) a. siroi no  
 white one  
 (the one which is white)  
 b. Taroo ga katta no  
 Nom bought one  
 (the one that Taroo bought)

In these examples, we can substitute a regular noun, e.g., *kuruma* (car), for *no*. Thus, it is possible to claim that the pronoun *no* basically has the distribution of a regular N. A problem arises, however, when we consider examples such as (73).

- (73) a. Tokyo kara no  
 from one  
 (the one from Tokyo)  
 b. Taroo no  
 one  
 (the one of Taroo's)  
 c. nihon no  
 two-CL one  
 (the one of two pieces)

Suppose the *no* in these examples is in the head position of the NP. Then, the *no*-insertion rule should apply, and insert the genitive *no* between the



modifier and the head noun *no*. But the result is ungrammatical, as shown in (74).<sup>30</sup>

- (74) a. \*Tokyo kara no no  
          from Gen one  
  
          (the one from Tokyo)  
  
      b. \*Taroo no no  
          Gen one  
  
          (the one of Taroo's)  
  
      c. \*nihon no no  
          two-CL Gen one  
  
          (the one of two pieces)

In order to solve this problem, Okutsu (1974) proposed a rule of *no-no* reduction. The rule basically states that the genitive *no* is deleted when it directly precedes the pronoun *no*.<sup>31</sup> According to this analysis, then, (73)

<sup>30</sup> In some dialects, all the NPs in (74) are grammatical. I will return to this point directly.

<sup>31</sup> Note here that the following are grammatical.

- (i) a. Taroo no no  
          Gen field  
  
          (Taroo's field)  
  
      b. no no hana  
          field Gen flower  
  
          (the flower of the field)  
  
      c. akai no no hyoosi  
          red one Gen front page  
  
          (the front page of the red one)

These examples suggest that the rule applies only when the genitive *no* directly precedes the pronoun *no*.

represents the predeletion structure, and (72) are in fact derived from (73).

I will henceforth refer to this analysis as the standard analysis.

## 2.2.2. Kitagawa and Ross (1982)

Let us now turn to Kitagawa and Ross's proposal to eliminate the "pronoun *no*." In Section 1, the mechanism of *no*-insertion rule was discussed. On the assumption that there is such an insertion rule in Japanese, it is reasonable to question the extent to which this rule has explanatory power to predict the distribution of Japanese *no*. As a logical possibility, it is possible that all the *no*'s in Japanese can be treated uniformly as a marker of noun modification, i.e., the genitive Case marker. This possibility ties into the question of whether the *no*-insertion rule can also explain the distribution of the pronoun *no* in Japanese.

Kitagawa and Ross (1982) pursue exactly this logical possibility. Observe the paradigms below:

- (75) a. [NP[NP Yamada] no hon]  
          Yamada Gen book  
  
          (Yamada's book)  
  
      b. [NP[ppkoko kara] no miti]  
          here from Gen road  
  
          (A road from here)  
  
      c. [NP[aputukusii] (\*no) hito]  
          pretty (\*Gen) person  
  
          (a pretty person)  
  
      d. [NP[S Yamada ga kaita] (\*no) hon]  
          Yamada Nom wrote (\*Gen) book  
  
          (a book that Yamada wrote)

The genitive Case marker *no* appears in (74a) and (74b), but not in (74c) and (74d). That is, *no* is not inserted following adjectives and relative clauses. On the other hand, in such languages as Chinese, the genitive Case marker *de* does appear in the contexts in (74a) through (74d). That is, *de* can be inserted following NPs and PPs, and adjectives and relative clauses, as well.

In order to explain the distribution of the genitive Case marker in Chinese and Japanese, Kitagawa and Ross (1982) first assume a universal rule of MOD (Modifying marker) insertion as in (76).

(76) MOD insertion Rule:  $[_{NP} X NP] \rightarrow [_{NP} X MOD NP]$

According to this rule, when some X modifies an NP, MOD is inserted. This rule explains the behavior of Chinese *de*, since in Mandarin Chinese, MOD *de* appears between a prenominal modifier and the head in every case. In Japanese, however, *no* does not appear when the modifier is an AP or a relative clause. Based on this observation, Kitagawa and Ross (1982) propose the parameterized rule in (77), i.e., a language specific rule in Japanese that deletes MOD (*no*).

(77) NO-deletion.

$[_{NP} X no NP] \rightarrow [_{NP} X NP]$   
 where: (a)  $NP \neq e$  (i.e., the head of NP is occupied by a phonologically full lexical item), and  
 (b)  $X = [...tense]$  (i.e., X is tensed [+V]).

(77) says that *no* is deleted if the prenominal modifier ends with tense and the modified nominal is not empty. As noted above, Japanese adjectives conjugate for tense. Hence, the NO-deletion rule applies in (75c) as well

as in (75d). Then, according to Kitagawa and Ross's analysis, *no* is first automatically inserted between the relative clause/adjectives and the head noun by the MOD Insertion rule, but is later deleted due to the NO-deletion rule. Here, as also indicated in their rule, the specification [+tense] can be replaced by the feature [+V], if Japanese relative clauses are projections of V, as proposed, for example, in Hale (1980).<sup>32</sup>

As noted before, this analysis of Kitagawa and Ross (1982) eliminates the pronoun *no*. They argue that the so called 'pronoun *no*' is in fact the genitive Case marker, and that the structures of the NPs in (59) are as in (78).

- (78) a.  $[_{NP} [_{AP} siroi] no e]$   
           white Gen  
           (the white one, or the one that is white)
- b.  $[_{NP} [_{PP} Arizona kara] no e]$   
           from Gen  
           (the one from Arizona)
- c.  $[_{NP} [s hasitte iru] no e]$   
           running Gen  
           (the one which is running)

This analysis is possible specifically because of the MOD-insertion rule and the first condition on the NO-deletion rule. The insertion rule automatically inserts *no* in (78a-c), exactly as in the case of (77c-d). But the NO-deletion rule does not apply in (78a-c), because the modified nominal

<sup>32</sup> See Fukui (1986) for another proposal in which V is the head of a relative clause.

is empty in these examples. This hypothesis enables us to analyze (78b), for example, as in (79).

- (79) [NP<sub>PP</sub> Arizona kara] no tegami ]  
           from Gen letter  
       (the letter from Arizona)

The only difference between (78b) and (79) is that the former has an empty pronoun, which is known to exist in Japanese on independent grounds.

Kitagawa and Ross's analysis is clearly quite attractive. It unifies the pronoun *no* and the genitive *no*. Further, it explains (28a-c) on the basis of the fact that Japanese has empty pronouns. However, as pointed out in McGloin (1985), it faces several problems. In what follows, I will briefly discuss those problems.

First, as noted above, *no* cannot be used to refer to human beings to whom deference is due. The following example is from McGloin (1985: 11).<sup>33</sup>

- (80) \*John no sensei wa kite-irasyaru keredo,  
       Gen teacher Top come-honorific though  
       Mike no wa mada kite-irassyaranai yoo da.  
       Mike Top yet come-honorific seem is (COP)  
       (John's teacher is here, but Mike's one does not seem to be here yet.)

If we assume Kitagawa and Ross's (1982) analysis, then *Maiku no* in (80) should have the structure as follows:

<sup>33</sup> McGloin's judgement is one question mark, but it seems to the present writer that it is out unless *sensei* (teacher) is treated as a thing, and not as a human being.

- (81) a. [NP<sub>NP</sub> Mike] no [NP *e* (*pro*)]  
           Mike Gen

But then, it is entirely unclear why (80) should be ill-formed, since *pro* in general can refer to human beings, as shown in (82).

- (82) a. sensei ga irasita  
           Nom came (+honorific)  
       (The teacher came.)  
       b. pro irasita  
           came (+honorific)  
       ((The teacher) came.)

Thus, Kitagawa and Ross's analysis faces a problem with the fact that the "pronoun *no*" cannot refer to human beings.

Second, as noted earlier, *no* cannot be used to refer to abstract objects. The example in (83), from Kamio (1983), confirms this generalization.

- (83) a. katai sinnen  
           firm belief  
       (a firm belief)  
       b. \*katai no  
           firm one  
       (a firm one (belief))

Here, if we assume Kitagawa and Ross's analysis, then we have to assume also that *pro* cannot refer to abstract objects. But we confront a problem, since *pro* in general can refer to abstract objects.

- (84) a. *Sinnen ga John o kaeta.*  
 belief Nom Acc changed  
 (The belief changed John.)
- b. *pro John o kaeta.*  
 Acc changed  
 ((The belief) changed John.)
- c. *pro pro kaeta.*  
 changed  
 ((The belief) changed (John).)

Thus, it is not clear why *pro* cannot refer to abstract objects in cases as (83). As McGloin (1985) points out, examples such as (81) and (83) raise serious problems for Kitagawa and Ross's analysis.

Furthermore, there is more direct empirical evidence indicating the existence of the pronoun *no*. Yuzawa (1953), Matsushita (1961), and Okutsu (1974) point out that there are several dialects in which two *no*'s may appear successively, as shown below:

- (85) *Kore wa watasi no no de wa arimasen.* (Yuzawa, 1953: 257)  
 this Top I Gen one is-not  
 (Lit. This is not my one.)

The first *no* in (85) should be the genitive Case marker. But how about the second one? It clearly cannot be the genitive Case marker, and the most straightforward analysis of (85) would be that the *no-no* reduction rule is absent or only optional in those dialects. But if this is correct, the second *no* in (85) must be the pronoun *no*, and hence, the pronoun *no* must be present at least in these dialects.

Further empirical support for the *pro* form *no* in line with Yuzawa (1953), among others, can be found in a Japanese dialect in which "the pronoun *no*" is in fact realized by a phonetic form distinct from the genitive Case marker. One of the factors that makes the analysis of *no* in Japanese quite difficult is the fact that possibly diverse functions in an NP are represented by the single phonetic form /no/. In phrases such as *Mari no* (Mari's) in the Tokyo dialect, for instance, there are logical two possibilities regarding the treatment of *no* in the NP. One possibility is that this *no* is the genitive Case marker. The other possibility is that this *no* is a *pro* form *no*. The former possibility implies that empty *pro* follows *no*, as proposed in Kitagawa and Ross (1982). The latter suggests that the genitive Case marker preceding *no* is deleted at some level, as proposed in Okutsu (1974). Here it becomes possible to distinguish these two possible hypotheses, if there is a dialect or language in which the genitive Case marker and the *pro* form have different phonetic forms. That is, if *no* in *Mari no* assumes a phonetic form different from the genitive Case marker in some dialect, we may safely conclude that it is not the genitive Case marker.

The Toyama dialect spoken in Japan fulfills this expectation.<sup>34</sup> In this dialect, the genitive Case marker is realized as *no*, as in the Tokyo dialect. However, in Toyama dialect, what has been traditionally called 'the pronoun *no*' is realized as *ga* as shown in (86).<sup>35</sup>

<sup>34</sup> It was brought to my attention that H. Hoji presented a similar argument on the basis of Kochi Dialect at the 1983 Harvard Conference on Japanese and Korean.

<sup>35</sup> The distributions of *no* and *ga* in the Toyama dialect is quite similar to

- (86) a. siroi ga  
white one  
(the one which is white)
- b. John no ga  
Gen one  
(the one which is John's)
- c. Arizona kara no ga  
from Gen one  
(the one from Arizona)
- d. hasitte iru ga  
running one  
(the one which is running)

Compare (86) of the Toyama dialect with (87) of the Tokyo dialect.

- (87) a. siroi no  
white one  
(the one which is white)
- b. John no  
one  
(the one which is John's)
- c. Arizona kara no  
from one  
(the one from Arizona)
- d. hasitte iru no  
running one  
(the one which is running)

---

those of Korean *uy* and *kes*. In Korean, *uy* functions as the genitive Case marker, and what correspond to the pro form *ga* in the Toyama dialect of Japanese is *kes*.

And importantly, the properties that have been observed with the pro-noun *no* can be observed also in the pro-form *ga* in the Toyama dialect.

First, *ga* of the pro-form cannot refer to human beings.

- (88) \*John no sensei wa kite-irassaru keredo,  
Gen teacher Top come-honorific though

Maiku no ga wa mada kite-irassharanai yoo da.  
Mike Top yet come-honorific seem is (COP)

(John's teacher is here, but Mike's one does not seem to be here yet.)

Second, as for the pro-form *no*, the pro-form *ga* also cannot refer to abstract objects. Compare (89) with (82).

- (89) a. katai sinnen  
firm belief  
(a firm belief)
- b. \*katai ga  
firm one  
(a firm one)

This discussion indicates that there is some element essentially different from the genitive Case marker *no*. This element is of the nominal category which cannot refer to human beings or abstract objects. In some dialects, this element is phonetically realized as *no*, being homophonous to the genitive Case marker. But in the Toyama dialect, this element is phonetically realized as a different lexical item, *ga*. I will therefore conclude that the pronoun *no* exists, and henceforth, assume that there are two *no*'s in Japanese, the genitive Case marker and that of the nominal category.

### 2.2.3. The Pronoun 'No' and the English 'One'

I concluded above that there is a the pronoun *no* that has the structure shown in (91).

- (90) a. Taroo ga katta no  
           Nom bought one  
           (the one that Taroo bought)
- b. botan ga toreteiru no  
      button Nom detached one  
      (the one without a button)
- (91) a. [NP[<sub>S</sub>Taroo ga katta][<sub>N</sub>no]]  
      b. [NP[<sub>S</sub>botan ga toreteiru][<sub>N</sub>no]]

This conclusion is quite consistent with the fact that the genitive *no* can be substituted for the nominative Case marker *ga* in (90a-b). Observe the following examples:

- (92) Tokyo dialect
- a. Taroo no katta no  
      Gen bought one  
      (the one that Taroo bought)
- b. botan no toreteiru no  
      button Gen detached one  
      (the one without a button)
- (93) Toyama dialect
- a. Taroo no katta ga  
      Gen bought one  
      (the one that Taroo bought)
- b. botan no toreteiru ga  
      button Gen detached one  
      (the one without a button)

Harada (1971) points out that nominative *ga* can be "converted" to the genitive *no* when, and only when, it is within a prenominal sentential modifier. Thus, what he calls "ga/no conversion" is possible in (94), but not in (95).

- (94) a. [NP[<sub>S</sub>Taroo ga/no katta] [NP<sub>hon</sub>]]  
   Nom/Gen bought book  
           (the girl whose cheek is red)
- b. [NP[<sub>S</sub>botan ga/no toreteiru][NP<sub>yoohuku</sub>]]  
   button Nom/Gen detached clothes  
           (the suits without buttons)
- (95) a. sono hon wa [<sub>S</sub>Taroo ga/\*no katta]  
   that book Top Nom/\*Gen bought  
           (As for that book, Taro bought (it).)
- b. sono yoohuku wa [<sub>S</sub>botan ga/\*no toreteiru]  
   that clothes Top button Nom/\*Gen is-detached  
           (As for the suits, the button is detached.)

Given the structures in (91), we, then, expect "ga/no- conversion" to be possible in the examples in (90).

In this section, I compare the properties of the pronoun *no* with those of the English *one*. There are some differences between the two pro-forms. For example, *no* cannot refer to human beings, as noted above, but *one* can, as shown in (96).

- (96) Jonn's kind teacher is wearing a black uniform, but  
       Mary's mean one is wearing a blue uniform.

However, the two pro-forms seem to share a number of properties as well. I will argue in this section that neither of them can take a complement, and further, that they require the same kind of modifiers.

Recall, first, the observation made by Kamio (1983), among others, that *no* can stand for concrete nouns, but not for abstract nouns. A relevant example, (66a), is repeated below in (97).

- (97) \**[sono toki no Mary e no izon] wa [John no] datta*  
           that time 's       to 's reliance Top       was

(\*The reliance on Mary at that time was John's.)

The example is clearly ungrammatical under the most natural interpretation in (98a), but interestingly, it is acceptable under the "kind interpretation" in (98b).

- (98) a. Who relied on Mary at that time was John  
       b. Someone relied on Mary at that time and it was  
           John's kind of reliance (the kind of reliance  
           on people that John shows).

This suggests that what is impossible in (97) is for *John* to be the thematic subject of *reliance*.

The same fact can be observed more clearly in the example in (99).

- (99) *[sono yokunai kenkyuu ni taisuru taido] wa [John no] da*  
           that not-good research toward       attitude Top       is

(That bad attitude toward research is John's.)

(99) is ungrammatical when *John* is interpreted as the thematic subject of the bad attitude referred to by the topic. But it is acceptable if the topic refers to someone else's (say, Bill's) bad attitude; the sentence says that it is the kind of attitude that John has. This fact indicates that *John no taido* (*John's attitude*) is ambiguous; *John* can be the thematic subject of attitude or it can be a modifier specifying the kind of attitude, and further

that *John no* allows only the latter interpretation. And if this is correct, the restriction on *no* is not that it cannot stand for an abstract noun, since *taido* (*attitude*) is an abstract noun under either interpretation. The restriction, instead, should be as stated in (100).<sup>36</sup>

- (100) The pronoun *no* is not a theta role assigner.

The restriction on *no* in (100) is in fact confirmed by the following examples:

- (101) *[John ga teian sita aidea/no] ga itiban omosiroi*  
           Nom proposed   idea/one   Nom most of all interesting

(The idea/one that John proposed is the most interesting.)

- (102) *[John ga happyosita iken/no] ga itiban*  
           Nom presented   opinion/one   Nom most of all

*settokuryoku ga aru*  
 convincing

(The opinion/one that John presented is most convincing.)

As shown in (101)-(102), *no* can stand for *aidea* (*idea*) and *iken* (*opinion*), which are certainly abstract nouns. However, it is reasonable to assume that they can refer to abstract objects, and hence, need not assign theta

<sup>36</sup> Anderson (1983) assumes that examples such as the following contain an empty N:

(i) \*That reliance on Mary was [John's e].

She then proposes that the example is ruled out because the empty N is not a theta-role assigner, and *John* fails to receive a theta role. The discussion in the text was inspired by this analysis of Anderson's. But the analysis of the empty N is beyond the scope of this dissertation. See Saito and Murasugi (1989a, 1990a) for relevant discussion.

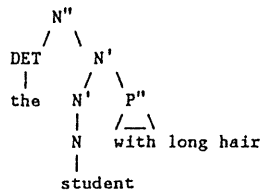
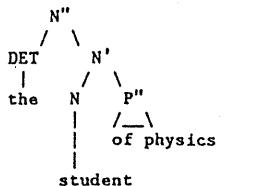
roles. Thus, given (100), we expect the examples in (101)–(102) to be grammatical.

Once we abandon the idea that *no* cannot stand for abstract nouns, adopting (100) instead, the relevant restriction on *no* becomes quite similar to that on English *one*, as discussed in Hornstein and Lightfoot (1981). They discuss examples such as (103), and propose that *one* is of the category *N'*, and not of the category *N*.

- (103) a. I like the student with short hair better than the one with long hair.  
 b. \*I like the student of chemistry better than the one of physics.

As they point out, if (104a–b) have the substructures in (105a–b), then the contrast in (103) immediately follows if *one* must be an *N'* and not an *N*.

- (104) a. the student with long hair  
 b. the student of physics

- (105) a. 
- b. 

In both (103a–b), *one* stands for *student*. But *student* is exclusively dominated by an *N'* in (103a), and not in (103b).<sup>37</sup>

Hornstein and Lightfoot's generalization about *one* and (105) look quite different superficially. However, they coincide to a large extent in terms of empirical coverage. Suppose *one* is exactly like *no* in that it is an *N*, but is not a theta-role assigner. Suppose further, as proposed in Chomsky (1981), that a complement to a lexical category must be assigned a theta-role by the lexical category. Then, it follows that *one* cannot take a complement, because it is not theta-role assigner. Hence, it also follows that *one* must always stand for an *N'*. Thus, the "concreteness restriction" on *no* and the "*N'*-hood" of *one*, which were proposed independently, seem to be reflections of some underlying property that *no* and *one* share. I tentatively suggest here that the relevant property is that both *no* and *one* cannot assign theta roles.

Another peculiar property of *no*, noted above, is that it requires certain kinds of modifiers. First, it cannot appear by itself as an NP, as shown in (106), and must be licensed by a modifier.

- (106) a. (omosiroi) hon  
 interesting book  
 (an interesting book)  
 b. \*(omosiroi) no  
 interesting one  
 (an interesting one)

<sup>37</sup> See Radford (1981) for supporting evidence for the structures in (105).



Furthermore, only certain kinds of modifiers license the presence of

*no*. As shown in (107), NPs, PPs, APs and relative clauses license *no*.

- (107) a. John no  
          one  
  
          (John's one, e.g., John's book)
- b. Tokyo kara no  
          from one  
  
          (the one from Tokyo, e.g., the train from Tokyo)
- c. akai no  
          red one  
  
          (the red one, e.g., the red apple)
- d. John ga kaita no  
          Nom wrote one  
  
          (the one that John wrote, e.g., the one that John wrote)

On the other hand, determiner-like elements and quantifiers do not license

*no*, as shown in (108).<sup>38</sup>

<sup>38</sup> In this case, I will assume that *nihon* (two-CL) is not a quantifier, but rather, is simply an NP modifier as that in (i).

- (i) a. midori no hon  
          green Gen book  
  
          (a green book)
- b. midori no  
          green one  
  
          (a green one)

- (108) a. \*kono no  
          this one  
  
          (this one)
- b. \*sono no  
          the (that) one  
  
          (the (that) one)
- c. \*ano no  
          that one  
  
          (that one)
- d. \*nihon no  
          two-CL one  
  
          ('two ones')

Note that the modifiers in (108) can co-occur with *no* as long as *no* is licensed independently. Thus, the examples in (109) are well-formed.

- (109) a. Toroo wa kono kireina no o motte kita  
          Top this pretty one Acc brought  
  
          (Taro brought this beautiful one.)
- b. Taroo wa futatsu no kireina no o katta  
          Top two Gen pretty one Acc bought  
  
          (Taro bought two beautiful ones.)

This fact indicates that (108a-d) are bad, not because the modifiers and *no* are not compatible, but because an appropriate modifier is absent.

At this point, it is worth recalling Kamio's restriction on *no*, and his proposed generalization, repeated below in (110).

- (110) Where *no* appears as a head nominal, it has to be associated with at least one modifier under NP'(N').

(Kamio, 1983: 85, translation by K.M.)

According to this analysis, the determiner-like elements and the quantifier in (108) are in the SPEC position of the NP, and hence, they fail to license the presence of *no*.

Given (110), it would be interesting to see whether the English *one* is subject to a similar restriction. First, it seems reasonable to maintain that *one*, like *no*, requires a modifier, despite examples such as (111).

(111) Give me one

Note that since (112) is also allowed, it is possible that *one* in (111) is a numeral, and not a pronoun.

(112) Give me two/three/...

And this hypothesis is supported by the contrast in (113).

- (113) a. Give me the red ones  
b. \*Give me ones

(113a) shows that the pronoun *one* has the plural form *ones*. And (113b) shows that the plural form requires a modifier, and cannot be an NP by itself. Hence, it seems that the pronoun *one*, as opposed to the numeral *one*, in fact requires a modifier.

Then, what kind of modifier does the pronoun *one* require? Examples such as the following suggest that its properties are quite similar to those of *no* in this respect.

- (114) a. John brought two beautiful ones  
b. \*John brought two ones

These examples indicate that *one*, like *no*, can be licensed by an AP, but not by a numeral quantifier.<sup>39</sup>

However, there are also examples that indicate that *one* and *no* are licensed by different kinds of modifiers. First, determiners, such as *the*, *this*, *that*, seems to license *one*, as shown in (115)-(116).<sup>40</sup>

- (115) a. the one/ the ones  
b. this one/ these ones  
c. that one/ those ones

(116) I prefer those ones you talked about

Secondly, genitive NPs fail to license *one*, as shown in (117).

(117) \*John's one(s) (Cf. (49a))

Here, it is not that genitive NPs are incompatible with *one*, since (118), which contains a licensing AP, is fine.

(118) John's red one(s)

Then, is it necessary to conclude that *no* and *one* are licensed by different kinds of modifiers? I will argue in the remainder of this section that the DP hypothesis, which is motivated on independent grounds in Abney

<sup>39</sup> This indicates the difference between the numeral quantifier and such quantifier as *each*.

(i) each one

<sup>40</sup> The fact that 'a one' is impossible suggests that *a* may not be a determiner but a quantifier. Since (115)-(116) are well formed, I will assume that determiners in general license *one*, and that 'a one' is ruled out for independent reasons, whatever those reasons may be.



(122a), on the other hand, is potentially problematic. If possessor NPs appear in the DP SPEC position, the structure of this example, before the *no-no* reduction rule applies, should be as in (124).

- (124) [<sub>DP</sub>John no [<sub>D</sub>D [<sub>NP</sub>[<sub>N</sub>·[<sub>N</sub>no]]]]]  
one

( 'John's one' )

Hence, the modifier *John* should fail to license *no*. Note that the ill-formed (119b), repeated below in (125), has exactly the same structure as (125), except for the position of D.

- (125) [<sub>DP</sub>John's [<sub>D</sub>'D [<sub>NP</sub>[<sub>N</sub>'{<sub>Nones</sub>}]]]]]

Recall, however, that the main reason that *John* in (125) must be in the DP SPEC position is that it is assigned Case from D in this position. Hence, if genitive phrases in Japanese, as opposed to those in English, are not assigned Case by D, it is possible that *John* in (124) is not in the DP SPEC position.

In fact, it is argued extensively in Fukui (1986) that 's is assigned by D to the DP SPEC position in English, but genitive *no* in Japanese is assigned NP internally. This hypothesis is motivated, for example, by the fact that English NPs can have only one genitive phrase, while Japanese NPs can contain multiple genitive phrases.

- (126) a. \*the barbarian's the city's destruction  
 b. yabanzin no tosi no hakai  
 the barbarian Gen city Gen destruction  
 (the barbarian's destruction of the city)

(129) Only *overt* modifiers that are sisters to some projection of N can license *one/no* in the N position.

(130) a. [DP[D·[Dthose][NP[N·[Nones]]]]]

<sup>42</sup> Mona Anderson (pers. comm.) pointed out that this generalization is not contradicted by the ungrammaticality of NPs such as follows.

- (i) apparently is a counterexample to the generalization in (129), because *one* is modified by the relative clause. However, as Stockwell, Schachter and Partee (1973: 709) observe, even if the *one* is replaced by a full noun, e.g., *shoe*, in many dialects of English, the NP still results in ungrammaticality.

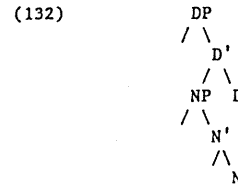
- Hence, the ungrammaticality of (1) is due to a reason independent from the property of *one*, and hence, it does not contradict with the generalization in (129).

(131) a. \*kono no  
          this one  
          (this one)

      b. \*sono                   no  
          the (that) one  
          (the (that) one)

      c. \*ano no  
          that one  
          (that one)

Note first that Japanese is strictly head-final; hence, the structure of DP should be as in (132).



This hypothesis receives intuitive support from examples such as the following:

- (133) a. [NPJohn] no [s hyoosi ga akai] hon  
           Gen cover Nom red book  
           ('John's book whose cover is red')
- b. [s hyoosi ga akai][NPJohn] no hon  
      cover Nom red Gen book  
      ('John's book whose cover is red')
- (134) a. kono [s hyoosi ga akai] hon  
          this cover Nom red book  
          (this book whose cover is red)
- b. [s hyoosi ga akai] kono hon  
      cover Nom red this book  
      (this book, whose cover is red)

In (133a) and (134a), the relative clause is interpreted as a restrictive relative clause. In (133b), it can be either restrictive, or non-restrictive. However, in (134b), the relative clause can be interpreted only as a non-restrictive relative clause. These facts can be accounted for if we assume the following:

- (135) a. Possessor NP can appear NP internally, say,  
           in the NP adjoined position.
- b. Restrictive relative clauses are adjoined to NP.
- c. Non-restrictive relative clauses are adjoined to DP.
- d. The determiner-like elements are in the DP SPEC position.

In (134b), in particular, the relative clause cannot be restrictive since it precedes *kono* in DP SPEC position. Thus, to the extent that (135a-c) are plausible, (134b) provides evidence for (135d). And given (135d), we do not expect the determiner-like elements in Japanese to license *no*. Since they are in the DP SPEC position, they are not sister to any projection of

*no* in examples like (131). Thus, they should fail to license *no*, exactly as *John's* in (127) fails to license *ones*.

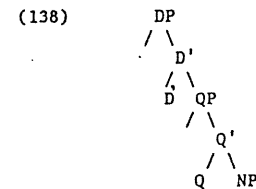
We have seen so far that the generalization in (129) successfully accommodates the superficial differences between English and Japanese with respect to the licensing of *one/no*. Let us finally consider the fact that neither *one* nor *no* can be licensed by a quantifier. Given (129), the quantifier *two* should not be within the N projection in (136).

- (136) \* two ones

At the same time, the following example indicates that the position of quantifiers follows that of determiners.

- (137) those two books

These facts suggest that when a quantifier appears, there is a QP node between the DP node and the NP node as shown in (138).



And if the quantifier in (136) is in the QP SPEC position, the ungrammaticality of (136) is consistent with the generalization in (129). The Japanese example in (108d), repeated below as (139), can be analyzed in the same way.<sup>43</sup>

<sup>43</sup> In Japanese, a quantifier can follow the head noun, as shown in (i).

- (139) \*nihon no  
two-CL one  
( 'two ones' )

The assumption here is that the Q projection must be present only when there is a quantifier. Thus, the Q projection can be absent in (140), and this allows the licensing of *ones* by D in examples like (140).

- (140) those ones

However, when a quantifier is present, the Q projection must also be present. In this case, the D cannot be sister to a projection of N, and hence, should fail to license *one*. This prediction is borne out by (141).

- (141) \*Those two ones

- (i) John ga hon nisatu o katta  
Nom book two-CL Acc bought

(John bought the two books.)

Given that Japanese is head-final, the natural position for the quantifier in (i) is the head position of QP. The object in (i), then, should have the following structure (See Miyamoto (in prep.) for further evidence for this structure.):

- (ii) [<sub>QP</sub> [<sub>Q'</sub> [<sub>NP</sub> hon] [<sub>Q</sub> nisatu]]]  
book two-CL

(two books)

If this structure is correct, the post nominal quantifier should license *no*, since it is sister to NP. However, this prediction is not borne out.

- (iii) \*John ga no nisatu o katta  
Nom two-CL Acc bought

(John bought two books.)

I will leave examples like (iii) as a problem at this point.

I have argued in this section that the pronoun *one* and the pronoun *no* have similar lexical properties. They both cannot assign theta-roles, and they are both subject to the generalization in (129). It is not clear at this point why they have these properties. But the English *one* has these properties, and is clearly of the category N. And given this fact, it is not surprising if Japanese has a corresponding lexical item. Hence, if *no* and *one* have similar properties, as argued in this section, this fact provides indirect support for the existence of the pronoun *no*, and consequently, for the hypothesis that there is a *no* of the category N.<sup>44</sup>

### 2.3. 'No' as Complementizer

The arguments presented so far lead us to the conclusion that *no* has at least two different functions: the genitive Case marker and a nominal pro-form. In this section, I will take up another type of *no*, which appears in the sentential subject (topic) of a cleft sentence:<sup>45</sup>

- (142) a. [Yamada ga atta] no wa Russell da  
Nom met Top is (COP)

(It was Russell that Yamada met.)

- b. [Yamada ga atta] no wa Russell ni da  
Nom met Top with is (COP)

(It was with Russell that Yamada met.)

<sup>44</sup> In the latter part of this section, I crucially relied on the DP hypothesis, proposed by Fukui and Speas (1986), Abney (1986), and Kuroda (1988), among others. (See Saito and Murasugi (1990) for arguments that the DP hypothesis is correct not only for English but also for Japanese.) But since the discussion in the remainder of this thesis does not depend on the choice between the DP hypothesis and the NP hypothesis, I will assume the latter only for the case of exposition.

<sup>45</sup> The example in (b) is from Hoji (1990: 554).

It is proposed in Hoji (1990) that the *no* in (142) is a complementizer, and the topic in (1b), for example, has the following structure:<sup>46</sup>

- (143) [s<sub>i</sub>[s<sub>j</sub>Yamada ga atta] no]  
           Nom met

I will present supporting evidence for this hypothesis, and thus, argue for the third type of *no*, i.e., *no* of the category C.

### 2.3.1. Complementizer 'No'

What is the category of the *no* in (142)? The first possibility that we must consider here is that it is the genitive Case marker. According to this hypothesis, an empty nominal must follow *no* in the examples in (142), and the structure of (142a) should be as in (144).

- (144) [NP[Yamada ga atta] no e] wa Russell da  
           Nom met           Top           is (COP)

However, evidence against this hypothesis is found again in the Toyama dialect, in which we observed a clear-cut distinction between the genitive Case marker and the pro-form in phonetic forms.

Recall that in the Toyama dialect, the genitive Case marker is realized as *no* as in the Tokyo dialect, but the pro-form is realized as *ga*. Examples of the two forms in Toyama dialect are shown below.

<sup>46</sup> What corresponds to the *no* in (142) in Korean is *kes*. And Kang (1988), in his analysis of NP shell, reports that the category of this *kes* is argued to be C in M.S. Lee (1967), H.B. Lee (1970), I.S. Yang (1972) and J.D. Kim (1988).

- (145) a. John no hon  
           Gen book  
           (John's book)  
       b. Tokyo kara no densya  
           from Gen train  
           (the train from Tokyo)  
       (146) a. siroi ga  
               white one  
               (the one which is white)  
           b. Arizona kara ga  
               from one  
               (the one from Arizona)  
           c. hashitteiru ga  
               running one  
               (the one which is running)

The *no* in the cleft sentences in (142) is also realized as *ga* in the Toyama dialect, as shown in (147).

- (147) a. Yamada ga atta ga wa Russell da  
           Nom met       Top       is (COP)  
           (It was Russell that Yamada met.)  
       b. Yamada ga atta ga wa Russell ni da  
           Nom met       Top       with is (COP)  
           (It was with Russell that Yamada met.)

This fact shows that the element in question is not the genitive Case marker in the Toyama dialect, and provides indirect, but strong evidence that *no* in (142) is not the genitive *no*.

The examples in (147) show that the element in question assumes the same phonetic form as the pro-form *ga* in Toyama dialect. This fact sug-



gests that the *no* in (142) is the pronoun *no*. According to this hypothesis, the structure of (142a) is as in (148).

- (148) [NP[s Yamada ga atta] no] wa Russell da  
           Nom met           Top           is (COP)

However, this hypothesis also faces problems. In Section 2.2, it was shown that the pro-form *no* has the semantic property that it cannot refer to human beings. The following example confirms this generalization. The head noun modified by the relative clauses cannot be the pro-form *no*, when the head noun refers to the human beings.

- (149) a. Taro wa [NP[sasoko de tabeta orareru] hito]  
           Top       there is-eating (+honorific) person  
           to hanasi o sita  
           with talk Acc did  
           (Taro talked to the person who is eating there.)  
       b. \*Taro wa [NP[sasoko de tabeta orareru] no] to  
           Top       there is-eating (+honorific) with  
           hanasi o sita  
           talk Acc did  
           (Taro talked to the one who is eating there.)

Let us now consider the following cleft sentences:

- (150) a. [[asoko de tabeta orareru] no] wa  
           over there at is-eating (+honorific) Top  
           Tanaka sensei desu  
           Prof. is  
           (It is Prof. Tanaka that is eating over there.)  
       b. [[soko kara detekita] no] wa John da  
           there from came out Top is (COP)  
           (It is John who came out from there.)

If *no* in (150) is the pro-form *no*, then the sentences (150a-b) should result in ungrammaticality. The head N *no* in (150a-b), as that in (149b), refers to a human. However, (150a-b) are grammatical. This fact suggests that the *no* in cleft sentences is not the pronoun *no*.

Another piece of evidence against the pronoun *no* hypothesis can be found in the “*ga/no*-conversion” phenomenon, discussed briefly in Section 2.2. As observed in Harada (1971), the nominative *ga* can be “converted” to the genitive *no*, when, and only when, it appears in a prenominal sentential modifier. The following examples illustrate this generalization:

- (151) a. [NP[sTaro ga/no katta] hon]  
           Nom/Gen bought book  
           (The book that Taro bought)  
       b. [NP[sbotan ga/no toreteiru][NPyoohuku]  
           button Nom/Gen detached clothes  
           (the clothes without button)  
       (152) a. Taro ga /\*no hon o katta  
               Nom/\*Gen book Acc bought  
               (Taro bought the book)  
       b. Hanako wa [s,Taro ga /\*no hon o katta to] omotta  
           Top           Nom/\*Gen book Acc bought thought  
           (Hanako thought that Taro bought the book)

The embedded subject in (151) can be marked by *ga* or *no* since it is the subject of a prenominal sentential modifier. But *Taro* in (152a) must be marked by *ga* since it is the subject of a matrix sentence. And that in (152b), also, cannot be marked by *no*, since it is the subject of a sentential

complement to a verb.<sup>47</sup> As noted above, “*ga/no*-conversion” is possible when a sentential modifier precedes the pronoun *no*. Thus, the subject NPs in (153)-(154) can be marked either by *ga* or by *no*.

- (153) a. [NP[<sub>s</sub>Taro *ga/no* katta][NP<sub>yoohuku</sub>]  
           Nom/Gen bought suit  
           (the suit that Taro bought)  
       b. [NP[<sub>s</sub>Taro *ga/no* katta][NP<sub>no</sub>]  
           Nom/Gen bought one  
           (the one Taro bought)
- (154) a. [NP[<sub>s</sub>botan *ga/no* toreteiru][NP<sub>yoohuku</sub>]  
           button Nom/Gen detached suit  
           (the suit without button)  
       b. [NP[<sub>s</sub>botan *ga/no* toreteiru][NP<sub>no</sub>]  
           button Nom/Gen detached one  
           (the one without button)

This is expected since the structure of (153b) and (154b) is identical to that of (153a) and (154a).

If the *no* in cleft sentences is the pronoun *no*, we should expect “*ga/no*-conversion” to be possible in sentences such as the following.

- (155) [[<sub>s</sub> Yamada *ga/??no* atta] *no*] wa Russell ni desu  
           Nom/??Gen met Top to is  
           (It is Russell that Yamada met.)
- (156) [[<sub>s</sub> John *ga/??no* itta] *no*] wa Tokyo ni da  
           Nom/??Gen went Top to is  
           (It is to Tokyo that John went.)

- (157) [[<sub>s</sub> Mary *ga/??no* nikedasita] *no*] wa gakkoo kara da  
           Nom/??Gen ran away Top school from is (COP)  
           (It is from school that Mary ran away.)
- (158) [[<sub>s</sub> Bill *ga/??no* benkyoo suru] *no*] wa Susan to da  
           Nom/??Gen study Top with is (COP)  
           (It is with Susan that Bill study with.)
- (159) [[<sub>s</sub> John *ga/??no* tabeta] *no*] wa Boston de da  
           Nom/??Gen ate Top at is (COP)  
           (It is at Boston that John ate.)
- (160) [[<sub>s</sub> Tanaka *ga/??no* kekkon sita] *no*] wa 30 sai de da  
           Nom/??Gen got married Top thirty at is  
           (It is at thirty (years old) that John got married.)

However, as pointed out in Cu (1988) and shown in (155)-(160), “*ga/no*-conversion” results in marginality when it is applied in the sentential subject (topic) of a cleft sentences. This fact suggests that *no* in cleft sentences is not the pronoun *no*, and further, that the embedded sentences in (155)-(160) are not prenominal modifiers.<sup>48</sup>

The conclusion obtained above directly leads us to Hoji’s (1990) hypothesis that the *no* in cleft sentences is of the category C. According to this hypothesis, the structures of (150a) and (159), for example, are as in (161) and (162) respectively.

- (161) [<sub>s</sub> (=CP) [<sub>s</sub>asoko de tabeta orareru][<sub>C</sub>no]] wa  
           there at is-eating (+honorific) Top  
           [NP Tanaka sensei] desu.  
           Prof. is  
           (It is Prof. Tanaka that is eating over there.)

<sup>47</sup> See Harada (1971), Bedell (1972), Saito (1982) for more detailed discussion of the “*ga/no*-conversion” phenomenon.

<sup>48</sup> “*ga/no*-conversion” in (155)-(160) does not result in total ungrammaticality, unlike that in (152). I will offer a speculation for this fact later.



It is clear that in these examples, the focussed phrase and the embedded sentence must be somehow "related." And, as discussed in Chomsky (1977, 1981), if an operator is present in the embedded CP SPEC position, and is coindexed with the focussed phrase, the desired relation can be established, as shown in (165).<sup>51</sup>

(165) It is  $XP_1$  [ $c_p O p_1$  [ $c'$  that [ $s \dots e_1$ ]]]

Furthermore, it is known independently that the CP SPEC position can be occupied not only by NP but by phrases of other categories as well. For example, the following *wh*-questions are all well-formed.

- (166) a. [<sub>CP</sub> [<sub>NP</sub>What]<sub>i</sub> [<sub>C</sub>did you eat e<sub>i</sub>]]  
 b. [<sub>CP</sub> [<sub>PP</sub>From which city]<sub>i</sub> [<sub>C</sub>did you arrive e<sub>i</sub>]]  
 c. [<sub>CP</sub> [<sub>AP</sub>How red]<sub>i</sub> [<sub>C</sub>is the book e<sub>i</sub>]]

Hence, given (165), the fact that non-NPs can be focussed in cleft sentences can be attributed in part to the nature of the CP SPEC position.

If Hoji's hypothesis is correct, the Japanese cleft sentences can be analyzed in the same way. As shown above, in Japanese cleft sentences also, PPs as well as NPs can be focussed.

- (167) a. [s[Taroo ga kane o nusunda] no wa  
          money Acc stole Top  
  
      [ppkono ginkoo kara] da  
         this bank from is (COP)  
  
      (It is from this bank that Taro stole money.)

<sup>51</sup> If the index of the operator is assigned to the embedded CP through SPEC/head agreement and the percolation of index from head to its maximal projection, we can even say that the XP and the embedded CP are coindexed in (165).

- b. [[<sub>S</sub>John ga torakku o unten sita] no] wa  
       Nom truck Acc drove Top  
       [<sub>PP</sub>Toyama made] da  
           up to is(COP)  
 (It is up to Toyama that John drove the truck.)

According to Hoji's hypothesis, the structure of (167a) is as in (168).

- (168) [crOp<sub>1</sub>[c·[sTaroo ga e<sub>1</sub> kane o nusunda][cno]]] wa  
[ppkono ginkoo kara]<sub>1</sub> da

Exactly as in (165), the relation between the focussed phrase and the embedded sentence can be expressed through the coindexation of the focussed phrase and the empty operator. Further, the fact that PP cleft, as well as NP cleft, is possible can be attributed in part to the fact that PPs as well as NPs can appear in the CP SPEC position.<sup>52</sup>

### 2.3.2. "The Formal Noun 'No'" and the Question Marker 'Ka'

In the preceding section, I discussed Hoji's (1990) hypothesis that the *no* in cleft sentences is a C, and presented supporting evidence for this hy-

<sup>52</sup> Hoji (1990) in fact suggests strong evidence for the presence of an operator in (168). One of the strongest reasons for assuming Op in (165) is that the relation of this element and the corresponding empty category is constrained by Subjacency. (See Chomsky (1977)). The Subjacency effects are often not observed in Japanese because this language has *pro*. However, Saito (1985) shows that PP topicalization, as opposed to NP topicalization, exhibits clear Subjacency effects, and argues that it involves movement. (See Chapter 3 for a detailed discussion.) Hoji (1990) shows in parallel fashion that PP cleft, as opposed to NP cleft, exhibits Subjacency, and thus, must involve movement. This conclusion, in turn, implies that an operator must be present, at least in the case of PP cleft.

pothesis. In this section, I will briefly discuss the so called "formal noun" *no*, and the question marker *ka*, illustrated in (169)-(170) below.

- (169) a. [NP[sFuji san ga takai] no] wa yuumei da  
Mt. Nom high Top well-known is

(That Mt. Fuji is high is well-known.)

- b. Hanako wa [NP[s Taro ga nigedasu] no] o mita  
Top Nom run away Acc saw

(Hanako saw Taro ran away.)

- (170) a. [NP[s John ga nani o kau ka] ga mondai da  
Nom what Acc buy Nom problem is

(It is a problem what John buy.)

- b. Mary wa [[sJohn ga nani o katta] ka] o sitte iru  
Top Nom what Acc bought Acc know

(Mary knows what John bought.)

As shown in (169), *no* can be attached to S, and "nominalize" the sentence. Or more precisely, the *no* in question takes a sentential modifier, and projects an NP without adding any substantial semantic information.<sup>53</sup> The fact that it projects an NP is confirmed by the following examples:

- (171) a. [NP[sFuji san no takai] no] wa yuumei da  
Mt. Gen high Top well-known is

(That Mt. Fuji is high is well-known.)

- b. Hanako wa [NP[s Taro no nigedasu] no] o mita  
Top Gen run away Acc saw

(Hanako saw Taro go away.)

As shown in (171), "ga/no-conversion" is possible in the sentential modifiers in (169). This is expected if the *no* projects and NP, and the embedded sentences in (169) are prenominal modifiers. Note that this fact distinguishes the "nominalization" *no* from the *no* in cleft sentences.

As we can readily observe in (169), the *no* in question adds very little, if any, to the meaning of the sentences; hence, the term "formal noun" seems to be the appropriate term to refer to this type of *no*. For this reason, this type of *no* has been treated separately from the pronoun *no*, and compared with the complementizer *to* or another N with little semantic content, e.g., *koto* (*the fact*).<sup>54</sup> The pronoun *no*, as shown in the following example, clearly has semantic significance:

- (172) Hanako wa [NP[sTaroo ga katta] no] o tabeta  
Top Nom bought Acc ate

(Hanako ate what Taroo bought.)

The *no* in (172), as opposed to that in (171b), clearly refers to an object, i.e., the object that Taroo bought.

However, it has also been noted that other nouns can be substituted for *no* in examples like (169a-b) without affecting the meaning of the sentence. Thus, (173) is synonymous with (169a), and (174) with (169b).

<sup>54</sup> See, for example, Kuno (1973), Inoue (1976), and Josephs (1976). See, in particular, Kuno (1973) for a detail discussion on the distribution of "formal noun" *no*.

<sup>53</sup> The term, "formal noun" is, as far as I know, due to Matushita (1930). He explicitly states that it is a noun which lacks substantial meaning.

- (173) [NP[sFuji san no takai] koto] wa yuumei da  
Mt. Gen high he fact Top well-known is (COP)

(The fact that Mt. Fuji is high is well-known.)

- (174) a. Hanako wa [NP[s Taro no nigedasu] tokoro] o mita  
Top Gen run away scene Acc saw

(Hanako saw the scene when Taro went away.)

- b. Hanako wa [NP[s Taro no nigedasu] genba] o mita  
Top Gen run away scene Acc saw

(Hanako saw the scene of Taro's running away.)

Given this fact, there does not seem to be any reason not to treat the "formal noun *no*" as a kind of the pronoun *no*. If the *no* in (171b), for example, stands for one of the head nouns in (174), it seems to satisfy the criteria for the pronoun *no*. It does not refer to a human, it does not assign a theta-role, and further, it is preceded by an appropriate modifier.

The apparent difference between the *no* in (171b) and (172), according to this hypothesis, is attributed not to an inherent difference between the two *no*'s, but to the structural position (and function) of the sentential modifier. In (172), the sentential modifier is a relative clause, and hence, the structure of the NP is as in (175).

- (175) [NP[sTaroo ga katta][NP[N<sup>o</sup>[N<sup>no</sup>]]]]

The *no* in this example, then, is the relative head, and "refers to" to the object specified by the relative clause. The NP headed by *no* in (171b), on the other hand, is a pure complex NP. Its structure is shown in (176).

- (176) [NP[N<sup>o</sup>[s Taroo ga nigeru][N<sup>o</sup>[N no]]]]

When the *no* in (176) stands for nouns like *tokoro* (scene), its content is specified by the sentential modifier and the head itself appears to carry little or no semantic information. Hence, the *no* of the category N, which functions as a pronoun *no* appears to be in (176) a "formal noun."

The ambiguity of (177) can be accounted for in the same way.

- (177) Hanako wa [NP[sTaroo ga katta] no] o mita  
Top Nom bought Acc saw

(a. Hanako saw the one Taroo bought)

(b. Hanako saw Taroo buy *pro.*)

If the sentential modifier is a relative clause, then the object NP refers to the object that Taroo bought. Thus, *no* "refers to" to a concrete object. On the other hand, if the embedded S in (177) is a pure sentential modifier, then the *no* in this example could be most naturally interpreted as "scene" or "event", given that the matrix verb is *mita* (saw). Hence, "the reference of *no*" is obscured. Thus, the ambiguity of (177) can be accounted for without postulating two different types of *no* of the category N. I will, then, tentatively conclude that the "formal noun" *no* not only has the category N, but is a species of the pronoun *no*.<sup>55</sup>

<sup>55</sup> As shown in (155-160) above, "ga/no-conversion" in cleft sentences does not result in total ungrammaticality. A representative example (157) is repeated in (i).

- (i) [s Mary ga /??no nigedasita] no] wa gakkoo kara da  
Nom/??Gen ran away Top school from is

(It is from school that Mary ran away.)

I suspect that "ga/no-conversion" is allowed when the *no* is interpreted as a pronoun *no* corresponding to something like "action" or "event".

Let us now turn to the question marker *ka* in (170), repeated below in (178).

- (178) a. [NP[s John ga nani o kau ka] ga mondai da  
                     Nom what Acc buy      nom problem is (COP)

(It is a problem what John bought.)

- b. Mary wa [[sJohn ga nani o katta] ka] o sitte iru  
             Top              Nom what Acc bought      Acc know

(Mary knows what John bought.)

It is widely assumed that *ka* appears in C as the spell-out of the [+WH] feature. (See, for example, Lasnik and Saito (1984), and Nishigauchi

The example, then, would be interpreted as in

- (ii) The event of John's going was to Tokyo.

In this case, the sentential subject (topic) is an NP, and we expect "*ga/no-conversion*" to be possible. The difficulty here, however, is that it is not clear what noun the *no* in (i) is the pro-form of. The following examples seem worse than (i) with "*ga/no-conversion*."

- (iii) \* [NP[sJohn ga itta] kooi ] wa Tokyo ni da  
                     Nom went action Top Tokyo to is

(The action that John went is to Tokyo.)

- (iv) \* [NP[sJohn ga itta] ziken ] wa Tokyo ni da  
                     Nom went case Top Tokyo to is

(The case that John went is to Tokyo.)

- (v) ?\*[NP[sJohn ga itta] ryokoo] wa Tokyo ni da  
                     Nom went trip      Top Tokyo to is

(The trip that John went is to Tokyo.)

- (iv) ?\*[NP[sJohn ga itta] syuttyoo ] wa Tokyo ni da  
                     Nom went work      Top Tokyo to is

(The work that John went is to Tokyo.)

(1986).) According to this assumption, the embedded clauses in (178) are CPs, and we predict that "*ga/no conversion*" is impossible. This prediction is indeed borne out by (179a-b).

- (179) a. \*[NP[s John no nani o kau ka] ga mondai da  
                     Gen what Acc buy      Nom problem is (COP)

(It is a problem what John buy.)

- b. \*Mary wa [[sJohn no nani o katta] ka] o sitte iru  
             Top              Gen what Acc bought      Acc know

(Mary knows what John bought.)

It is suggested, however, in Saito (1985) and explicitly proposed in Fukui (1986) that *ka* is an N, and the embedded questions in examples like (178) are NPs. If this is correct, then the "*ga/no-conversion*" phenomenon may be more complex than it is assumed to be in the discussion above. I have assumed crucially that "*ga/no-conversion*" is possible in all prenominal sentential modifiers. Thus, if the embedded clauses in (178) are prenominal sentential modifiers preceding the N *ka*, the fact that *ga/no-conversion* is impossible in (178) raises serious doubts about the validity of the arguments presented in this section.

However, as M. Saito (pers. comm.) points out, the empirical motivation to assume that *ka* is N seems fairly weak at this point. As shown in (178), in embedded clauses, *ka* can appear with Case markers. But non-interrogative CPs (=S's) cannot be Case marked as shown in (180).<sup>56</sup>

<sup>56</sup> Non-interrogative CPs can appear with the topic marker *wa*, as shown in (i).

- (i) [CP[sHanako ga kaetta] to] wa siranakatta  
                     Nom went back      did-not know

- (180) a. [cp[s Taroo ga tensai da] to] (\*ga) omowareta iru  
                     Nom genius is           (\*Nom) is-thought  
           (Taro is considered to be a genius.)
- b. Hanako wa [cp[s Taroo ga tensai da] to] (\*o) itta  
                     Top                      Nom genius is (COP) (\*Acc) said  
           (Hanako said that Taro is a genius.)

And it was on the basis of this fact that Saito (1985) suggested that embedded questions in Japanese may be NPs but not CPs.

But as observed in Stowell (1981), there is a contrast between interrogative CPs with respect to Case assignment in English. Let us consider the following example:

- (181) a. We talked about [cpwhy [s Mary left]]  
           b. We talked about [cp whether [s Mary should be invited]]
- (182) \*We talked about [cp that [s Mary left]]

It appears then that a CP can be directly Case marked when and only when its COMP has the feature [+WH].<sup>57</sup> And if this is the case, the fact that embedded questions in Japanese can be Case marked does not show that they are NPs. Hence, I will maintain that "ga/no-conversion" provides a valid test to check whether an embedded sentence is a prenominal modifier, and that *ka* is not an N, but is a spell-out of the [+WH] feature in C.

See Kuroda (1975) for relevant discussion.

<sup>57</sup> A question remains as to why this should be the case. See Stowell (1981) for a discussion of this problem, and also for an analysis of examples such as (i), in which a non-interrogative CP apparently appears in a case marked position.

(i) [cpthat [sMary is smart]] is obvious

## 2.4. Conclusion

In this chapter, I dealt with the multiple functions of *no* in Japanese. I argued that there are three distinct *no*'s: *no* as the genitive case marker, *no* of the category N, and *no* of the category C. In 2.1., I discussed genitive Case marking in Japanese. I provided some supporting evidence for the *no*-insertion rule proposed in Bedell (1972), Saito (1982) and Fukui (1986), among others, and discussed the nature of the genitive Case marker Insertion rule in relation to the general system of Case marking. Then, in 2.2., I discussed the controversy concerning the pronoun *no*, and argued that *no* of the category N exists. In passing, I compared the pronoun *no* and the English *one*, and pointed out that they have similar lexical properties. Finally, in 2.3., I presented supporting evidence for Hoji's (1990) hypothesis that *no* appears as C in cleft sentences, the conclusion of which led us to provide a piece of support for the presence of functional categories in Japanese.





Arguing against Kuroda's (1965) movement analysis of topicalization, Kuno (1973) proposes that topics in Japanese are all base generated. His argument for this base-generation hypothesis is based on examples of gapless topicalization such as (2).

(2) gapless topicalization

sakana wa [stai                      ga ii]  
fish    Top   a red-snapper Nom good

(As for fish, a red snapper is the best.)

In (2), apparently, the topic, did not move to the sentence-initial position from a position inside the S, since there is no gap within the S that corresponds to the topic. Hence, Kuno (1973) proposes that topic in Japanese can be base-generated in the following configuration, and what is required of a sentence-initial topic is only the "aboutness relation" with the rest of the sentence.



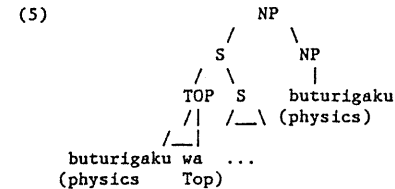
Kuno (1973) proceeds further to provide a parallel analysis for the relative clauses in Japanese. Observe first an example of gapless relative in (4).

(4) gapless relative

[<sub>NP</sub>[<sub>S</sub>syyuusyoku    ga   muzukasii][<sub>NP</sub>buturigaku]]  
  getting job Nom hard                      physics

(The physics that the job is scarce)

According to Kuno (1973), what is relativized in (4) is the topic within the relative clause. The underlying structure on (4), then, is as in (5).



The topic is licensed by the aboutness condition with S. Accordingly, what is required of the relative head is the "aboutness relation" with the relative clause in (4).

Besides the possibility of gapless topic sentences and relative clauses, Kuno (1973) notes two more important properties of topicalization and relativization in Japanese. First, relativization and topicalization in Japanese do not exhibit Subjacency effects. For example, (6b) and (7b) indicate that relativization out of a relative clauses is possible.<sup>58</sup>

<sup>58</sup> (7b), which involves relativization of an object out of a relative clause, is somewhat marginal. Hasegawa (1984) takes this marginality as evidence that relativization in Japanese is subject to Subjacency. But I follow Kuno (1973) here, and assume that the marginality of (7b) is due to effects that are independent of Subjacency. See Saito (1985) for relevant discussion, and also Ishii (in prep.) for a concrete proposal to explain the marginality of examples such as (7b).

- (6) a. [NP[s<sub>sono</sub> sinsi ga e<sub>j</sub> kiteiru] yoohuku<sub>j</sub>] ga  
that gentleman Nom wearing suit Nom

yogorete iru  
dirty

(\*As for the gentleman, the suit that (he) is wearing is dirty.)

- b. [NP[s[NP[s e<sub>1</sub> e<sub>j</sub> kiteiru] yoohuku<sub>j</sub>] ga  
wearing suit Nom

yogorete iru] sinsi<sub>1</sub>]   
dirty gentleman

(Lit. a gentleman who the suit that (he) is wearing is dirty.)

- (7) a. [NP[s e<sub>1</sub> hon o syuppan sita] kaisya<sub>1</sub>] ga  
book Acc published company Nom

kazi de yakete-simatta  
fire by was-burned-down

(The company that published the book was burned down by a fire.)

- b. ?[NP[s[NP[s e<sub>1</sub> e<sub>j</sub> syuppan sita] kaisya<sub>1</sub>] ga  
published company Nom

kazi de yakete-simatta] hon<sub>j</sub>]   
fire by was-burned-down book

(a book which the company that published (it) was burned down by a fire.)

(8b) and (9b) show that topicalization is exactly like relativization in this respect.

- (8) a. [NP[s<sub>sono</sub> sinsi ga e<sub>j</sub> kiteiru] yoohuku<sub>j</sub>] ga  
that gentleman Nom wearing suit Nom

yogorete iru  
dirty

(The suit that the gentleman is wearing is dirty.)

- b. [sono sinsi wa] [s[NP[s e<sub>j</sub> kiteiru] yoohuku<sub>j</sub>] ga  
that gentleman Top wearing suit Nom

yogorete iru  
dirty

(Lit. As for the gentleman, the suit that (he) is wearing is dirty.)

- (9) a. [NP[s e<sub>1</sub> hon o syuppan sita] kaisya<sub>1</sub>] ga kazi de  
book Acc published company Nom fire by

yakete-simatta  
was-burned-down

(The company that published the book was burned down by a fire.)

- b. [sono hon<sub>j</sub> wa] [s[NP[s e<sub>1</sub> e<sub>j</sub> syuppan sita]  
that book Top published

kaisya<sub>1</sub>] ga kazi de yakete-simatta  
company Nom fire by was-burned-down

(Lit. As for the book, the company that published (it) was burned down by a fire.)

Second, an overt resumptive pronoun is allowed in relative clauses and topic sentences in the position where a "gap" may appear. (10) is an example of relative clause and (11) is a topic sentence.

- (10) ?[NP[s[NP[s kare<sub>1</sub> ga e<sub>j</sub> kiteiru] yoohuku<sub>1</sub>] ga  
he Nom wearing suit Nom

yogorete iru] sinsi<sub>1</sub>]   
dirty gentleman

(Lit. a gentleman who the suit that (he) is wearing is dirty)

- (11) ?sono sinsi<sub>1</sub> wa [s[NP[s<sub>1</sub>kare<sub>1</sub> ga e<sub>3</sub> kite iru]  
 that gentleman Top he Nom wearing  
 yoohuku<sub>3</sub>] ga yogorete iru]  
 suit Nom dirty  
 (Lit. As for the gentleman, the suit that (he) is  
 wearing is dirty.)

An attempt to explain Kuno's (1973) observation that relativization in Japanese does not exhibit Subjacency effects is found in Perlmutter (1972). He proposes to explain this fact on the basis of another fact, i.e., that Japanese is a pro-drop language. Perlmutter's point is, in short, as follows. First, he notes that Japanese is a pro-drop language. An empty pronoun is allowed in the subject position as well as in the object position as shown in (12).

- (12) a. [NP[s<sub>pro</sub> e<sub>3</sub> kiteiru] yoohuku<sub>3</sub>] ga yogorete iru  
 wearing suit Nom dirty  
 (The suit that (he/she) is wearing is dirty.)  
 b. [NP[s<sub>1</sub> e<sub>3</sub> pro syuppan sita] kaisya<sub>3</sub>] ga  
 published company Nom  
 kazi de yakete-simatta  
 fire by was-burned-down  
 (The company that published (it) was burned down  
 by a fire.)

Then, Perlmutter observes that the gap in Japanese relative clauses can be an empty pronoun. If it can be an empty pronoun, it can be base-generated, and hence, it need not be produced by movement. From here, Perlmutter concludes that Japanese relative clauses need not involve movement, and consequently, that we do not expect them to exhibit Subjacency effects. English, on the other hand, is not a pro-drop language.

Hence, an empty category cannot be base generated in the relative clause. Therefore, English relative clauses involve movement, and naturally, they exhibit Subjacency effects. Perlmutter's (1972) analysis is, then, basically that relative clauses in Japanese do not exhibit Subjacency effects because Japanese is a pro-drop language.

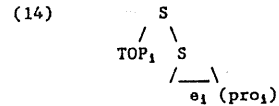
### 3.2.2. Saito's (1985) Analysis of Topicalization

The work that incorporates the insights of the previous analyses into one uniform analysis is Saito (1985). He focuses mainly on topicalization, and argues that not only Kuno's base generation hypothesis, but also Kuroda's movement analysis is correct. His discussion on topicalization consists of three main parts.

In the first part, Saito (1985) supports Kuno's base generation hypothesis. If the base generation hypothesis is correct, and if topic can be base-generated in the sentence-initial position and be licensed by the "aboutness" relation, then an overt resumptive pronoun should be able to occur in the position where a gap appears. Saito (1985) points out that this prediction is already borne out by Kuno's observation: an overt pronoun appears in the "gap" position, as shown in (13).

- (13) sono sinsi<sub>1</sub> wa [s[NP[s<sub>1</sub> (?kare<sub>1</sub> ga) kite iru] yoohuku] ga  
 the gentleman Top he Nom wearing suit Nom  
 yogorete iru]  
 dirty  
 (As for the gentleman, the suit that he is wearing  
 is dirty.)

Secondly, he applies Perlmutter's analysis of relative clauses to topicalization, and sharpens the analysis. He states that a topic sentence with a gap can have the following structure, where the gap is pro.



If we adopt Perlmutter's analysis, *pro* base generates in the embedded *S*, and the possibility of this base generated *pro* is responsible for the difference between English and Japanese with respect to the Subjacency effects. That is, the gap in (14) need not be produced by movement in Japanese, and hence, Japanese topicalization need not involve movement. Hence, Subjacency, as a condition on movement, is irrelevant in the case of Japanese topicalization.

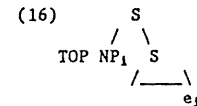
However, Saito (1985) points out that one should also question the status of  $TOP_1$  in (14). If the topic cannot be base-generated in the sentence-initial position, but must be moved to that position from the position of the gap, then we would still expect Japanese topicalization to involve movement, regardless of whether this language has "*pro*". Hence, it is necessary to assume that not only the gap but also the topic can be base-generated in (14) to make Perlmutter's analysis complete. But here, recall that Kuno (1973) has argued on independent grounds that a topic can be base-generated in the sentence-initial position as long as it is licensed by the "aboutness relation" with the rest of the sentence. Thus, Saito (1985) concludes that Kuno's "aboutness" hypothesis makes Perlmutter's analy-

sis complete. According to Saito (1985), then, the following two conditions must be satisfied for the structure in (14) to be base-generated: (i) the topic is licensed by the aboutness condition, and (ii) the gap is base generated as *pro*. And he hypothesizes that examples like (15) are allowed in Japanese because those examples satisfy both condition (i) and condition (ii).

- (15) Sono  $sins_i$  wa [ $s[NP[s$   $e_i$  kiteiru] yoohuku] ga  
 the gentleman Top is-wearing suit Nom  
 yogorete iru]  
 dirty  
 (As for the gentleman, the suit that he is wearing  
 is dirty.)

Thus, the insights of Perlmutter's *pro*-analysis and Kuno's aboutness condition are unified in Saito's (1985) analysis.

In the third and the most interesting part of his discussion, Saito (1985) provides supporting evidence for Kuroda's (1965) movement analysis of topicalization, which Kuno (1973) criticized. His reasoning proceeds as follows. Observe first the structure of topic sentences considered so far.



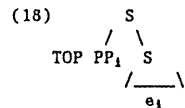
The structure in (16) can be base generated, according to Saito (1985), if (i) the topic is licensed by the aboutness condition, and (ii)  $e$  is base generated as *pro*. In the case of examples like (15), these two conditions are satisfied. This analysis, of course, implies that the aboutness condition

can licence an NP topic, and an NP pro can be base generated in Japanese. However, when  $\bar{e}$  is subjacent to the topic in the configuration in (16), nothing seems to prevent the topic from appearing in the position of  $\bar{e}$  at D-structure, and moving to the sentence-initial position. Hence, he claims that it is the null hypothesis that Japanese topicalization can involve movement. Saito (1985) confirms this conjecture by presenting examples of topic sentences that can be derived only by movement, i.e., examples with PP topics. If there are cases that necessarily involve movement, then movement should be an available option in Japanese topicalization.

Observe the following examples of PP-topicalization in Japanese:

- (17) a. Pekin ni wa [<sub>S</sub>John ga  $e_1$  itta]  
 Beijing to Top Nom went  
 (To Beijing, John went (there).)
- b. Pekin ni wa [<sub>S</sub>Mary ga [<sub>S</sub>John ga  $e_1$  itta to]  
 to Top Nom Nom went C  
 omotte iru]  
 thinking  
 (To Beijing, Mary thinks that John went (there).)

The structure of the examples in (17) is as follows:



Saito (1985) first shows that regardless of whether there is a pro form for PP (pro PP) in Japanese, i.e., regardless of whether  $\bar{e}$  in (18) can be base-

generated as pro, the PP-topic cannot be base generated in the sentence-initial position. If the PP topic in (18) can be licensed by the "aboutness relation" and be base generated, then it should be possible to substitute an overt resumptive pronoun for the gap in this configuration. However, the overt resumptive pronouns are impossible in the case of PP topicalization.

Compare (19) with (17). (19b) is exactly like (17b), except that the gap is filled by an overt resumptive pronoun.

- (19) a. \* Pekin ni<sub>1</sub> wa [<sub>S</sub>Mary ga [<sub>S</sub>John ga soko ni<sub>1</sub>  
 to Top Nom Nom there to  
 itta to] omotte iru]  
 went C thinking  
 (To Beijing<sub>1</sub>, Mary thinks that John went there<sub>1</sub>.)
- b. \* Pekin ni<sub>1</sub> wa [<sub>S</sub>John ga [<sub>NP</sub>[<sub>S</sub>  $e_1$  soko ni  
 Beijing to Top Nom there to  
 itta koto ga aru] hito<sub>3</sub>] o sagasite iru]  
 went fact Nom have person Acc looking for  
 (Lit. (As for) to Beijing<sub>1</sub>, Mary thinks that John went there<sub>1</sub>.)

The ungrammaticality of (19a-b) indicates, then, that PP topics cannot be licensed by the "aboutness relation". If they could be, then there should be nothing wrong with those examples. Note that (19a-b) improve considerably when we substitute NP topics for the PP topics, as shown in (20).

- (20) a. ?Pekin<sub>i</sub> wa [<sub>S</sub>Mary ga [<sub>S</sub> John ga [soko<sub>i</sub> ni itta to]  
 Beijing Top Nom Nom there to went C  
 omotte iru]]  
 thinking  
 (Lit..As for Beijing, Mary thinks that  
 John went there.)
- b. Pekin<sub>i</sub> wa [<sub>S</sub>John ga [<sub>NP</sub>[soko<sub>i</sub> ni itta koto ga aru]  
 Beijing Top Nom there to went fact Nom have  
 hito] o sagasite iru]  
 person Acc looking for  
 (Lit..As for Beijin, John is looking for a someone  
 who has been there.)

The clear contrast between (19) and (20) indicates that NP topics, but not PP topics, can be licensed by the "aboutness relation" and be base generated in the sentence-initial position.

If the sentences containing a PP topic cannot be base generated, then how are they generated? Here, Saito (1985) proposes a movement analysis for the PP topicalization. To provide empirical evidence for this hypothesis, he presents an asymmetrical paradigm between NP-topicalization and PP-topicalization with respect to Subjacency effects: The topicalization of NP does not exhibit subjacency effects; but the topicalization of PP does. Observe the contrast between (21b) and (21c).

- (21) a. [<sub>S</sub>John ga [<sub>NP</sub>[se<sub>i</sub> Pekin ni itta koto ga aru]  
 Nom Beijing to went fact Nom have  
 hito<sub>i</sub>] o sagasite iru]  
 person Acc looking for  
 (John is looking for a person who has been  
 to Beijing.)
- b. ?Pekin<sub>j</sub> wa [<sub>S</sub>John ga [<sub>NP</sub>[s e<sub>i</sub> e<sub>j</sub> itta koto ga aru]  
 Top Nom went fact Nom have  
 hito<sub>i</sub>] o sagasite iru]  
 person Acc looking for  
 (Beijing<sub>j</sub>, John is looking for the person  
 who went t<sub>j</sub>.)
- c. \*Pekin ni<sub>j</sub> wa [<sub>S</sub>John ga [<sub>NP</sub>[s e<sub>i</sub> e<sub>j</sub> itta koto ga  
 Beijing to Top Nom went fact Nom  
 aru hito] o sagasite iru]  
 have person Acc looking for  
 (To Beijing<sub>j</sub>, John is looking for the person  
 who went t<sub>j</sub>.)

(21b) is grammatical because NP-(wa) can be base-generated. (21c), on the other hand, shows that PP topicalization exhibits Subjacency effects. If PP topics cannot be base generated in the sentence-initial position, but must be moved to that position, the ungrammaticality of (21c) is exactly what we expect. PP-(wa) in (21c) must have been moved from inside the complex NP violating Subjacency. Based on this fact, among others, Saito concludes that PP topics are preposed to the sentence initial position.

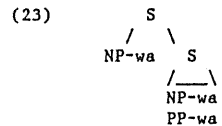
The conclusion that PP topicalization necessarily involves movement clearly supports the hypothesis that NP topicalization can involve movement as long as it obeys Subjacency. If PP topicalization involves movement, then movement should be an available option for topicalization in

Japanese. Thus, Saito (1985) arrives at his conclusion that NP topicalization can involve base generation, as Kuno (1973) argued, but, at the same time, it can also involve movement, as Kuroda (1965) initially proposed.

And finally, he speculates that the movement operation that preposes topics to the sentence-initial position is scrambling. Topics in Japanese need not appear in the sentence-initial position, but can appear in situ, as shown in (22).

- (22) a. John ga shyoosetu dake wa yoku yomu (koto)  
 Nom novels only Top often read (the fact)  
 ((the fact that) John often reads only novels)
- b. John ga sono tosyokan kara wa hon o kariru  
 Nom that library from Top book Acc check out  
 (koto)  
 (the fact)  
 ((the fact that) John check out the book from the library)

Then, as illustrated in (23), the topic marker *wa* can be attached to the sentence-initial topic, or to an NP or PP within the lower S.<sup>59</sup>



Let us now consider (24a) and (24b).

<sup>59</sup> *Wa* is interpreted as 'as for', and when it is attached to a base generated sentence-initial topic, it seems to licence the presence of the topic. But (22b) shows that it does not prevent the NP it is attached to from directly receiving a theta role from the verb.

- (24) a. shyoosetu dake wa<sub>i</sub> [<sub>S</sub> John ga e<sub>i</sub> yomu] (koto)  
 novels only Top Nom read (the fact)  
 (Lit. (the fact that) as for only novels<sub>i</sub>,  
 John read e<sub>i</sub>)
- b. sono tosyokan kara wa<sub>i</sub> [<sub>S</sub> John ga e<sub>i</sub> hon o kariru]  
 that library from Top Nom book Acc check out  
 (koto)  
 (the fact)  
 (Lit. (the fact that) from the library<sub>i</sub>, John  
 check out the book e<sub>i</sub>)

Suppose that (24a, b) are derived from (22a, b) by preposing the *wa*-marked phrases. Then, the movement operation that is involved must be an optional one, since (22a,b) themselves are well-formed. And Japanese does have a movement operation that optionally preposes phrases to the sentence-initial position, i.e., scrambling. Hence, there arises the possibility that the movement operation that preposes topics is in fact scrambling.

### 3.3. An Analysis of Japanese Relative Clauses

#### 3.3.1. PP *pro*: Pure vs. Quasi Adjuncts

Saito's (1985) analysis of topicalization has important implications for the analysis of relative clauses. This subsection deals with the analysis of relative clauses in Japanese. The analysis presented here stands as the extension of Perlmutter (1972) and Saito (1985).

Recall the case of topicalization where two types of topics were allowed; i.e., NP topics and PP topics. The "aboutness relation" licenses only NP-topics. Hence, only NP topics can be base generated in the sen-



tence-initial position. NP has also a pro form that can be base generated. Therefore, sentences such as (15) can be base generated. On the other hand, PP topics cannot be licensed by "aboutness". Therefore, when they appear in the sentence-initial position, they have to move to that position. Regardless of the existence of PP pro, sentences like (17) cannot be base generated, but they have to be generated by movement. This explains the fact that PP topicalization exhibits the Subjacency effect, in contrast with NP topicalization.

Then, how about the case of relative clauses? In relative clauses, the head is always NP. There is no relative head of the category PP. Hence, the head of a relative clause can always be licensed by the "aboutness relation". Hence, we might predict that relative clause in Japanese can be all base generated, and hence, relativization in Japanese never exhibits Subjacency effects.

When we consider relative clauses in which an argument NP is relativized, the prediction is indeed borne out. Let us consider the following example:

- (25) [NP[s<sub>i</sub> e<sub>1</sub> hasitteiru]<sub>i</sub>][NPonna no ko]<sub>i</sub>]  
           running                    girl  
       (a girl who is running)

The NP head is licensed by the aboutness condition. In addition, the empty category e<sub>1</sub> can be base generated as pro, since there is a pro form for NP. Hence, the two conditions for base generation are satisfied, and the structure in (25) can be base generated. And in fact, this type of rela-

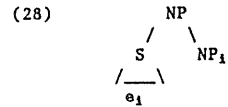
tive clause does not exhibit Subjacency effects. The relevant example from Kuno (1973) is repeated below in (26).

- (26) a. [NP[s<sub>i</sub>sono sinsi          ga e<sub>j</sub> kiteiru] yoohuku]<sub>j</sub> ga  
           that gentleman Nom      wearing suit          Nom  
           yogorete iru  
           dirty  
       (The suit that the gentleman is wearing is dirty.)  
       b. [NP[s[NP[s e<sub>1</sub> e<sub>j</sub> kiteiru] yoohuku]<sub>j</sub> ga  
   wearing suit          Nom  
           yogorete iru] sinsi]<sub>i</sub>  
           dirty                    gentleman  
       (Lit. a gentleman who the suit that  
           (he) is wearing is dirty)

However, an interesting problem arises when we consider relative clauses in which a PP is relativized. S. Saito et al. (1988) point out that there are cases of PP relativization that show Subjacency effects. Their example is shown below.

- (27) \*[NP[sMary ga [NP[s<sub>e1</sub> e<sub>j</sub> John o sasita]  
   Nom                                  Acc stabbed  
           hito] o aisiteiru] naihu]<sub>j</sub>  
           person Acc love                    knife  
       (Lit. the knife with which Mary loves the person  
           who stabbed John)  
   (S.Saito, et al., 1988; Oka, 1988)

S. Saito et al. (1988) claim that in the structure below, when the gap is of the category PP, Subjacency effects are observed, but when the gap is of the category NP, there are not any Subjacency effects.



They consider this NP/PP asymmetry to be parallel to the one discussed in Saito (1985). But it is somewhat different. In Saito's discussion of topicalization, what is important is the category of the topic and not that of the empty category.<sup>60</sup> And as noted above, in relative clauses, the relative head is always of the category NP. Hence, Saito's analysis does not directly predict the ungrammaticality of (27), and thus, a question arises as to why relative clauses such as (27) should exhibit Subjacency effects.

The examination of PP relativization reveals that S. Saito et al.'s observation is true for some types of PPs, but not for the others. That is, in PP relativization, some PPs exhibit the Subjacency effects, as S. Saito et al. (1988) point out, but there are also PPs that do not exhibit the Subjacency effects. Let us consider the following examples:

<sup>60</sup> In fact, Saito (1985) does not consider examples such as (21b), repeated in (1), as a Subjacency violation.

- (i) ?Pekin<sub>j</sub> wa [<sub>S</sub>John ga [<sub>NP</sub>s e<sub>1</sub> e<sub>j</sub> itta koto ga aru]  
           Top          Nom          went fact Nom have

hito<sub>j</sub>] o sagasiteiru]  
 person Acc looking for

(Beijing<sub>j</sub>, John is looking for the person  
 who went e<sub>j</sub>.)

In this example, the empty category is of the category PP, but the topic is of the category NP.

- (29)a. [<sub>NP</sub>[<sub>s</sub>[<sub>NP</sub>[s e<sub>1</sub> e<sub>j</sub> mensetu o uketa]  
   job interview Acc received

gakusei<sub>1</sub>] ga minna ukaru] hi<sub>j</sub>  
 student Nom all of them passes day

(the day<sub>1</sub> that all of the students that received the job  
 interview t<sub>1</sub> passes)

- b. [<sub>NP</sub>[<sub>s</sub>[<sub>NP</sub>[s e<sub>1</sub> e<sub>j</sub> mensetu o uketa]  
   job interview Acc received

gakusei<sub>1</sub>] ga minna ukaru] kaigisitu<sub>j</sub>]  
 student Nom all of them passes conference room

(the conference room<sub>1</sub> that all of the students that  
 received the job interview t<sub>1</sub> passes)

- c.\*[<sub>NP</sub>[<sub>s</sub>[<sub>NP</sub>[s e<sub>1</sub> e<sub>j</sub> kubi ni natta] hito<sub>1</sub>] ga  
   fired person Nom

minna okotteiru] riyuu<sub>1</sub>]  
 all get angry reason

(the reason<sub>1</sub> that all of the person who is fired t<sub>1</sub>  
 get angry)

- d.\*[<sub>NP</sub>[<sub>s</sub>[<sub>NP</sub>[s e<sub>1</sub> e<sub>j</sub> mondai o toita] gakusei<sub>1</sub>] ga  
   problem Acc solved students Nom

minna siken ni otiru] hoo<sub>3</sub>]  
 all exam fail method

(the method<sub>1</sub> that all of the students who solved the  
 problem t<sub>1</sub> fails the examination)

The contrast between (29a-b) and (29c-d) shows that there are two types of PPs: those that show Subjacency effects in relativization and those that do not. And it shows further that reason and manner adjunct PPs belong





- (35) a. ?[NP[s[NP[s e<sub>1</sub> sono hi<sub>j</sub> ni mensetu o uketa]  
that day ib job interview Acc received  
  
gakusei] ga minna ukaru] hi<sub>j</sub>]  
student Nom all of them passes day  
  
(the day<sub>1</sub> that all of the students that received the job  
interview then<sub>1</sub> passes)
- b. ?[NP[s[NP[s e<sub>1</sub> soko de<sub>j</sub> mensetu o uketa]  
there at job interview Acc received  
  
gakusei] ga minna ukaru] kaigisitu<sub>j</sub>]  
student Nom all of them passes conference room  
  
(the conference room<sub>1</sub> that all of the students that  
received the job interview there<sub>1</sub> passes)
- (36) a. ?[NP[s[NP[s e<sub>1</sub> sore de<sub>j</sub> kubi ni natta]  
that by is-fired  
  
hito<sub>1</sub>] ga minna omotte iru] riyuu<sub>j</sub>]  
person Nom everyone thinking reason  
  
(the reason<sub>1</sub> that all of the person who is fired by that<sub>1</sub>  
get angry)
- b. ?[NP[s[NP[s e<sub>1</sub> sore de<sub>j</sub> mondai o toita]  
that by problem Acc solved  
  
hito<sub>1</sub>] ga minna siken ni otiru] hoohoo<sub>j</sub>]  
person Nom everyone exam fail method  
  
(the method<sub>1</sub> that all of the students who solved the  
problem by it<sub>1</sub> fails the examination)

The gap of a quasi-adjunct PP can be filled in by a resumptive pronoun marginally. And, as shown in (36), the gap of a pure adjunct PP can be replaced by a resumptive pronoun as well, with the similar degree of marginality. There is no clear contrast between (35) and (36). This fact fits perfectly in with our treatment of relative clauses containing the two types of adjunct PP gaps.

As noted above, relativization of pure adjunct PPs not only exhibits Subjacency effects, but is severely bounded in the sense that it is clause bound. The following examples illustrate the contrast between pure adjuncts and quasi adjuncts.

- (37) a. \*[NP[sJohn ga [s.Mary ga e<sub>1</sub> sentaku sita to]  
Nom Nom washed  
  
itta] riyuu<sub>1</sub>]  
said reason  
  
(the reason<sub>1</sub> why John said that Mary washed e<sub>1</sub>)
- b. \*[NP[sJohn ga [s.Mary ga e<sub>1</sub> mondai o toita to]  
Nom Nom problem Acc solved C  
  
itta] hoohoo]  
said way  
  
(the way<sub>1</sub> that John said that Mary solved the problem e<sub>1</sub>)
- (38) a. [NP[sJohn ga [s.Mary ga e<sub>1</sub> gakkoo ni itta to]  
Nom Nom school to went C  
  
omotteiru] hi<sub>1</sub>]  
think day  
  
(the day<sub>1</sub> that John thinks that Mary went  
to school e<sub>1</sub>)
- b. [NP[sJohn ga [s.Mary ga e<sub>1</sub> tabeta to]  
Nom Nom ate C  
  
omotteiru] mise<sub>1</sub>]  
think store  
  
(the store<sub>1</sub> where Mary thinks that John ate e<sub>1</sub>)

Exactly as in the case of (33), the examples in (37) improve when we substitute an overt resumptive pronoun for the gap. As shown in (39)-(40), there is no contrast between pure adjuncts and quasi adjuncts when an overt resumptive pronoun is present.



and their English counterparts directly follows from the Empty Category Principle, as formulated in Lasnik and Saito (1990). The discussion in this section, together with the analysis presented so far, ultimately leads us to the conclusion that the peculiarity of Japanese relative clauses is attributed to two parameteric factors: (i) Japanese is a pro-drop language, hence the base generation of some relative clauses is allowed; (ii) the structure of relative clauses in Japanese is different from that in English; hence, even simple long distance movement is prohibited in some Japanese relative clauses.

### 3.4.1. The ECP

Observe first the following difference between English and Japanese.

- (41) a. the reason [<sub>i</sub>why<sub>i</sub>] [Mary thinks [that John left e<sub>i</sub>]]
- b. \*<sub>i</sub>[Mary ga [John ga e<sub>i</sub> kaetta to] omotta iru] riyuu<sub>i</sub>  
 Nom Nom left C think reason
- (the reason Mary thinks that John left)
- (42) a. the book<sub>i</sub> [(which<sub>i</sub>) [Mary thinks [that John bought e<sub>i</sub>]]
- b. [<sub>i</sub>Mary ga [John ga e<sub>i</sub> katta to] omotte iru] hon<sub>i</sub>  
 Nom Nom bought C think book
- (the book Mary thinks that John bought)
- (43) [<sub>i</sub>John ga e<sub>i</sub> kaetta] riyuu<sub>i</sub>  
 Nom left reason
- (the reason John left)

Compare (41b) with (43). In Japanese relative clauses, relativization from an argument position is unbounded as shown in (42b), but relativization from a pure adjunct position is clause bound, as the contrast between (41b) and (43) shows. On the other hand, In English, relativization from

either position is unbounded. In this subsection, I will show that if we hypothesize that Japanese relative clauses are IPs, then the difference between English and Japanese relative clauses shown in (41) directly follows from the Empty Category Principle (ECP), as formulated in Lasnik and Saito (1990).<sup>65</sup>

Before getting into the main discussion, I will briefly illustrate the Empty Category Principle (ECP). The principle is stated as follows:

- (44) A nonpronominal empty category must be properly governed.

(Chomsky, 1981)

Traces of movement, being nonpronominal empty categories, are subject to this principle. The relation of proper government itself is defined in Lasnik and Saito (1990) as follows.<sup>66</sup>

- (45) α properly governs β  
=df α c-commands β, α is X-zero, and
1. α θ-marks, or Case marks β (lexical government), or
  2. α is coindexed with β and β is subjacent to α.  
(antecedent government)

<sup>85</sup> We will crucially rely on their assumption that only X-zero categories can be proper governors. This particular assumption is proposed also in Stowell (1981) and Rizzi (1986).

<sup>68</sup> There is much controversy as to the precise definition of this relation. See, for example, Chomsky (1981), Aoun and Sportiche (1981), Huang (1982), and Chomsky (1986) for alternative proposals.

(45) is a somewhat simplified version of Lasnik and Saito's definition. For the definition of subadjacency that they assume, see Lasnik and Saito (1990, Chapter III). The following definition from Chomsky (1973) suffices for our purposes here:

$\beta$  is subjacent to  $\alpha$  =df. there is at most one bounding node (NP or S) that dominates  $\beta$  but not  $\alpha$ .

The two types of proper government, lexical government and antecedent government, both play important roles. Let us first consider the case of lexical government. Both (46a) and (46b) are sentences violating the Subjacency Condition.

- (46) a. \*[the reason [(why<sub>1</sub>) [John wonders [who<sub>j</sub> [t<sub>j</sub> left t<sub>1</sub>]]]]]  
 b. ??[the book [(which<sub>1</sub>) [John wonders [who<sub>j</sub> [t<sub>j</sub> bought t<sub>1</sub>]]]]]

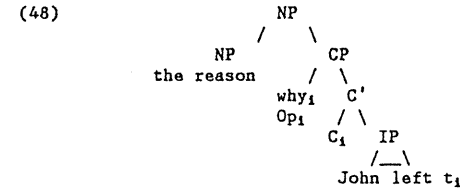
Native speakers of English find some grammaticality difference between the two. What is crucial to distinguish the ill-formedness of (46a) and the marginality of (46b) is the ECP. That is, (46a) violates the ECP, but (46b) does not. The trace in (46b) is lexically governed by *bought*. On the other hand, the trace in (46a), being an adjunct trace, is not lexically governed by the verb *left*. (Cf. Huang (1982), Lasnik and Saito (1984), among others.) Hence, lexical government successfully distinguishes (46a) and (46b).

However, there are cases which indicate that lexical government does not suffice to explain the sentences containing empty categories. Observe the following example:

- (47) [the reason [(why<sub>1</sub>) [John left t<sub>1</sub>]]]

In this case, the trace is not lexically governed by *left*. Thus, if lexical government were the only mode of proper government, the ECP should rule out this sentence. But clearly, this sentence is well-formed. Given ante-

cedent government, this sentence is correctly ruled in. The structure of (47) is illustrated below in (48).<sup>67</sup>



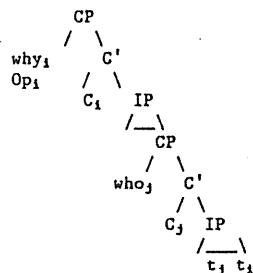
By SPEC-head agreement, the C gets the index of the *wh*-phrase (or empty operator). The trace is subjacent to the C, and hence is properly (antecedent) governed by C. Thus, (47) satisfies the ECP through antecedent government.

Let us finally go back to (46). As we saw above, the trace *t<sub>1</sub>* is not lexically governed in this example. If this trace violates the ECP, then it must not be antecedent governed, either. And this is in fact the case. As illustrated in (49), the potential antecedent governor *C<sub>1</sub>* is "too far" from this trace.

<sup>67</sup> If *why* is not present in the CP SPEC position, an empty operator occupies this position.



(49)



In particular,  $t_i$  is not subjacent to  $C_1$ . Hence,  $t_i$  is not antecedent governed, and hence, is in violation of the ECP.<sup>68</sup>

The definition of proper government stated above in (45) assumes that the following holds:

(50) only X-zero categories can be proper (antecedent) governors.

Since this condition on proper government, and on antecedent government, in particular, plays a crucial role in our account for the facts of Japanese relative clauses, I will briefly discuss one piece of supporting evidence for this condition.

Rizzi (1986) claims that a restriction on heavy NP shift (henceforth HNPS) follows as an immediate consequence of the condition in (50). Observe first an example of HNPS, in which an NP object of a verb moves rightward if it is "heavy" enough.

(51) I gave  $t_i$  to John [<sub>NP</sub>all of my books on vowel harmony]<sub>i</sub>

<sup>68</sup> The trace of *who* is antecedent governed by  $C_j$ , which gets the index  $j$  by SPEC-head agreement.

In this example, the trace is lexically governed by the verb *gave*, and furthermore, the trace is bound by the shifted heavy NP. Observe next the contrast between (52) and (53).<sup>69</sup>

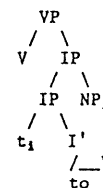
(52) I consider [<sub>IP</sub> $t_i$  to be desirable]<sub>i</sub> [<sub>NP</sub>the perspective that  $S_i$ ]

(53) \*I consider that [<sub>IP</sub> $t_i$  is desirable]<sub>i</sub> [<sub>NP</sub>the perspective that  $S_i$ ]

This pair illustrates the following generalization. In the exceptional case marking (ECM) construction, the subject of the IP complement can undergo HNPS. But the subject of a tensed clause can never be moved rightward by HNPS. Rizzi (1986) claims that this generalization is captured if it is assumed that antecedent government can only take place from a head position. According to this hypothesis, a C, being a head (X-zero), can antecedent govern a trace in the subject position, but an NP right adjoined by HNPS, being an X-max, cannot.

Let us examine the contrast in (52) - (53) in more detail. In (52), the trace of the shifted NP, which is in the Spec of IP, is lexically governed by the main verb, *consider*. Thus, lexical government obtains. Note here that HNPS in this example does not create a configuration of antecedent government. The moved NP is adjoined to IP (or VP) as shown in (54).

(54)

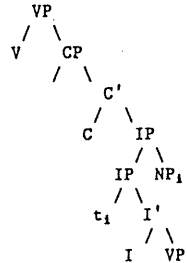


<sup>69</sup> The examples in (52) - (53) are from Rizzi (1986, Fn 30).

Since the adjoined NP is not an X-zero category, it is not eligible to antecedent govern the trace. This fact is of no import in the case of (52), since lexical government obtains.

On the other hand, in the case of (53), since the subject position of a finite clause is not lexically governed, the trace  $t_1$  is not lexically governed. Furthermore, antecedent government fails exactly as in the case of (52). The NP moved rightward is adjoined to IP, as in (55). It is a maximal projection and consequently, is not eligible to antecedent govern the trace.

(55)



Hence,  $t_1$  is not properly governed at all. Thus, the ECP based on the condition on antecedent governors in (50) correctly rules out the example (53). Note that if (50) did not hold, antecedent government would obtain in the configuration in (55).

Lasnik and Saito (1990), examining topicalization of subject NPs, also draw the conclusion that only X-zero categories can be antecedent governors. (See Lasnik and Saito, Chapter IV, for the details.)

### 3.4.2. Antecedent Government in Relative Clauses

In the previous subsection, the ECP and the condition on antecedent government in (50) were discussed. The present subsection focuses on the contrast between (41a) and (41b), which are repeated below.

(41) a. [<sub>NP</sub>the reason [<sub>CP</sub>(why<sub>i</sub>)[<sub>C</sub>·C<sub>i</sub> Mary thinks  
[<sub>CP</sub>that John left e<sub>i</sub>]]]

b. \*[Taroo ga [[Hanako ga e<sub>i</sub> kaettesimatta] to] omotte iru]  
Nom Nom went back C thinking

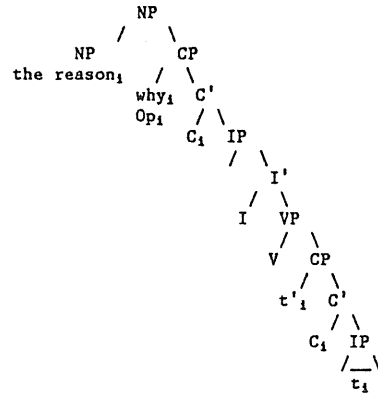
riyuu<sub>i</sub>  
reason

(the reason why Taro thinks that Hanako went back home)

I will show that this contrast will be immediately accounted for, if we assume the condition (50) on antecedent governors and the hypothesis that relative clauses are CPs in English, but IPs in Japanese.

First, observe the English relative clause shown in (41a). The movement of the most deeply embedded *why* (or the empty operator) is possible, because, as shown in (56), the traces in this example satisfy the ECP.

(56)



The lower C receives the index *i* through SPEC-head agreement with the intermediate trace  $t'_i$ , and antecedent governs the initial trace  $t_i$ .<sup>70</sup> The intermediate trace is itself antecedent governed by the higher C, which receives the index *i* through SPEC-head agreement with *why* (or the empty operator).

Recall here that although (41a) is well-formed in English, the parallel Japanese example in (41b) is ill-formed. This implies that even the derivation of this example through movement results in ungrammaticality, as indicated in (57).

<sup>70</sup> As Huang (1982) observes, adjuncts do not display *that*-trace effects. (i) and (ii) do not contrast.

(i)  $Why_i$  [do you think [ $t_i$  [he left early  $t_i$ ]]]

(ii)  $Why_i$  [do you think [that [he left early  $t_i$ ]]]

See Huang (1982) and Lasnik and Saito (1984) for relevant discussion.

(57) \*[Taroo ga [[Hanako ga  $t_i$  kaettesimatta] to] omotte iru]  
 Nom Nom went back C thinking

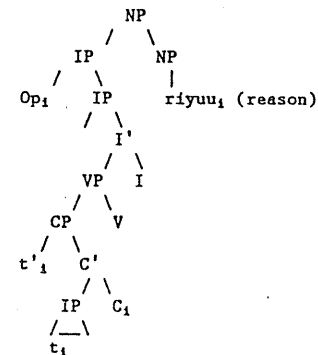
riyuu<sub>i</sub>  
 reason

(the reason that Taro thinks that Hanako went back home)

Suppose the structure of the Japanese relative clauses is identical to the one for English relative clauses, aside from the linear order of constituents. Then, (57) should be allowed for the same reason that (41a) is. Hence, the ill-formedness of (57) indicates that there is a structural difference between relative clauses in Japanese and those in English.

Suppose then that Japanese relative clauses are not CPs. Rather, in Japanese, relative clauses are IPs, and the relative operator is adjoined to IP. Then, the structure of (57) will be as follows:

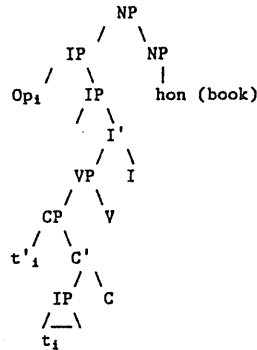
(58)



In (58), the initial trace  $t_i$  is antecedent governed by C, which receives the index *i* through SPEC-head agreement with the intermediate trace. However, the intermediate trace  $t'_i$  is not properly governed, and hence, is in



(60)



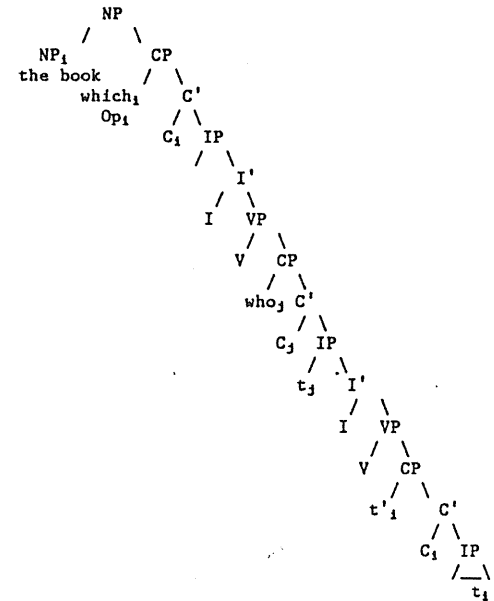
In (60), the initial trace  $t_1$  is lexically governed by the verb *katta*. Note here that the intermediate trace  $t'_1$  is not properly governed, as in the case of (57).<sup>72</sup> However, this intermediate trace need not be present. According to Lasnik and Saito (1984), only in cases where lexical government does not obtain for the initial trace, does the intermediate trace need to be present to give its index to C, and make the C antecedent govern the initial trace.<sup>73</sup> As noted above, in (42b), the initial trace  $t_1$  is lexically governed. Thus, the fact that the intermediate trace is not antecedent governed is of no import in this case. Thus, (42b) is correctly ruled in by the ECP. (42b), then, is explained in exactly the same way that Lasnik and Saito (1984) explain (61).

(61) ??the book (which<sub>1</sub>) John wonders who said Mary bought  $t_1$

<sup>72</sup> This is because the potential antecedent governor for this trace is the empty operator adjoined to IP. This is not an X-zero category, and hence, does not qualify as an antecedent governor.

<sup>73</sup> See also Stowell (1981) for a similar proposal.

(62)



In this example also, the intermediate trace  $t_1$  is not properly (antecedent) governed. But this is irrelevant, since the initial trace  $t_1$  is lexically governed by *bought*, and hence the intermediate trace need not be present in the structure.

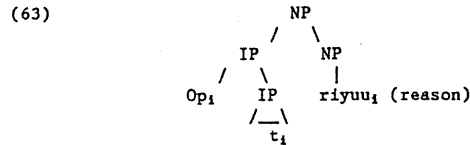
### 3.4.3. Pure Complex NPs

The analysis of the relative clauses presented in the preceding subsection accounts for the cases of long distance relativization of pure adjuncts. In this subsection, I deal with one last problem to be solved. One should wonder why (43), which is repeated below, is well-formed.

- (43) [John ga t<sub>1</sub> kaetta] riyuu<sub>1</sub>  
 Nom left reason

(The reason John left)

Given the IP hypothesis, the ECP, with antecedent government defined as in Lasnik and Saito (1990), incorrectly rules out this example. The structure of (43) is shown below:



(43) is also ruled out by the ECP for the same reason that (57) is. The potential antecedent governor for the trace t<sub>1</sub> is the empty operator adjoined to IP. But, as in the case of (58), it is not an X-zero category, and hence, does not qualify as an antecedent governor. Thus, given the condition on antecedent government in (50), the trace t<sub>1</sub> is not properly (antecedent) governed.

The discussion above indicates that if our analysis in the preceding section is correct, the example (43) cannot have the operator-trace relation as represented in (63). That is, (43) does not have the structure of relative clause in (63), but has the structure analogous to that of pure complex NPs. In this case, the structure of (43) would have neither an operator nor a trace. Clear cases of Japanese pure complex NPs are illustrated below:

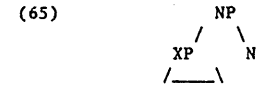
- (64) a. [sakana ga yakeru] nioi  
 fish Nom burn smell

(Lit. the smell that the fish burns)

- b. [doa ga simaru] oto  
 door Nom shut sound

(Lit. the sound that the door shut)

The structure of these examples is as follows:



The hypothesis we arrive at is, then, that (43) also has this structure. In (65), the sentential modifier, which we tentatively call XP, and N' are in a modifying relation.

The hypothesis proposed above, though it may look ad hoc, is actually supported by the existence of English examples such as the following:

- (66) the reason for John's leaving

(66) shows that Ns such as *reason* can take a "pure sentential modifier." And exactly as in the Japanese case, the head *reason* cannot be understood with the most deeply embedded clause in examples such as (67).<sup>74</sup>

<sup>74</sup> There are examples of pure complex NPs, where the head N is, apparently, interpreted with the embedded clause. For example,

- (i) [Taroo ga [sakana ga yakete-iru to] omotta] nioi  
 Nom fish Nom is-being-broiled C thought smell

('the smell that Taro thought that the fish is being broiled)

- (ii) [Taroo ga [doa ga simatta to] omotta] oto  
 Nom door Nom shut C thought sound

(67) the reason for [Mary's saying [that [John left]]]

Given the conclusion that (43) is a pure complex NP, there arises the possibility that all "relative clauses" in Japanese are "pure sentential modifiers". If this hypothesis is correct, even examples like (68) would have the structure in (65).

(68) [Mary<sub>ga</sub> [John<sub>ga</sub> katta] to itta hon  
           Nom          Nom bought C said book

(the book that Mary said that John bought)

---

('the sound that Toro thought that the door shut')

But not all pure complex NPs allow such interpretation. Thus, the head N in (ii) can be interpreted only with the higher clause.

(iii) [Taroo<sub>ga</sub> [sakana<sub>ga</sub> yakete iru to] omotta] zizitu  
           Nom fish      Nom is-being-broiled C thought the fact

('the fact that Taro thought that the fish is being broiled')

Then, according to the analysis presented here, (41b) should be grouped together with (iii), and not with (i) and (ii).

It should be noted here that there are some speakers who marginally accept examples like (41b). For them, (41b) would be like (i)-(ii). And even those speakers do not accept examples of "Subjacency violations" such as (33). This fact seems consistent with the conjecture presented here, since unlike (i), (iv) is ungrammatical.

(iv) \*[Taroo<sub>ga</sub> [<sub>NP</sub>e<sub>1</sub> sakana o yaite iru] hito<sub>1</sub>]  
           Nom      fish      Acc is-broiling person

ni atta] nioi  
 to met smell

(Lit. the smell that Taro met the person<sub>1</sub> who e<sub>1</sub> is  
 broiling the fish)

Neither (i) nor (iv) involves movement. Yet, some sort of "Subjacency effect" is observed in their contrast. These examples indicate, then, that the presence of an "(apparent) Subjacency effect" does not necessarily establish the presence of a movement operation.

But this hypothesis seems implausible, since examples such as (29), in contrast to (66), are ill-formed.

(69) \*the book of/for Mary's saying that John bought (it)

We therefore conclude that (68) contains a relative clause. And if Japanese has relative clauses, the question why (57) is ill-formed as a relative clause would remain a real problem. My solution to this problem, as discussed in detail above, is that Japanese relative clauses are IPs.

Having established that Japanese relative clauses are IPs, we will now briefly discuss the categorical status of "pure sentential modifiers." To begin with, observe the example of English pure complex NPs in (70).

(70) the claim [<sub>CP</sub> \*(that) [Bill had left the party]]

The CP modifiers in English pure complex NPs do not allow *that*-deletion. That is, *that* must be present in the head position of the CP in examples such as (70). As will be discussed in detail below, Stowell (1981) proposes to explain this phenomenon in terms of the ECP.

The general distribution of empty COMPs is explained as a consequence of the ECP by Kayne (1981) and Stowell (1981). Observe the following subject/object asymmetry:

(71) a. Ben knew [<sub>CP</sub> (that) [<sub>IP</sub> the teacher was lying]]

b. [<sub>CP</sub>\*(That) [<sub>IP</sub> the teacher was lying]] was hardly obvious

In (71a), the complementizer *that* need not be present, but in (71b), it is obligatory. One difference between (71a) and (71b) is that the embedded CP is in the object position, and hence, is lexically governed by the verb

knew in (71a), while it is in the subject position, and is not lexically governed in (71b).<sup>75</sup> Kayne and Stowell capitalize on this difference, and propose to account for (67) as follows. Suppose first that when the complementizer *that* is missing, there is an empty category in the head C position, which is subject to the ECP. Then, with the reasonable assumption that lexical government "percolates down to heads,"<sup>76</sup> the empty C will be lexically governed in the case of (71a), but not in the case of (71b). Thus, unless *that* is present, (71b), unlike (71a), violates the ECP. Then, with the reasonable assumption that lexical government "percolates down to the head," the C will be lexically governed in the case of (71a), but not in the case of (71b). Thus, when *that* is absent, (71b) satisfies the ECP, but (71a) violates this principle.

The ECP account of (71) outlined above is extended to examples such as (70) in Stowell (1981). He assumes that in a pure complex NP, the N, even if it is a derived nominal, does not actually assign a theta-role to the CP, but is in apposition to the CP.<sup>77</sup> Given this assumption, the obligatori-

<sup>75</sup> According to Stowell (1981), the embedded CP in (71b) is topicalized, and hence, is in the topic position. See Chapter 4 below for relevant discussion.

<sup>76</sup> That is, if  $\alpha$  lexically govern  $\beta$ , then  $\alpha$  lexically govern the head of  $\beta$ . See Stowell (1981), Belletti and Rizzi (1981), for independent evidence for this assumption.

<sup>77</sup> This assumption is controversial, especially for examples such as (i). (See Anderson (1983) for discussion.)

(i) the proof [<sub>CP</sub>\*(that) <sub>IP</sub>[<sub>IP</sub>John is qualified]]

In this example, the head N seems to assign a theta-role to the embed-

ness of *that* in (70) is accounted for by the ECP, exactly as that in (71b). If *that* is not present, the empty category in C is not lexically governed by N, and thus, is not properly governed at all. Hence, the ECP rules out the possibility of an empty C, and consequently, pure complex NPs in English require the head of the modifying CP to be realized lexically.<sup>78</sup>

What about Japanese? Unlike in the case of English, C does not show up in Japanese pure complex NPs.

(72) the fact \*(that) John is smart

(73) a. sakana ga yakeru (\*no/\*to) nioi  
fish Nom burn smell

(the smell that the fish burns)

b. doa ga simaru (\*no/\*to) oto  
door Nom shut sound

(the sound that the door shut)

ded CP. As an alternative, it may be stipulated as in Kayne (1981) that N, as opposed to V, does not "govern into" the head of CP.

<sup>78</sup> The C position may be empty in relative clauses, as shown in (i).

(i) [<sub>NP</sub>the man [<sub>CP</sub>Op<sub>i</sub> [<sub>C</sub>\*(that) [<sub>IP</sub>John saw t<sub>i</sub>]]]]

This seems to be related to the fact that an operator is present in the CP SPEC position, and agrees with the head C.

Lasnik and Saito (1990, Chapter V) discuss examples such as the following, and conjecture that the empty C in this example is not subject to the ECP because of the presence of the feature [+WH]:

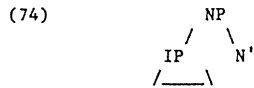
(ii) [<sub>CP</sub>what<sub>i</sub> [<sub>C</sub>+WH [<sub>IP</sub>John bought t<sub>i</sub>]]] is obvious

This hypothesis extends to relative clauses such as (iii) and also to the case of (i) where *that* is absent, if an analogous feature [+R] is present in C in these cases.

(iii) [<sub>NP</sub>the man [<sub>CP</sub>who<sub>i</sub> [<sub>C</sub>+R [<sub>IP</sub>John saw t<sub>i</sub>]]]]



This brings us to the hypothesis that not only relative clauses, but also the sentential modifiers in pure complex NPs, exactly like relative clauses, are IPs in Japanese. Suppose that the sentential modifiers are CPs. Then, the ECP requires that a lexical complementizer be present in the head position of those CPs. As we saw in detail above, if a lexical complementizer is not present, those CPs should be ruled out by the ECP. Hence, the mere fact that a lexical complementizer need not be present in Japanese pure complex NPs indicates that pure sentential modifiers cannot be CPs in Japanese. Thus, the IP hypothesis is drawn for the case of Japanese pure complex NPs. The structure of pure complex NPs would then be as follows:



This hypothesis predicts correctly that the examples in (73) are not ECP violations. Furthermore, it explains the fact that a lexical complementizer can never show up in Japanese pure complex NPs.

I conclude then that not only relative clauses but also pure sentential modifiers are IPs in Japanese. We thus arrive at the generalization that all prenominal sentential modifiers are IPs in Japanese.<sup>79</sup>

<sup>79</sup> I crucially rely on this result in the following chapter, where I discuss the question of how children retreat from the overgeneralization of *no* in relative clauses.

#### 3.4.4. Cleft Sentences

Before I conclude this chapter, I will briefly discuss some related facts. Examples such as (57), repeated below as (75), provided us with crucial evidence that Japanese relative clauses are IP.

- (75) \*[Taroo ga [[Hanako ga t<sub>i</sub> kaettasimatta] to] omotte iru]  
           Nom          Nom          went back      C      thinking  
           riyuu<sub>i</sub>  
           reason  
           (the reason that Taro thinks that Hanako went back home)

If relative clauses were CP, the ECP could be satisfied, and hence, the example should be grammatical. On the other hand, if relative clauses are IP, the example is correctly ruled out by the ECP.

Here, recall from Chapter II that Japanese cleft sentences, such as (76), contain CP.

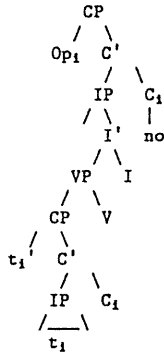
- (76) [cpOp<sub>i</sub>[c·[IP doroboo ga e<sub>i</sub> okane o nusunda] no]] wa  
           robber Nom money Acc stole      C      Top  
           [ppkono ginkoo kara]<sub>i</sub> da  
           this bank from      is (COP)  
           (It is from this bank that the robber stole the money.)

As noted in Chapter II, Hoji (1990) suggests that the *no* in cleft sentences is C, and further, that PP cleft involves movement of an empty operator to the CP SPEC position. I provided supporting evidence for this hypothesis there, and have assumed it throughout this dissertation.

Then, given that cleft sentences contain CP, we should predict that long distance movement of pure adjuncts is possible in cleft sentences, unlike the case of relative clauses. This is so, since the following is a possible

structure resulting from long distance movement of a pure adjunct operator in cleft sentences:

(77)



In (77), the initial trace is antecedent governed by the embedded C, which is coindexed with  $t'_1$  by Spec-Head agreement. And unlike the case of long relativization of pure adjuncts, the intermediate trace is antecedent governed by the higher C, since it is an X-zero category. Thus, both traces in (77) satisfy the ECP.

The relevant cleft examples clearly contrast with the relative clause examples such as (75), as shown in (78).

(78) a. ??[<sub>CP</sub>Op<sub>1</sub> [<sub>C</sub>·[<sub>IP</sub> Taroo ga [<sub>CP</sub> Hanako ga e<sub>1</sub>]  
Nom Nom

kaette simatta to] omotte iru] no]] wa  
went back C thinking C Top

[<sub>PP</sub>sono riyuu de]<sub>1</sub> da  
that reason for is (COP)

(It is for that reason<sub>1</sub> that Taro thinks that Hanako went back e<sub>1</sub>.)

b. ??[<sub>CP</sub>Op<sub>1</sub> [<sub>C</sub>·[<sub>IP</sub> Taroo ga [<sub>CP</sub>Hanako ga e<sub>1</sub>]  
Nom Nom

sono mondai o toita to omotte iru] no]] wa  
that problem Acc solve C thinking C Top

[<sub>PP</sub>sono hooohoo de]<sub>1</sub> da  
that method with is (COP)

(It is with that method<sub>1</sub> that Taro thinks that Hanako solved the problem e<sub>1</sub>.)

The examples in (78) are marginal, but are better than (75). However, note that long distance PP clefts in general seem to result in marginality, regardless of whether the PP is a pure adjunct or a quasi adjunct. Thus, (79) has the status of the examples in (78).

(79) ?? [<sub>CP</sub>Op<sub>1</sub>[<sub>C</sub>·[<sub>IP</sub>Taroo ga [Hanako ga e<sub>1</sub>]  
Nom Nom

sono hon o katta to] omotte iru] no]] wa  
that book Acc bought C thinking C Top

[<sub>PP</sub>sono mise de]<sub>1</sub> da  
that shop at is (COP)

(It is at that shop that Taro thinks that Hanako bought that book.)

To the extent that (78) contrasts with (75), and does not have the ungrammatical status of an ECP violation, it is consistent with the account of (75) presented above.

### 3.5. Conclusion

In this chapter, Japanese relative clauses were analyzed in detail, along the lines of Perlmutter (1972) and Saito (1985). The main proposal in this chapter was to attribute the differences between English and Japanese relative clauses to (i) the existence of *pro* and (ii) the structure of relative clauses. Following Perlmutter (1972), I argued that whether the gap can be base generated as *pro* determines whether the relative clause can be base generated. This conclusion is based on the assumption that the “aboutness condition” is always met in relative clauses, because the relative head is always of the category NP.

The first conclusion drawn here is that there are two types of adjunct PPs. One is pure adjunct PP, which includes the time- and place-adjunct PP. It was proposed that pure adjunct PPs cannot be realized as *pro*, but quasi adjunct PPs can. Second, focussing on the case where the relative clauses are generated by movement, I discussed one further difference between English and Japanese. In Japanese, even simple long distance movement is not allowed in the relativization of pure adjunct PPs. This difference was attributed to the structural difference between English and Japanese. English relative clauses are CP, but Japanese relative clauses are IP. The two major factors, “*pro*”-parameterization and configurational parameterization, were presented to interlace with each other, to create thus complex properties of Japanese relative clauses.

## Chapter IV

# Overgeneration of ‘No’: Its Acquisition and Learnability

### 4.1. The Category of the Overgenerated ‘No’

In this chapter, I discuss acquisition data concerning the Japanese particle *no* in some detail. I deal with the learnability problems posed by those data, and the implications of the data for the analysis of relative clauses in Japanese.

As was discussed in Chapter II, there are three kinds of *no* in Japanese. One is the genitive Case marker. The others are of the categories N and C. The genitive Case marker *no* appears after NP and PP pronominal modifiers, but not after relative clauses, as shown in (1).

- (1) a. [NP[NP Yamada] no hon]  
           Yamada Gen book  
           (Yamada's book)
- b. [NP[PP koko kara] no miti]  
           here from Gen road  
           (the road from here)
- c. [NP[Rel c1 Yamada ga kaita] (\*no) hon]  
           Nom write (\*Gen) book  
           (the book that Yamada wrote)

In various syntactic analyses of these structures, a *no*-insertion operation is proposed to insert the genitive Case marker *no* after, and only after NP and PP prenominal modifiers. (See, for example, Saito (1982) and Fukui (1986).)

As shown in (2), the *no* as N appears as the so-called pronoun *no* and the nominalizer *no*.

- (2) a. Pronoun *no*: [NPakai no]  
           red one  
           (the red one)
- b. Nominalizer *no*: [NP[IPPRO tabesugiru] no] wa  
           eat too much Top  
           yokunai  
           is-not-good  
           (It is not good to eat too much.)

And as shown in (3), the *no* as C appears in cleft sentences.

- (3) [CP[IPDoroboo ga kane o nusunda] no] wa koko kara da  
           robber Nom money Acc stole Top here from is  
           (It is from here that the robber stole the money.)

Harada (1980) and Clancy (1985), among others, observed that some Japanese children, at around 2 to 3 years old, insert *no* after any prenominal modifier, as illustrated in (4a) and (4b). My own experiments, which are described in detail in Chapter V, confirmed this observation. For example, 11 out of the 42 subjects showed the overgeneration of *no* in relative clauses, as shown in (4c) and (4d). The same pattern was also observed in the longitudinal data of a child I have been following for two years.<sup>80</sup>

- (4) a. \*[Rel c1 aoi ] no buubuu  
           blue (+present) car  
           (the blue car) (Clancy, 1985: 459)
- b. \*[Rel c1 usatyan ga tabeta] no ninzin  
           rabbit Nom ate carrot  
           (the carrot that the rabbit ate) (Harada, 1980)
- c. \*[Rel c1 tigau ] no outi  
           different house  
           (the different house) (Emi, 3;0)
- d. \*[Rel c1 gohan tabeteru] no buta san  
           food eating piggy  
           (the pig that is eating the food) (Nagisa, 3;2)

A plausible hypothesis for the data in (4), suggested by Harada (1980) and Clancy (1985), is that the overgenerated *no* is the genitive Case marker. According to this hypothesis, children, at one point, overgener-

<sup>80</sup> Here, I will tentatively consider the AP modifiers in (4a) and (4b) as relative clauses, since the adjectives inflect for tense. The structure of (4a), then, is more precisely as follows:

(1) [NP[Rel c1 e1 aoi] no [NPbuubuu]]

alize the *no*-insertion rule and insert the genitive Case marker after any prenominal modifier. Then, they later retreat from this overgeneralization, and start inserting *no* only after NP and PP modifiers.

In this chapter, I will examine the overgeneration of *no* in (4) in detail. First, I will discuss the hypothesis that *no* in (4) is the genitive Case marker. I will briefly discuss the implications of this hypothesis, and then, present direct evidence against the hypothesis itself. In the course of the discussion, I will show that the process of the acquisition of Japanese genitive Case marking is quite consistent with proposed UG principles such as Vergnaud's Case Filter and Stowell's Case Resistance Principle. Then, I will argue, on the basis of other acquisition data, that the over-generated *no* in examples like (4) is not the genitive Case marker, but rather the *no* of the category C. This leads to a different picture of the learnability problem of how children retreat from the overgeneration in (4). I propose that children initially assume that relative clauses are CPs, but in the adult grammar of Japanese, they are IPs. Finally, I will speculate on the input data that enable the children to attain the target adult grammar.

#### 4.1.1. Apparent Problems for the Case Resistance Principle

Let us first consider the hypothesis that *no* in (4) is the genitive Case marker. If we assume this hypothesis, the question to be addressed is why relative clauses are wrongly Case marked at a certain acquisition stage, as in (4).

It has been observed that in English, CPs and PPs generally do not occur in Case marked positions. This fact suggests that there is some general principle or rule that governs the Case marking system, predicting that CPs and PPs do not receive Case. For instance, in English, CPs and PPs cannot occur as the object of a Case assigning preposition, as shown in (5).

- (5) a. \*We talked about [<sub>CP</sub>that John would be coming home]  
b. \*We talked about [<sub>PP</sub>in Tokyo]

Nor, as shown in (6), can CPs and PPs occur in the subject position of a finite clause to which nominative Case is assigned.<sup>81</sup>

- (6) a. \*Although [<sub>CP</sub>that we leave] is a good idea, we refuse to do so.  
b. \*Although [<sub>PP</sub>about John] is my worry, we will leave.

And as in (7), CP complements and PP complements to nouns and adjectives do not trigger *of*-insertion.

- (7) a. John's [<sub>N</sub>claim] (\*of) [<sub>CP</sub>that we should leave]  
b. John was [<sub>A</sub>happy] (\*of) [<sub>CP</sub>that you had left]  
c. John's [<sub>N</sub>claim] (\*of) [<sub>PP</sub> about his marriage]  
d. John was [<sub>A</sub>happy] (\*of) [<sub>PP</sub> about his marriage]

<sup>81</sup> As noted, for example, in Jackendoff (1977), there are some PPs that can appear in the subject position of a finite clause.

(1) Although under the table is a nice place to hide,...

I do not have an account for these exceptions at this point.



difference between Japanese and Chinese prenominal modification; in Chinese, prenominal modifiers of any category, including CP, are followed by *de*. Their analysis first assumes a universal rule (10i) governing modifying marker (MOD) insertion. This rule applies to both Japanese and Chinese. And they account for the linguistic variation by a language specific rule (10ii) that applies in Japanese (but not in Chinese). This rule deletes MOD (i.e., *no*) under certain conditions.

- (10) (i) MOD-insertion Rule: [NP X NP] --> [NP X MOD NP]  
 (ii) *no*-deletion: [NP X *no* NP] --> [NP X NP]  
 where: (a) NP ≠ e, and (b) X = [...tense].

This analysis accounts for the distribution of *no*, as illustrated in (1).

Given this analysis of *no*, the overgeneralization shown in (9) is correctly predicted. At the initial state, children have a grammar including the MOD-Insertion Rule. Then, the Japanese speaking children must acquire the *no*-deletion rule on the basis of positive evidence. Hence, at the Japanese children's intermediate acquisition stage, *no* is inserted following the MOD-Insertion Rule, without *no*-deletion. It is predicted then that children produce sentences that are ungrammatical, as in (9). Thus, the data in (4) may be interpreted as supporting empirical evidence for the analysis proposed by Kitagawa and Ross (1982). Note here that their analysis contains a universal rule that assigns Case to all prenominal modifiers, including PPs and CPs. Hence, if their analysis is correct, it clearly poses a problem for the Case Resistance Principle, which states that such Case assignment is disallowed in UG.

#### 4.1.2. Undergeneration in PP Modifiers

However, on the basis of further examination of the acquisition data, I will argue that despite the appearance to the contrary, the acquisition data of Japanese genitive Case marking provides evidence for, and not against, the Case Resistance Principle, or a principle that has similar effects. Let us first consider the fact that PP modifiers, as well as NP modifiers, are assigned genitive Case in Japanese.

In my experimental study with 42 Japanese speaking children using the elicited production method, I found that 11 subjects show the overgeneralization pattern in (9). And just at the time when children overgeneralized *no* to CP modifiers, all of the same 11 children undergenerated *no* after PP modifiers as in (11).

- (11) a. Tokyo made \*(no) basu  
           to \*(gen) bus  
           (a bus from Tokyo) (Yusuke, 3;2)  
       b. Santa san kara \*(no) purezento  
           Santa from \*(gen) present  
           (a present from Santa) (Mari, 2;9/ Emi, 3;0)

Importantly, even some of those children in the same age group who did not show the overgeneralization in (9) undergenerated *no* after PP modifiers. That is, those children who produce examples like (9), as well as some of those who do not, undergeneralize the genitive Case marker-insertion operation, and fail to insert *no* after prenominal modifiers of the category PP. This pattern was also observed in the longitudinal data of children I have been following. Note that at an earlier stage, all children

start inserting the genitive Case marker properly after NP, as shown in (12).<sup>83</sup>

- (12) a. Emi no zyuusu  
          's juice  
          (Emi's juice) (Emi, 2;9)
- b. megane no ozityan  
   glasses gen man  
   (a man with eye glasses) (Miki, 2;4)
- c. heya no okatazuke  
   room Gen cleaning  
   (the cleaning of the room) (Mari, 2;4)

The undergeneration of *no* for the PP modifiers (but not for the NP modifiers) can be interpreted to reflect the tension between the language particular operation of genitive Case marker-insertion and some principle of U(niversal) G(rammar) specifying that PPs do not receive Case. Children initially observe some UG principles such as the Case Filter, which specifies that a phonetically realized NP should be Case-marked. The Case Filter is already observed by the children in the late 1 year to early 2 years of age. However, at this stage and even later on, some UG principle such as the Case Resistance Principle, which prevents PPs from being Case-marked, is at work. Only later, at three to four years old, do the Japanese-speaking children learn that the language-particular genitive Case marking operation applies to PP modifiers, on the basis of the posi-

<sup>83</sup> Clancy (1985), among others, reports that Japanese children start with the stage of no Case marking, followed by the stage where only genitive Case is marked. Komura (1981), among others, observe that children one year to early two years old, undergenerate *no* on NPs.

tive evidence available. From the learnability point of view, it is reasonable that children start from undergeneration, strictly obeying UG, attaching the Case marker only to NPs, and only later do they learn the language-specific Case marking system, such as Case marking of PP in Japanese.

Another possibility, which seems more plausible, is based on the analysis of Japanese postpositions suggested in Chapter II. There, I hypothesized that Japanese postpositions<sup>84</sup> are not abstract Case assigners, but they cliticize to the preceding N and function as Case markers themselves. Given this hypothesis, Japanese PPs, which are not headed by a Case assigner, can receive Case, consistent with the Case Resistance Principle. The undergeneration of *no* in (11) can, then, be interpreted as follows. Children initially hypothesize that Japanese Ps are Case assigners. This hypothesis, together with the Case Resistance Principle, prevents them from inserting *no* after PP modifiers at this stage. But they later find out that P is not a Case assigner in Japanese, and at this point, they start inserting *no* after PP modifiers. Note that if the Case Resistance Principle is part of UG, the very fact that *no* is inserted after PP modifiers can constitute positive evidence that P is not a Case assigner in Japanese. This second possibility seems more plausible at this point, since unlike the first, it does not make the adult grammar of Japanese violate the Case Resistance Principle. Note that according to the first account, the language particular rule of *no*-insertion eventually "overrides" the Case Resistance

<sup>84</sup> Except for *ni* which does not trigger the *no*-insertion. See Chapter II.



Principle, which is assumed to be a part of UG. The second, on the other hand, does not have this problem. But under either hypothesis, the acquisition data concerning PP provides us with a piece of supporting evidence for the validity of the Universal Principles, in particular, the Case Resistance Principle, or another principle with similar effects. If nothing prevents Case assignment to PPs, then it is not clear why children do not start inserting *no* after PPs at the time they start applying *no*-insertion to NP prenominal modifiers.

#### 4.1.3. Overgeneralization of 'No' in Relative Clauses

Here, however, we cannot hastily conclude, just on the basis of the undergeneration of genitive for PPs, that the Case Resistance Principle provides a full explanation for the acquisition pattern observed so far. The reason why relative clauses incorrectly get Case in Japanese as in (9) should be explained.<sup>85</sup> Next, I will show that the overgenerated *no* is not a genitive Case marker, but is something else. Hence, I conclude that relative clauses as well as PP modifiers do not trigger the genitive Case marker insertion operation in the early acquisition stage.

As I mentioned at the beginning of this chapter, there are three kinds of *no*. One is the genitive Case marker, as in (1). The others are of the

<sup>85</sup> Note here that the acquisition data in (9) constitute a real problem for the Case Resistance Principle only if INFL is a Case assigner in Japanese. The status of Japanese INFL is quite controversial in this respect. Saito (1982, 1985) and Fukui (1986), for example, argue that Japanese INFL is not a Case assigner, but Takezawa (1987) draws the contrary conclusion. The analysis of (9) proposed below does not rely on the exact nature of Japanese INFL, and hence, is not affected by the outcome of this controversy.

categories N and C as in (2) and (3). The *no* associated with a nominal feature functions as a pronoun (Pro form of N'), and also as a nominalizer. *No* as a complementizer appears in cleft sentences. An example of *no* as N is shown in (13a), and an example of *no* as C is shown in (13b).

(13)

Category N:

- a. [<sub>NP</sub>hasitte iru no]  
           running       one

(the one that is running)

Category C:

- b. [<sub>CP</sub>[<sub>IP</sub>Doroboo ga kane o nusunda] no] wa  
           robber Nom money Acc stole       Top

koko kara da  
           here from is

(It is from here that the robber stole the money.)

The crucial question to be asked here is which *no*, the genitive Case marker, or N, or C, is overgenerated in the child grammar. Here, a difficulty arises from the fact that in the Tokyo Dialect of Japanese, it is empirically impossible to detect which one is overgenerated, as these three different *no*'s are realized by the same phonetic form. However, suppose there is some dialect or language in which these different types of *no* assume different phonetic forms. Then, by examining acquisition data from this dialect or language, we would acquire a piece of empirical evidence to detect which form is overgenerated.

The crucial data were in fact found in a dialect in Middle North Japan, called Toyama Dialect (See Chapter II for detailed discussion of this dialect). In this Dialect, as noted in Chapter II, the genitive Case marker is

realized as *no* as in the Tokyo Dialect; but the other two *no*'s (the N and the C) are realized as *ga*. Examples from this dialect are shown in (14).

(14) Genitive Case:

- a. [NP[NP<sub>Yamada</sub>] no hon]  
Yamada gen book

(Yamada's book)

Category N:

- b. [NP<sub>akai</sub> ga]  
red one

(the red one)

- c. [NP<sub>hasitte</sub> iru ga]  
running one

(the one that is running)

Category C:

- d. [CP[IP<sub>Doroboo</sub> ga kane o nusunda] ga] wa  
robber Nom money Acc stole Top

koko kara da  
here from is

(It is from here that the robber stole the money.)

My experimental study at a kindergarten in a region where the Toyama Dialect is spoken revealed that, at around the same age, the Toyama Dialect speaking children show the same overgeneralization as the one in (9), which was observed with the children speaking the Tokyo Dialect. In the experiment with the subjects speaking Toyama Dialect, 20 children were tested, and, two children, 2;11 and 3;2, showed the overgeneration with relative clauses. The Toyama Dialect speaking children overgenerated the

complementizer (or nominal) *ga*, but not the genitive Case marker *no*, as the examples in (15) show.

- (15) a. akai (\*ga) boosi  
red cap

(a red cap)

(Ken, 2;11)

- b. anpanman tuitoru (\*ga) koppu  
(a character) attaching cup

(a cup which is pictured with "anpanman") (Ken, 2;11)

If overgeneralization of genitive Case marker insertion is taking place at this stage, then, *no*, but not *ga*, should be inserted after the relative clauses in this dialect. These acquisition data, then, strongly suggest that the overgenerated *no* in the Tokyo Dialect, illustrated in (9), is not the genitive Case marker, but is *no* of the category N or C.

Recall that it was predicted by Kitagawa and Ross's analysis that the genitive Case marker insertion operation is at some acquisition stage overgeneralized to relative clauses. This prediction was not borne out. The dialectical study showed that it was not the genitive Case marker that is overgenerated in (9). Thus, although the data in (9) appeared to provide support for Kitagawa and Ross's analysis, they do not.

The acquisition data considered so far show that neither relative clauses nor PP modifiers trigger the genitive Case marker insertion, but only NP modifiers do at the initial stage. This fact, indicates, in turn, that children have an initial and default grammar in their mind that makes a clear-cut distinction between the categories that need Case and those that do not. Further, we observed that children have difficulty attaching *no* to

PP modifiers. This fact is in accord with the data Stowell (1981) was trying to capture by the formulation of the Case Resistance Principle. Thus, the acquisition study presented here provides a piece of supporting evidence for the validity of the UG principles, such as the Case Filter and the Case Resistance Principle, and Case theory in general.

#### 4.1.4. Acquisition of CP/IP Modifiers

This analysis, however, leaves a problem. That is, it has still to be explained what the overgenerated *no* in (9) is. Is it N or C? Now the focus of the discussion moves on to the analysis of the overgeneralization phenomenon in relative clauses in Japanese. Specifically, I will address the following questions: why and how the Japanese children overgenerate *no* in relative clauses, and why and how they retreat from it.

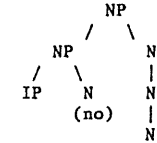
Let us first take a look once again at the crucial acquisition paradigm in question. Some Japanese speaking children overgenerate *no* in the Tokyo Dialect, and *ga* in the Toyama Dialect. The relevant patterns are summarized in (16).

(16) Summary of Children's Production of Prenominal Modifiers  
(RC= Relative Clause)

Tokyo Dialect	Toyama Dialect
NP no N/N'	NP no N
PP N	PP N
*RC no NP	*RC ga NP

Suppose that the overgenerated *no* is of the category N. Then, the structure that children conjecture at the stage in question will be as in (17).

(17)



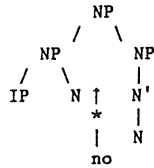
Thus, the stage of overgeneration of *no* in (9) can be interpreted as the stage when the Japanese speaking children lexically realize the head N in a modifier NP. However, this hypothesis faces a serious problem.

My experimental study found that the children who show the overgeneration in (9) also properly apply the *no*-insertion rule to NP modifiers, as in (18).

- (18) a. mama no namae  
Mother name  
(Mother's name) (Takuya, 2;2)
- b. oyama no ohana  
mountain flower  
(a flower of the mountain) (Kotaro, 2;4)

Thus, at the stage of overgeneration in (9), the children have already acquired the rule of *no*-insertion, applying it properly in the position after prenominal NP modifiers. Therefore, if they assume the structure in (17), they should insert *no* after the NP modifier in this structure, as shown in (19).

(19)



However, this prediction is not borne out. The Japanese speaking children, whether they speak Tokyo Dialect or Toyama Dialect, do not insert *no* in the context illustrated in (19). They do not produce such ill-formed strings as those in (20).

(20) Tokyo Dialect

- a. aoi (\*no no) buubuu  
blue (+present) N Gen car  
(a blue car)
- b. usatyan ga tabe -ta (\*no no) ninzin  
rabbit Nom eat past N Gen carrot  
(the rabbit that ate carrots)

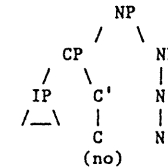
Toyama Dialect

- c. akai (\*ga no) boosi  
red N Gen cap  
(a red cap)
- d. anpanman tuitoru (\*ga no) koppu  
a character attaching N Gen cup  
(a cup which is pictured with Anpanman)

Hence, I conclude that the overgenerated *no* in (9) is not an N.

We are thus led to the conclusion that the overgenerated *no* in (9) is of the category C. The structure of relative clauses conjectured by the children at the stage of the overgeneration in (9) is then as in (21).

(21)



Note that this structure is identical to the one assumed for English relative clauses, aside from the linear order of constituents.

While no lexical C can appear in relative clauses in the adult grammar, some children do lexically realize the head C as *no*. If they hypothesize that relative clauses are CP, then, overgeneration of *no* is possible on the basis of their knowledge that the position C exists as the head position of a CP. The evidence which can be assumed to trigger this overgeneration of *no* is that C is realized as *no* in cleft sentences.<sup>46</sup>

If CP is the unmarked category for relative clauses and this is part of the reason for the overgeneration of *no*, then an explanation must be provided for the fact that the *no* cannot occur as C in relative clauses in the adult grammar of Japanese. Two reasons for the invisibility of C in the adult grammar can be conjectured. One possibility is that the node C exists, but

<sup>46</sup> Further, *no* is a type of complementizer which appears in non-complement CPs. The other complementizer *to* appears typically when the CP subcategorizes the verb. This fact will make children overgenerate *no*, but not *to* in the position in question.

it simply cannot be lexically realized. If this is the case, then Japanese relative clauses have a null complementizer. The other possibility is that there is no structural position for C. In this case, relative clauses are not CPs in Japanese.

Recall, at this point, the main conclusion in Chapter III. I argued there that prenominal sentential modifiers, and in particular, relative clauses are IP, and not CP, in Japanese (the IP hypothesis). This conclusion fits perfectly with the second possibility mentioned above. Japanese speaking children, at one point, hypothesize that relative clauses are CP and lexically realize the head C as *no*. But they eventually attain the target grammar and realize that relative clauses are IP. There is no structural position for C in relative clauses, and hence, they retreat from the overgeneration of *no* at this point. In the following section, I will briefly summarize the arguments for the IP hypothesis presented in Chapter III. Then, in Section 4.3, I will present a hypothesis on exactly how Japanese speaking children retreat from the overgeneration of *no*.

## 4.2. Syntactic Evidence for the IP Hypothesis

The crucial empirical difference between Japanese and English relative clauses was found in the following paradigm:

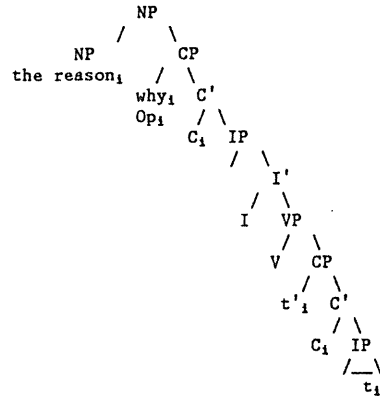
- (22) a. the reason [(why)<sub>1</sub>] [Mary thinks [that John left e<sub>1</sub>]]  
 b. \*<sub>1</sub>[Mary ga [John ga e<sub>1</sub> kaetta to] omotte iru] riyuu<sub>1</sub>  
       Nom     Nom     left C   think     reason  
       (the reason<sub>1</sub> Mary thinks that [John left t<sub>1</sub>])

- (23) a. the book [(which)<sub>1</sub>] [Mary thinks [that John bought e<sub>1</sub>]]  
 b. [Mary ga [John ga e<sub>1</sub> katta to] omotte iru] hon<sub>1</sub>  
       Nom     Nom     bought C   think     book  
       (the book<sub>1</sub> Mary thinks that [John bought e<sub>1</sub>])  
 (24) [John ga t<sub>1</sub> kaetta] riyuu<sub>1</sub>  
       Nom     left     reason  
       (the reason<sub>1</sub> [John left e<sub>1</sub>])

In Japanese relative clauses, relativization of an argument position is unbounded, as shown in (23b), but relativization of a pure adjunct is clause bound, as the contrast between (22b) and (24) shows. On the other hand, in English, relativization of either kind is unbounded, as shown in (22a) and (23a). I pointed out that if we hypothesize that Japanese relative clauses are IPs, then the difference between English and Japanese relative clauses shown in (22) directly follows from the Empty Category Principle (ECP), as formulated in Lasnik and Saito (1990).<sup>87</sup> Let us first consider (22a). This example is grammatical since all the traces satisfy the ECP in the configuration in (25).

<sup>87</sup> We crucially relied on their assumption that only X-zero categories can be proper governors. This particular assumption is proposed also in Stowell (1981) and Rizzi (1986).

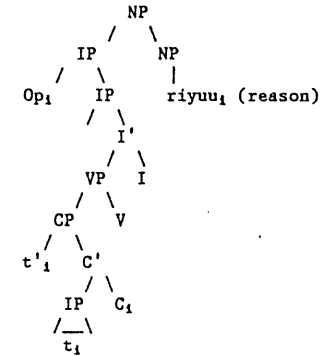
(25)



The lower C receives the index *i* through SPEC-head agreement with the intermediate trace  $t'_i$ , and antecedent governs the initial trace  $t_i$ . The intermediate trace is itself antecedent governed by the higher C, which receives the index *i* through SPEC-head agreement with *why* (or the empty operator).

Let us next consider the ill-formed Japanese example (22b). Suppose the structure of Japanese relative clauses is identical to that of English relative clauses, aside from the linear order of constituents. Then, (22b) should be allowed for the same reason that (22a) is. Hence, the ill-formedness of (22b) indicates that there is a structural difference between relative clauses in Japanese and English. Suppose then that Japanese relative clauses are not CPs. Rather, in Japanese, relative clauses are IPs, and the relative operator is adjoined to IP. Then, the structure of (22b) will be as follows:

(26)



In (26), the initial trace  $t_i$  is antecedent governed by C, which receives the Index *i* through SPEC-head agreement with the intermediate trace. However, the intermediate trace  $t'_i$  is not properly governed, and hence, is in violation of the ECP. The potential antecedent governor for this trace is the empty operator adjoined to IP. But it is not an X-zero category, and hence, does not qualify as an antecedent governor. Hence, given the condition on antecedent government in (27), (22b) is correctly ruled out by the ECP.

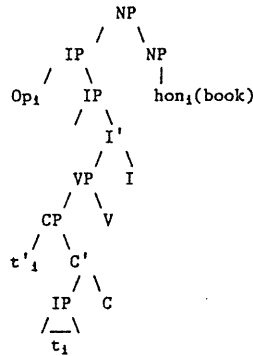
(27) Only X-zero categories can be proper (antecedent) governors.

The contrast in (22), thus, constitutes evidence for the IP hypothesis for Japanese relative clauses.

The IP Hypothesis is quite consistent with the grammaticality of (23), which is repeated below as (28).

(28) [Mary ga [John ga e<sub>i</sub> katta to] omotte iru] hon<sub>i</sub>  
       Nom       Nom   bought C   think       book  
       (the book Mary thinks that John bought)

(29)



In (29), the initial trace  $t_1$  is lexically governed by the verb *katta*. Note here that the intermediate trace  $t'_1$  is not properly governed, as in the case of (26). This is because the potential antecedent governor for this trace is the empty operator adjoined to IP. This is not an X-zero category, and hence, does not qualify as an antecedent governor. However, this intermediate trace need not be present. According to Lasnik and Saito (1984), only in cases where lexical government does not obtain for the initial trace, does the intermediate trace need to be present to give its index to C, and make the C antecedent govern the initial trace.<sup>88</sup> As noted above, in (29), the initial trace  $t_1$  is lexically governed. Thus, the fact that the intermediate trace is not antecedent governed is of no import of this case. Thus, (28) is correctly ruled in by the ECP.<sup>89</sup>

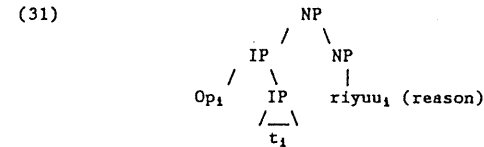
<sup>88</sup> See also Stowell (1981) for a similar proposal.

<sup>89</sup> As discussed in detail in Chapter III, examples such as (28), as opposed to those like (22b), can be base-generated, and hence, need not involve

Let us finally consider (24), repeated below as (30).

- (30) [John ga e<sub>1</sub> kaetta] riyuu<sub>1</sub>  
 Nom left reason  
 (the reason John left)

Given the IP hypothesis, the ECP, with antecedent government defined as in Lasnik and Saito (1990), incorrectly rules out this example. The structure of (30) is shown below:



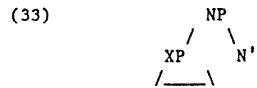
(31) is ruled out by the ECP for the same reason that (22b) is. The potential antecedent governor for the trace  $t_1$  is the empty operator adjoined to IP. But, it is not an X-zero category, and hence, does not qualify as an antecedent governor. Thus, given the condition on antecedent government in (27), the trace  $t_1$  is not properly (antecedent) governed.

Thus, if the IP hypothesis is correct, the example (30) cannot have the operator-trace relation as represented in (31). Given this conclusion, I proposed in chapter 3 that (30) does not have the structure of relative clauses as in (31), but has the structure of pure complex NPs. Clear cases of Japanese pure complex NPs are given below:

movement. The discussion here simply shows that the ECP allows (28) to be generated by movement.

- (32) a. sakana ga yakeru nioi  
 fish Nom burn smell  
 (Lit. the smell that the fish burns)
- b. doa ga simaru oto  
 door Nom shut sound  
 (Lit. the sound that the door shut)

The structure of these examples is as follows:



In (33), the sentential modifier, which we tentatively call XP, and N' are in a modifying relation. The hypothesis we arrived at was that (30) also has this structure. This hypothesis seems quite plausible, since there are English examples such as the following:

- (34) the reason for John's leaving

(34) shows that Ns such as *reason* can take a "pure sentential modifier." And exactly as in the Japanese (22b), the head *reason* cannot be understood with the most deeply embedded clause in examples such as (35).

- (35) the reason for Mary's saying that John left

Given the conclusion that (30) is a pure complex NP, there arises the possibility that all "relative clauses" in Japanese are "pure sentential modifiers". If this hypothesis is correct, even examples like (36) would have the structure in (33).

- (36) [Mary ga [John ga katta] to omotteiru hon  
 Nom Nom bought C is-thinking book  
 (the book that Mary thinks that John bought)

But this hypothesis seems implausible, since examples such as (37), in contrast to (34), are ill-formed.

- (37) \* the book of/for Mary's saying that John's buying (it)

I therefore concluded that (36), unlike (30), contains a relative clause. And if Japanese has relative clauses, the question why (22b) is ill-formed as a relative clause remains a real problem. My solution to this problem, as discussed in detail above, is that Japanese relative clauses are IPs.

#### 4.3. The Learnability of the IP Hypothesis

In the previous section, I presented some syntactic evidence that Japanese relative clauses are not CP modifiers, but, in fact, IP modifiers. In this section, I deal with a learnability problem concerning the analysis of Japanese relative clauses.

The fundamental question to be addressed here is why and how those children who exhibit the overgeneration of *no* attain the knowledge that relative clauses are IPs in Japanese. According to our hypothesis, presented in Section 4.1, those children who show the overgeneration of *no* are those who initially hypothesize that relative clauses are CPs. Those children know that *no* can be associated with the category C. The trigger for this is accessible on independent grounds from positive evidence. C is realized as *no*, for instance, in Japanese cleft sentences, as illustrated in (38).



- (38) [<sub>CP</sub>[<sub>IP</sub>John ga okasi o tabeta] no] wa kooen de da  
 Nom candy Acc ate C Top park at is (COP)

(It is at the park that John ate candy)

Thus, the children overgenerate *no* in relative clauses.<sup>90</sup> But they clearly need to know that the target grammar has only IP relative clauses. Here, a lexical complementizer does not appear in relative clauses in the adult grammar of Japanese, as shown in (39).

- (39) [John ga mita (\*no)] hito  
 Nom saw person

(the person John saw)

And it seems possible to conjecture that this fact serves as positive evidence for children to attain the target grammar. The Japanese speaking children receive, as input, relative clauses without a lexical complementizer, and from this evidence, infer that Japanese relative clauses are IPs.

But this hypothesis immediately faces a problem. As shown in (40), C is only optionally realized in English relative clauses.

- (40) the cookie (that) Mary ate

<sup>90</sup> Those children who overgenerated *no* did so almost uniformly. This may be related to the fact that a [+WH] COMP is obligatorily lexically realized as *ka* in Japanese as shown in (i).

- (i) John wa [<sub>CP</sub>[<sub>IP</sub>Mary ga nani o katta] \*(ka)] sitteiru  
 Top Nom what Acc bought C know

(John knows what Mary bought)

Suppose that for some principled reason, a COMP with a specific feature cannot be empty in Japanese. Then, if the head C of a CP relative clause has the feature [+R], as conjectured in Chapter III, this will force the children to lexically realize the head C.

Thus, the English speaking children must receive input such as *the cookie Mary ate*. But they apparently do not infer from such input that English relative clauses are IPs. Instead, they only find out that the realization of the complementizer *that* is optionally allowed. Hence, it is not at all clear how the Japanese speaking children could infer on the basis of examples like (39) that Japanese relative clauses are IPs.

Then, what evidence makes the Japanese speaking children attain their target grammar? The key to solve this learnability problem can be found when we consider the syntax of pure complex NPs in English and Japanese. (See Chapter III for detailed discussion.) Observe the example of the pure complex NP in (41).

- (41) the fact [<sub>CP</sub>\*(that) [<sub>IP</sub>John is smart]]

In English, pure complex NPs require the head C of the modifying CP to be realized obligatorily. In Japanese, on the other hand, as shown in (42), C does not show up, as in the case of relative clauses.

- (42) John ga kosikoi (\*no) koto  
 Nom clever fact

(That John is clever)

Recall here that Stowell (1981) discusses English examples such as (41), and proposes to explain the obligatoriness of *that* in terms of the ECP. He assumes that in a pure complex NP, the N, even if it is a derived nominal, does not actually assign a theta role to the CP, but is in apposition to the CP. Given this assumption, the obligatoriness of *that* in (41) is accounted for by the ECP. When *that* is not present, there is an empty category in

C. This empty category in C is not lexically governed by N, and thus, is not properly governed at all. Hence, the ECP rules out the possibility of an empty C, in pure complex NPs, and consequently, pure complex NPs in English require the head of the modifying CP to be realized lexically.

Suppose that the structure of pure complex NPs in Japanese is the same as that in English. Then, given that the ECP is a UG principle, we predict that C should be lexically realized in Japanese, exactly as in English. However, this prediction is not borne out. Therefore, as discussed in detail in Chapter III, if we assume the universality of the ECP, we have to conclude that the sentential modifier in Japanese pure complex NPs is not CP, but IP. Note here that Japanese speaking children can attain this knowledge on the basis of examples such as (42). Given the ECP, (42) constitutes a straightforward piece of positive evidence that sentential modifiers in Japanese pure complex NPs are IPs.

Now, suppose that the category of sentential modifiers in NP is parameterized; it is CP or IP depending on the language, and the unmarked setting is CP.<sup>91</sup> That is, in a given language, the categories of pure sentential

<sup>91</sup> Strictly speaking, the CP stage should not be called the initial stage. It is plausible that children initially hypothesize that relative clauses are IPs, or even VPs, and only later reach the CP stage when they fully "acquire" the functional categories. If so, then the Japanese speaking children, more precisely, "go back" to the IP hypothesis.

However, the CP stage should be the initial stage in the sense that children reach this stage only on the basis of their knowledge of functional categories and without positive evidence. It is difficult to imagine that they move from the IP (or VP) stage to the CP stage on the basis of positive evidence, given that relative clauses are IP in the adult grammar of Japanese. (As described in detail in Chapter V, one child, Emi, started the overgeneration of *no* in the circumstance where she received input only from adult speakers.) Thus, the CP hypothesis

modifiers and relative clauses are both CP or both IP. Then, the learnability problem will be given an elegant explanation. Assume that children know the ECP in UG. On the basis of examples such as (42), the Japanese speaking children find out that the category of NP-internal sentential modifiers is IP in Japanese. In particular, they find out that relative clauses are IPs. Once this target structure is fully attained, the overgenerated *no*, which was once realized in the C position, will not be considered as optional. Rather, it will be concluded that *no* should not appear. This is because there is no C position in which *no* can be even optionally realized in the attained grammar.<sup>92</sup>

should be the unmarked setting for prenominal sentential modifiers.

Those children who did not show the overgeneration of *no*, then, must have found out on the basis of positive evidence that Japanese relative clauses are IP, as soon as, or shortly after, they "acquire" functional categories and the unmarked setting became "available" to them.

<sup>92</sup> As Mona Anderson and Kenneth Wexler pointed out to me, this account predicts that those children who overgenerate *no* in relative clauses overgenerate *no* in pure complex NPs as well. This prediction is indeed borne out. Examples such as those in (i) were observed in the spontaneous productions during the experiment sessions with 6 children, and also in the longitudinal study.

- (i) a. syuu kuriimu tukutteru (\*no) noio (Emi, 2;11)  
cream puffs is-making smell

('the smell that pro (=mother) is making cream puffs')

- b. doa no simatta (\*no) oto (Emi, 3;11)  
door Gen shut sound

(the sound of the door shutting)

#### 4.4. Conclusion: Where Acquisition, Learnability and

##### Syntax Meet

##### 4.4.1. IP Hypothesis

The goal of fl was to explain why some of the Japanese speaking children, at about 2 years old, produce such NPs as (43).

- (43) Tokyo Dialect
- a. \*[aoi] no buubuu  
blue (+present) \*NO car  
(a blue car) (Clancy, 1985: 459)
- b. \*[usatyan ga tabeta] no ninzin  
rabbit Nom ate \*NO carrot  
(the rabbit that ate carrots) (Harada, 1980)

In Section 4.1, we saw that the Japanese speaking children do not overgenerate the genitive Case marker, but rather, they start from the minimal application of the *no*-insertion rule, and attach *no* only to prenominal NP modifiers. By attaching *no* to NPs, they obey the Case Filter as young as 1 year of age. The arguments against the hypothesis of genitive Case marking overgeneralization were based on the data indicating the under-generation of *no* in PP modifiers, and the data concerning the acquisition of Toyama Dialect.

- (44) Toyama Dialect
- a. \*[akai] ga boosi  
red cap  
(a red cap)
- b. \*[anpanman tuitaru] ga koppu  
a character attaching cup  
(a cup which is pictured with Anpanman)

The acquisition data in (43) seemed at first to provide evidence for the syntactic analysis of Kitagawa and Ross (1982). But, the data in (44), I argued, show that this is not the case. Instead, I analyzed the acquisition data as a piece of supporting evidence for the existence of some UG principles such as the Case Resistance Principle, and the Case Filter.

Given that *no* in (43) is not the genitive Case marker, a question arose as to the categorial status of this *no*. I discussed this question, examining two hypotheses: (i) It is N, and (ii) It is C. The absence of the *no*-insertion operation led us to conclude that the overgenerated *no* is not of the category N. Hereupon, I reached the conclusion that the category of the *no* in question is C.

Once it is concluded that the overgenerated *no* is C, a new question was raised regarding the reason why this *no* is mis-realized in the relative clause (which is usually assumed to be a CP modifier) in Japanese. Thus, the focus moved to the learnability question: why and how the Japanese children overgenerate *no* of the category C in relative clauses, and why and how they retreat from it. This learnability question was tied to the following syntactic question: How can we describe the target grammar that

is consistent with the acquisition data and the learnability criteria? More specifically, I pursued the question why C cannot be phonetically realized in the adult grammar.

In Section 2, I briefly summarized the discussion in Chapter III concerning the syntax of Japanese relative clauses. One of the main conclusions in Chapter III was that Japanese relative clauses and pure sentential modifiers are IPs, and not CPs (the IP hypothesis). In Section 4.4, I suggested that (at least some of the) children initially hypothesize that Japanese relative clauses are CPs and overgenerate *no* in the head position of CP, but they retreat from this overgeneration at the point they attain the target grammar and realize that Japanese relative clauses are IPs. I showed that this hypothesis not only accounts for the relevant data, but also that this hypothesis meets the learnability criteria. One of the main conclusions of this dissertation is that the Japanese relative clauses are IP modifiers. This conclusion was attained from studies in syntax, learnability and acquisition.

#### 4.4.2. Additional Evidence from Korean

The most crucial evidence in this Chapter was found in the Toyama Dialect. Children speaking this dialect show us the overgeneration of *ga* (C or N), but not of the genitive Case marker *no*, as shown in (44). Before we conclude this chapter, it should be questioned whether what happens in Japanese (in Toyama Dialect as well as in Tokyo Dialect) is merely an accidental phenomenon, or not. Does the overgeneration in (43)-(44) take place in other languages? Suppose it does. If a similar overgeneration is

observed in some language that has syntactic properties similar to those of Japanese, then the conclusions drawn here would be all the more strongly supported. This final subsection presents a piece of evidence from Korean supporting the plausibility of the analyses proposed in this chapter.<sup>93</sup>

Recall first the facts about *no* in the Japanese adult grammar. In Tokyo Dialect, there are three kinds of *no*. One is the genitive Case marker. The others are of the categories N and C. Recall also that in Toyama Dialect, the first is realized as *no* as in Tokyo Dialect, but the latter two are realized as *ga*. Korean shows the same paradigm as the one in Toyama Dialect. In Korean, the genitive Case marker is *uy*, but what corresponds to the latter two kinds of *no* (those of categories N and C) is *kes*.

First, observe the following examples of genitive Case marking in Korean. The marker is *uy*.

- (45) a. Chelsu uy cha  
Gen car

(Chelsu's car)

- b. Hartford roputeo uy ku kicha  
from Gen the train

(the train from Hartford)

- c. Chomsky ka sseoss deon (\*uy) ku chaek  
Nom wrote (\*Gen) the book

(the book that Chomsky wrote)

<sup>93</sup> I would like to thank Myungkwan Park for providing me with the Korean data discussed in this section.

Compare (45) with the Japanese paradigm in (46).

- (46) a. [NP<sub>NP</sub>Yamada] no hon]  
           Yamada Gen book  
           (Yamada's book)
- b. [NP<sub>PP</sub>koko kara] no miti]  
           here from Gen road  
           (the road from here)
- c. [NP<sub>IP</sub>Yamada ga kaita] (\*no) hon]  
           Yamada Nom write (\*Gen) book  
           (the book that Yamada wrote)

Thus, the genitive Case marker is attached to NPs and PPs, but not to relative clauses in both Korean and Japanese.

The Korean equivalent of the pronoun *no* is *kes*.

- (47) Chelsu uy kes  
           / Gen one  
           (Chelsu's one)

This *kes*, exactly as the Japanese *no*, is a "bound noun" in the sense that it cannot occur as an NP by itself, but requires a prenominal modifier. This parallelism is illustrated in (48)

- (48) a. \*Kes  
           one  
           (one)
- b. Nae ka mekko-iss nun kes  
           I Nom eat -ing one  
           (what I am eating)

*Kes* can function not only as N, but also as C. For instance, in cleft sentences, *kes* appears as C, as illustrated in (49)-(50).<sup>94</sup>

- (49) totuk i ton ul hunchin kes un eyki lopute ta  
           robber Nom money Acc stole Top here from COP  
           (It is from here that the robber stole the money.)
- (50) mek ko iss nun kes un Chelsu ta  
           eat ing Top COP  
           (It is Chelsu who is eating.)

This *kes* corresponds to *no* of the category C, which is exemplified in (51).

- (51) John ga kane o nusunda no wa koko kara da  
           Nom money Acc stole Top here from COP  
           (It is from here that John stole the money.)

Finally, as in Japanese, a lexical complementizer cannot appear in a prenominal sentential modifier in Korean. The Korean examples in (52) correspond to the Japanese ones in (53).

- (52) a. Chelsu ka ilk un (\*kes/\*ko) chaek  
           Nom read book  
           (the book that Chelsu read)
- b. Chelsu ka tolaka n (\*kes/\*ko) sasil  
           Nom returned fact  
           (the fact that Chelsu returned)

<sup>94</sup> The other complementizer *ko* appears typically when the CP subcategorizes a verb, exactly like the Japanese *to*.

- (53)    a.    Taroo ga yonda (\*no/\*to) hon  
                Nom read                         book
- (the book that Taro read)
- b.    Taroo ga kaetta (\*no/\*to) zizitu  
                Nom went back                   fact
- (the fact that Taro went back)

The parallel paradigms between Japanese and Korean suggest that the analysis given for Japanese in this thesis may hold for Korean as well. If so, then it is predicted that Korean speaking children should show the same type of overgeneralization as those in (43)-(44). That is, it is predicted that the Korean speaking children show the overgeneration of *kes*, but not *uy* at around 2 to 3 years old.

And, there is in fact an acquisition study reporting that this type of overgeneration is observed in Korean. There is a stage when the Korean speaking children overgenerate *kes* between a sentential modifier and the head noun. The crucial data were collected by Kim (1987):<sup>95</sup>

- (54) Accessi otapai      tha -nun (\*kes) soli -ya  
uncle motorcycle ride Pres                  sound be+Dec
- ((This) is the sound that a man is riding a motorcycle.)  
(Kim, 1987: 90)

(54) is an example of the overgeneration of *kes* in a pure complex NP. And as noted above in Footnote 92, it is predicted by the analysis proposed here that overgeneration in pure complex NPs should occur exactly as that

<sup>95</sup> In the phonetic description she used, the overgenerated form is written as *kə*, but it can be rewritten as *kes* in the system used here.

in relative clauses. Thus, the Korean data in (54) provides further support for the analysis proposed in this Chapter.

## Chapter V

### An Experimental Study of the Overgeneration of 'No'

#### 5.1. Introduction

##### 5.1.1. Children's Production of NPs Containing Prenominal Modifiers

This chapter presents the results of several experimental and observational studies of children's knowledge of the structure of NPs containing prenominal modifiers. The experiments and observations were conducted in both cross-sectional and longitudinal ways. The experiments were designed to test children's knowledge of the paradigms of NPs shown below:<sup>96</sup>

<sup>96</sup> I will continue to assume that the prenominal modifiers in (1b) are relative clause with subject gap. See Chapter IV for the more precise structure of (1b) assumed here.

- (1) a. [NP[S... ] NP]
- b. [NP[AP... ] NP]
- c. [NP[PP... ] Gen N/N']
- d. [NP[NP... ] Gen N/N']

Previous acquisition studies (Iwabuchi and Muraishi, 1968, among others) have found that some children, at around 2 to 3 years old, overgenerate *no* on adjectives ((1b)-type NPs). Harada (1980) observed that those children who overgenerate *no* in (1b) also overgenerate *no* in (1a). The present study investigates children's knowledge in experiments designed to elicit the types of NPs in (1c-d) as well as in (1a-b), and aims to find out exactly how *no* is overgenerated. This was achieved using the technique of elicited production, as described below.

##### 5.1.2. Paradigms Tested

The Main session of the experiments aimed to elicit the 4 syntactic types of NPs shown in (1), which are repeated below.

- (2) Group O: Relative Clauses (which should not be Case Marked)
  - a. [NP[S... ] NP] I
  - b. [NP[AP... ] NP] II
- (3) Group N: PPs and NPs with the Genitive Case marker *no*
  - a. [NP[PP... ] Gen N/N'] III
  - b. [NP[NP... ] Gen N/N'] IV

### 5.1.2.1. Group O

Group O contains the types of NPs where *no*-insertion should not take place in the adult grammar. The types of the elicited NPs are illustrated in more detail in (4)-(7).

#### Type I: Sentences

##### A. Subject Gap Relative Clauses

- (4) a. hasitteru zoosan  
is-running elephant

(the elephant that is running)

- b. pan (o) tabeteru buta san  
bread Acc is-eating piggy

(the piggy that is eating the bread)

##### B. Object Gap Relative Clauses

- (5) kuma san ga tataiteru taiko  
bear Nom is-hitting drum

(the drum that the bear is playing)

#### Type II: APs

##### A. Adjectival Verbs

- (6) iziwaru na obatyan  
mean woman

(a mean woman)

##### B. Adjectives

- (7) a. yasasii anpanman  
kind anpanman (a character)

(the kind anpanman)

- b. akai tomato  
red tomato

(a red tomato)

### 5.1.2.2. Group N

Group N contains, on the other hand, the NPs where *no*-insertion should obligatorily take place in the adult grammar. These NPs are illustrated in more detail in (8)-(14).

#### Type III: PPs

- (8) Santa san kara no purezento  
Santa Claus from Gen present

(a present from Santa)

#### Type IV: NPs

##### A. Possessives

- (9) kobuta hanako san no ribbon  
Piggy Hanako Ms. Gen ribbon

(Piggy Hanako's ribbon)

##### B. Inalienable Possessives

- (10) Porori no mimi  
Porori Gen ear

(Porori's ear)

##### C. Modifier NPs

- (11) oyama no ohana  
mountain Gen flower

(the mountain's flower)

##### D. Color terms

- (12) midori no hebi  
green Gen snake

(a green snake)



#### E. NPs with object theta-role

- (13) oheya no okatazuke  
 room Gen cleaning up  
 (the cleaning of the room)

#### F. NPs with subject theta-role

- (14) buta san no kusyami  
 piggy Gen sneeze  
 (a piggy's sneeze)

## 5.2. Methodology of the Experiments

### 5.2.1. Elicited Production

To gather the crucial acquisition data on the children's knowledge of the paradigms of NPs shown in (1), the Elicited Production methodology developed by Crain and Hamburger (1982), and Crain, Thornton and Mura-sugi (1987), was employed for both cross-sectional and longitudinal experimental studies. This methodology, with suitable controls (e.g., by satisfying the presuppositions associated with certain syntactic structures), elicits children's knowledge of grammar through their production, without being impeded by the problems of parsing, planning, and so on.<sup>97</sup> In eliciting the paradigm of NPs in question, the context was constructed so that the (pragmatic) presuppositions associated with the NP structures in question are properly satisfied, thereby, putting the children in a natural communicative situation to produce the target NPs in the experimental

<sup>97</sup> Crain and Fodor (1988) point out that with this technique, the factor of non-verbal response planning, a major source of difficulty in act-out comprehension tasks, can also be avoided.

field. In particular, the experiments reported here were designed so that the so-called felicity condition on the use of relative clauses is properly satisfied. In order to elicit the NP in (15), for example, the situation was set up so that there were two toy piggies ((16a)-(16b)) and two toy squirrels ((16c)-(16d)), engaging in different actions.

- (15) Target NP: [mikan o tabateru] buta san  
 orange Acc is-eating piggy  
 (the piggy that is eating the orange)

- (16) a. the PIGGY that is eating an orange  
 b. the PIGGY that is eating an apple  
 c. the SQUIRREL that is eating an orange  
 d. the SQUIRREL that is eating an apple

By establishing the situation in which two different animals perform two different actions, we create the context which requires the children to use a prenominal modifier in addition to the head noun, in order to describe just one of the toys.

The technique employed has the following merit. First, as Ingram (1975) points out, it is rare to find relative clauses in spontaneous production. This is also true for NPs with other types of prenominal modifiers. In particular, it is rare to get the complete target paradigm in question from spontaneous production. This problem can be solved with the experimental technique which sets up a situation that properly satisfies the presupposition, and elicits the target NPs.<sup>98</sup>

<sup>98</sup> The importance of setting up a proper situation was confirmed in the pilot study of this project. This method was also applied to the exper-

### 5.2.2. Experimental Design

The basic procedure adopted here is the same as the one that Crain and Hamburger (1982) employed. A blind-folded bear (interlocutor) was introduced to the subject. The experimenter explained to the child that this bear always wants to know everything about the world. The child was told also that the bear wants everything that he sees, so we blind-folded him to keep him quiet. The child was asked by the blind-folded bear to identify an object.

In eliciting the target NPs, four games were planned.<sup>99</sup> The experimental materials for the elicitation of each NP type are summarized below:

- (17) a. [NP[s... ] NP]: Pictures/ Toy props/ Game  
 b. [NP[AP... ] NP]: Pictures/ Toy props/ Game  
 c. [NP[PP... ] Gen N/N'] : Games  
 d. [NP[NP... ] Gen N/N'] : Pictures/ Toy Props/ Games

perimental technique on the acquisition of Binding Condition (C) in Mura-sugi (1988a, b) and Mura-sugi, Crain and Lillo-Martin (1989) as a methodological innovation called *plausible denial*. The heart of the experimental innovation in plausible denial is the same as that of the felicity condition. The difference is that the felicity condition is for the presupposition of relative clauses; but the *plausible denial* was for the possible antecedents of the pronouns. This *plausible denial* technique sets up the situation in the experiment to avoid the accidental coreference in the comprehension of the binding relation.

<sup>99</sup> The games were necessary to (i) keep the subject's attention, and (ii) elicit the target NP in the most natural context for each type of NP.

#### 5.2.2.1. Elicitation of the Relative Clauses (Ss and APs) and Prenominal NP Modifiers

Relative clauses (17a-b) and prenominal NP modifiers (17d) (except for inalienable possessives) were elicited by (i) pictures and (ii) toy props. In the picture task, the child was shown a picture to set up the context exemplified in (18).<sup>100</sup> In the prop task, the experimenter manipulated the toy props (e.g., two piggies and two squirrels) to set up the same kind of situation. The child was then asked to tell the blind-folded bear what s/he saw, as in (19).

- (18) Situation: A piggy and a squirrel are playing the drums.  
 Another piggy and another squirrel are playing the flute.

#### (19) Protocol:

taiko ga futatu aru ne. fue mo aru ne.  
 drum Nom two there-are flute too there-are

(There are two drums, aren't there. There are flutes, too.)

kore wa donna taiko ka na? (Pointing to one of  
 this Top what kind of drum Q the drums.)

(What kind of drum is this?)

kuma san ni osiete agete kureru?  
 bear to tell please

(Could you please tell the bear (what it is)?)

<sup>100</sup> In the elicitation by pictures, in addition to the pictures of the tested paradigms, the following picture books were used. The books which were considered suitable for the purpose of the experiment were the following: N. Kudo and Ikezumi, H. (1984) *kobuta hanako san no kuri-sumasu* (Ms. Hanako Piggy's Christmas) and *kobuta hanako san no pikunikku* (Ms. Hanako Piggy's picnic) (translation by K.M.). Tokyo: Doowa ya.

## (20) Examples of the Elicited NPs:

- a. \*buta san tataiteru no taiko (M: 2;11)  
 piggy is-hitting \*NO drum

(the drum that the piggy is playing)

- b. buta san ga tataiteru taiko (O: 2;11)  
 piggy Nom is-hitting drum

(the drum that the piggy is playing).

In addition, a traditional Japanese game, *kagome kagome*, was used to elicit the relative clauses. In this game, the tagger sits blind-folded in the center of a group of children, and the children walk around the tagger, singing the song *kagome kagome*. At the end of the song, the tagger guesses who is right behind him/her. In the experiment, either the subject or the bear played the role of the tagger. And the toy props played the role of the children walking around the tagger. The props were set up so that the felicity condition is satisfied. For example, there would be two dogs and two cats, where one dog and one cat hold fish, and the other dog and the other cat hold flowers. The experimenter made the toy props walk around the tagger, singing *kagome kagome*. Then, at the end of the song, one of the toys was placed behind the tagger. The song ends with the interrogative sentence: "Who is right behind you?" When the subject is the tagger, s/he guesses who it is. When the bear is the tagger, s/he keeps saying "I don't know," and the experimenter asks the subject to tell the blind-folded bear who is right behind him/her. (21)-(23) below illustrate the procedure.

- (21) Situation: Four toy props (a dog with fish, a dog with a flower, a cat with fish, a cat with a flower) walk around the tagger.

- (22) Protocol: (song) usiro no syoomen dare?  
 back right who

(Who is there right behind you?)

## (23) Examples of the Elicited NPs:

- a. \*osakana tabeteru no wanwa (M: 2;3)  
 fish is-eating \*NO doggie

(a doggie that is eating fish)

- b. \*ohana motteru no wanwa (T: 2;6)  
 flower is-holding \*NO doggie

(a doggie that is holding a flower)

Not every child produced the target NP immediately in response to the experimenter's prompt. When the target NP was not elicited, an expression without *no* was used as a protocol. The possibility of imitation was excluded by the experimenter's care not to use an NP containing *no*. When the subject merely identified the head nominal, the experimenter would ask:

- (24) Experimenter: donna?  
 what kind  
 (Which one?)

On the other hand, when the subject merely identified the modifier, which was rare, the protocol used by the experimenter or the bear would be:

- (25) Experimenter: dare?  
 who  
 (Who?)

This interactive style allowed the children several attempts at producing the target NPs.

A filler "elicitation" was interspersed at intervals (one filler after every type of NP).<sup>101</sup> All children received the same types of session with the same types of test sentences (NPs). The picture session always preceded the prop-session. This was because the pilot study showed that children produce the target NP more easily with pictures, particularly when the target NP contained an AP modifier. When more than five different examples for each type of NP in (1) were elicited from the child, the session proceeded to the next. When the child's attention did not last, the prop task was postponed until the next day.<sup>102</sup> The order of the presentation of the materials was counterbalanced in the Prop Session. In the Picture Session, the materials were presented in the same order.<sup>103</sup>

#### 5.2.2.2. Elicitation of PP Prenominal Modifiers

Two games, "the post-clerk game" and the "station game", were used to elicit NPs of type III. In the "post-clerk game," the clerk (subject) goes to the post-office and asks the post-clerk (experimenter) for presents or letters from (i) Santa or (ii) Snoopy or (iii) Donald Duck or (iv) Anpanman. In

<sup>101</sup> Conversation between the bear and the child was used as a filler. After the child produces the target NP, the bear would take off the blind-fold, and have a conversation with the child about the object identified by the target NP.

<sup>102</sup> There were 10 children out of 42 who were involved in the experiment for two days: 4 of them showed the overgeneration; and 6 of them did not. The results collected in the two days were consistent.

<sup>103</sup> The order of the presentation did not influence the result.

the "station game", the subject goes to a station and buys tickets to (i) Tokyo or (ii) Osaka or (iii) Nagano. Each ticket has a different color, so that the child has to specify the color of the ticket as well as the destination.<sup>104</sup> The experimenter played the role of the clerk also in this game. In order to increase the number of elicitations, sometimes, the experimenter gave the child the wrong present or ticket, so that the child kept specifying the exact thing s/he wants by producing NPs with PP modifiers. In order to avoid the situation in which the child points to the present or ticket and uses a deictic prenominal modifier, *this* or *that*,<sup>105</sup> the presents and tickets were all hidden in a box behind the clerk. The following is an example of an exchange in the "post-clerk" game:

- (26) Situation: There are a present from Santa and a present from Snoopy.  
There are also a letter from Santa and a letter from Snoopy.  
They are all placed in a box behind the post-clerk.
- (27) Protocol: takusan purezento to otegami kitemasu yo.  
a lot present and letter there-is  
(There are a lot of presents and letters.)

<sup>104</sup> This was to prevent the child from saying, for example, just "Tokyo," and to elicit NPs such as "a green ticket to Tokyo."

<sup>105</sup> This in fact took place in the longitudinal study with Mari (3;2).

Santa san to Snoopy kara prezento ga aruyo.  
 Santa and Snoopy from present Nom there-is

(There are presents from Santa and Snoopy.)

soreni, Santa san to Snoopy kara otegami mo  
 And Santa and Snoopy from letter too

aruyo.  
 there-is

(And there are letters from Santa and Snoopy.)

hitotu dake ageru. Nani ga ii?  
 one only give what Nom good

(You can have only one. What do you want?)

(28) Example of Elicited NPs:

- a. \*Santa san kara purezento hosii. (M: 2;11)  
 Santa from \*(Gen) present want

(Please give me the present from Santa.)

- b. \*Santa san kara otegami tyoodai. (O: 2;11)  
 Santa from \*(Gen) letter give-me

(Please give me the letter from Santa.)

### 5.2.2.3. Elicitation of the Inalienable Possessives: the Puzzle Game

In this game, the experimenter acted the part of the blind-folded bear and the child helped the bear to put the puzzle into one figure. In the puzzle, the figures of Mickey Mouse and Minnie Mouse are divided in pieces, and the child is asked to help the blind-folded bear put the pieces together to make the two whole figures. The child was asked to tell the blind-folded bear what pieces s/he has picked up, e.g., "mikkii no hana" (*Mickey's nose*.)

### 5.2.3. Imitation Task

In addition to the elicited production method, an imitation task was also employed at the very end of the main session for each child. The aim of employing this task was (i) to reconfirm the children's production, and (ii) to lessen the experimental noise of performance factors, if any, by giving the child the adult form of the target preceding the child's production. The children were once again provided with the "situation" with pictures or toy props, and they were asked to repeat the target NPs after the bear (interlocutor).

It should be noted here that the results of the imitation task coincided perfectly with those of the elicited production task. This fact indicates that the imitation task is a valid way to check the overgeneration pattern of *no* by children. Since the imitation task did not provide any new findings, I will not discuss the results obtained by this task below.

## 5.3. Experiment 1: Longitudinal Studies

Two types of studies were conducted: longitudinal and cross-sectional. The cross-sectional studies will be described in Section 5.4. The purpose of the longitudinal studies was to overcome one shortcoming of cross-sectional experimental studies, which is that it is hard to ascertain the exact developmental process in individuals. The target NPs were elicited in experiments, using the same design and technique as those employed for the cross-sectional studies. In addition, their spontaneous productions were observed and reported. Two types of children were chosen for the

longitudinal study: One who showed the overgeneration in question; and one who never showed the overgeneration in question.

### 5.3.1. Subjects

One longitudinal study dealt with a Japanese-speaking child, Emi, who showed the overgeneration phenomenon. Emi was born in Japan with Japanese-speaking parents. She developed in normal fashion in a monolingual circumstance of an upper middle-class family. She had a healthy propensity for social interaction. She also had a healthy cognitive comprehension.

The longitudinal study was conducted during her stay in Oswego, New York from the age of 2;11 to 4;2. During her stay in the United States, conversations at home were entirely in Japanese. She had no siblings; in the usual circumstances, the only linguistic input she received was in Japanese and was from her parents.<sup>106</sup> The observation was maintained with assistance from her parents, and the experimental data was collected at her home at 4-5 month intervals over two years. Each of my visits lasted 3-6 days. Hence, the observer (the present author) had access not only to experimental data, but also to the target NPs that were elicited naturally. At each experimental and observational session, Emi was interviewed for about 20 minutes. The same pairing of pictures-sets were shown to her at each visit, and the number of the elicited NPs were counter-balanced among the category types. An observer tape recorded all conversations,

<sup>106</sup> She could not verbally communicate with English-speaking people. Hence, the factor of an interlingual effect was minimal.

including the elicitation of target NPs in natural conversation. Also, some experimental sessions were video-taped with the cooperation of her parents.

A longitudinal study was held also with another Japanese speaking girl, Mari, who never showed the overgeneration of *no*. She was born in Japan with Japanese-speaking parents, and had two elder siblings. She was brought up in a monolingual circumstance. She developed in normal fashion in an upper middle-class family, having a healthy propensity for social interaction and a healthy cognitive comprehension. The longitudinal study was held while she was staying in Arlington, Massachusetts, from 2;4 to 2;8. The data were collected at her home at one week intervals for three months. With the help of a co-observer, M. Fukuhara, the sessions of elicitation and observation were tape-recorded.

### 5.3.2. Procedures

The longitudinal studies conducted were both experimental and observational. The target NPs were collected either by the experiments with the procedure described in Section 5.2. above (Elicited production and/or Imitation task), or by observation of the spontaneous productions.

### 5.3.3. Results

#### 5.3.3.1. Overgeneration of 'No'

As noted before, one of the merits of a longitudinal study is that the whole picture of the developmental process can be observed. A longitudinal study clarifies how the phenomenon in question begins and ends. Here, I

will report mainly the results obtained from the longitudinal study of Emi, who showed the overgeneration of *no*.

Structure dependence in grammar acquisition was clearly observed in the 16-month longitudinal study of Emi. She showed the overgeneration of *no* from 2;11 to 4;2. She did not start overgenerating *no* gradually item by item depending on the particular pronominal modifiers, but rather, she started the overgeneration in all NPs with the structures in (2a-b), i.e., in a structure dependent fashion. And she did not cease overgenerating *no* item by item, but her retreat was also structure dependent.

#### 5.3.3.1.1. Overgeneration of 'No' in Sentential Modifiers.

According to her mother, Emi started overgenerating *no* at age 2;11, one week prior to the commencement of the longitudinal study. When the experimental study began, her overgeneration was seen on almost all of the relative clauses. Examples of her utterances are shown below.

#### Relative Clauses (Subject gap)

- (29) a. \*tigau        no outi  
             different \*NO house  
  
             (a different house)
- b. \*hasitteru no baabaa  
             running \*NO Babar  
  
             (the Babar who is running)
- c. \*osoto        no tabeten        no zoo san  
             outside Gen is-eating \*NO elephant  
  
             (the elephant that is eating outside)
- d. \*odotteru        no sinderera  
             is-dancing \*NO Cinderella  
  
             (the Cinderella that is dancing)
- e. \*toomorokosi tebeteru        no buta san  
             corn        is-eating \*NO piggy  
  
             (the piggy that is eating the corn)
- f. \*oyoohuku kigaeteru        no baabaa  
             suits        is changing \*NO Babar  
  
             (the Babar who is tyanging his suits)

#### Relative Clauses (Object gap)

- (30) a. \*Emi tyan no kaita no sinderera  
             Emi-3s. Gen drew \*NO Cinderella  
  
             (the Cinderella that Emi drew)
- b. \*kaizyuu no tabeta no gorira  
             monster Gen ate \*NO gorilla  
  
             (the gorilla that the monster ate)

- c. \*Mama tukutta no shyu Kuriimu  
Mother made \*NO cream puffs

(the cream puffs that Mother made)

- d. \*Papa ga kaita no tako no a  
Father Nom drew \*NO octopus Gen picture

(the picture of an octopus that Father drew)

### 5.3.3.1.2. AP-Prenominal Modifiers

Emi Overgenerated *no* on AP modifiers as well.<sup>107</sup>

Adjectival Verbs

- (31) a. \*kirei no hana  
pretty \*NO flower

(a flower that is pretty)

<sup>107</sup> The correct adult form of (31a), for example, is as follows:

- (i) kirei-na hana  
pretty flower

(a pretty flower)

Thus, Emi did not simply overgenerate *no*, as in (ii), but she deleted *na* as well.

- (ii) \*kirei-na no hana  
pretty \*Gen flower

(a pretty flower)

The suffix *na*, according to Miyagawa (1987), carries tense. And it is argued in Chapter II above that the stem of the adjectival verb *kerei-na*, i.e., *kirei*, has the feature specification [+N, -V]. Hence, strictly speaking, the examples in (31), unlike those in (32), do not show the overgeneration of *no*, but instead the use of the stems of adjectival verbs as NP modifiers. I will return to the examples in (31) in Section 5.3.5.

- b. \*genki no onnanoko  
cheerful \*NO girl

(a girl who is cheerful)

- c. \*daizyoobu no neko  
all right \*NO cat

(the cat that is all right)

- d. \*kirai no papa  
dislike NO daddy

(Daddy, who pro dislikes)

- e. \*Emi tyan daisuki no oningyoo  
Emi Ms. likes NO doll

(the doll that Emi likes very much)

Adjectives

- (32) a. \*suppai no zyuusu  
sour \*NO juice

(sour juice)

- b. \*kawaii no zoosan  
cute \*NO elephant

(a cute elephant)

- c. \*ookii no tako  
big \*NO octopus

(a big octopus)

- d. \*tiityai no tako  
small \*NO octopus

(a small octopus)

- e. \*atarasii no outi  
new \*NO house

(a new house)



Emi overgenerated *no* in almost all NP with the structures in (2a-b). Only 10 out of about 600 instances collected during her overgeneration period did not have *no*.

### 5.3.3.1.3. Pure Complex NPs

It should be noted here that the overgeneration of *no* was observed not only in relative clauses, but also in pure complex NPs. Some of the examples are shown below.

(33) (A heavy door was shut with a big sound at the museum in Ottawa)

Observer: nani are?  
what that

(What's that?)

Emi: doa yo. asoko (pointing to the door)  
door there

((That's) the door, over there)

O: doa?  
door

(A door?)

Emi: doa simatta no.  
door shut C

(The door shut.)

O: oto sita ne. nani ga simatta....  
sound did what Nom shut

(There was a sound. What shut?)

--> Emi: asoko no doa no simatta no oto.  
there Gen door Gen shut \*NO sound

(the sound that the door over there shut)

O: a soo.  
so

(Is that so?)

(34) (Mother makes cream puffs at home.)

Observer: uun ii nioi. nani ka na.  
good smell what C

(That's a good smell, what is that?)

--> Emi: syuu kuriimu tukutten no nioi yo.  
cream puffs is-making \*NO smell

((That's) the smell of pro making cream puffs.)

Mama, syuu kuriimu tukutten no. Oisii no syuu kuriimu.  
Mommy cream puffs is-making C yummy \*NO cream puff

(Mommy is making cream puffs. The yummy cream puffs.)

Interestingly enough, the present study did not find any example of pure complex NPs in which *no* was not overgenerated.

### 5.3.3.2. Proper 'No'-Insertion in NPs

When Emi overgenerated *no* in relative clauses and pure complex NPs, she properly marked the NP prenominal modifiers by the genitive Case marker *no*. There was no instance in which she failed to insert *no* after NP modifiers. The following are examples of the data collected for each type of NP modifiers.

## A. Possessive

- (35) a. Baabaa no oyoochuku  
Babar Gen suits  
(Babar's suit)
- b. Aasaa no oyoochuku  
Arthur Gen suits  
(Arthur's suit)
- c. Emi kun no zyuusu  
Ms. Gen juice  
(Emi's juice)
- d. papa no biiru  
daddy Gen beer  
(daddy's beer)

## B. Inalienable Possessives

- (36) a. Mikkii no asi  
Mickey Gen leg  
(Mickey's leg)
- b. Minii no te  
Minnie Gen arm  
(Minnie's arm)
- c. Porori no mimi  
Gen ear  
(Porori's ear)
- d. Pikkoro no mimi  
Gen ear  
(Pikkoro's ear)

## C. Modifier NPs

- (37) a. okasi no uti  
sugar Gen house  
(a house made of sugar)
- b. hontoo no gohan  
real Gen food  
(the real food)
- c. uso no gohan  
lie Gen food  
(the untrue food (referring to the toy hamburgers))
- d. oyama no ohana  
mountain Gen flower  
(the mountain flower)

## D. Color Terms

- (38) a. murasaki no ribbon  
purple Gen ribbon  
(a purple ribbon)
- b. siro no boosi  
white Gen cap  
(a white cap)
- c. tyairo no hebi  
brown Gen snake  
(a brown snake)
- d. kiiro no hebi  
yellow Gen snake  
(a yellow snake)

## E. NPs with Object Theta Role

- (39) a. Baabaa no hon  
Babar Gen book  
(the book about Barbar)

b. Sinderera no hon  
Cinderella Gen book  
  
(the book about Cinderella)

c. oheya no okatazuke  
room Gen cleaning up  
  
(the cleaning up of the room)

d. oniwa no osoozi  
garden Gen cleaning up  
  
(the cleaning up of the garden)

e. Yamaguchi no oziityan no syasin  
Gen grandfather Gen picture  
  
(a picture of the grandfather in Yamaguchi Prefecture)

#### F. NPs with Subject Theta Role

(40) a. risu no ohirune  
squirrel Gen nap  
  
(Ms. Squirrel's nap)

b. papa no onara  
daddy Gen fart  
  
(daddy's fart)

c. Keiko neetyan no e  
Ms. Gen picture  
  
(a picture drawn by Keiko)

d. Emi kun no omorasi  
Emi Ms. Gen careless pee  
  
(the pee that Emi did)

e. Rika tyan no ohikkosi  
Ms. Gen moving  
  
(Ms. Rika's moving)

#### 5.3.3.3. Undergeneration of 'No' after PP Modifiers

A surprising fact was observed with Emi's production of Type III NPs, i.e., those NPs containing PP modifiers. Recall that *no*-insertion obligatorily applies after PP prenominal modifiers, as shown in (41).

(41) Santa san kara \*(no) prezento  
Santa from Gen present  
  
(a present from Santa)

However, Emi consistently undergenerated *no* after PP modifiers, while she overgenerated *no* after sentential modifiers. She produced NPs such as (41) in one of two ways. In some cases, she simply undergenerated *no* as shown in (42a). In other cases, she dropped the postposition, and made the PP modifier into an NP modifier as in (42b).

(42) a. \*Santa san kara purezento  
Santa from present  
  
(a present from Santa)  
  
b. Santa san no purezento  
Santa Gen present  
  
(a present from Santa)

More examples of the undergeneration of *no* are shown below:

- (43) a. \*Emi tyan e purezento  
Emi Ms. to present  
(a present to Emi)
- b. \*Toronto kara kippu  
Toronto from ticket  
(a ticket from Toronto)
- c. \*Yamaguchi kara densya  
from train  
(the train from Yamaguchi)
- d. \*Santa san kara otegami  
Santa Mr. from letter  
(a letter from Santa Claus)

Further confirmation of the undergeneration of *no* in PP modifiers was obtained in the follow-up Imitation task. Emi was asked to repeat NPs with PP modifiers. The result was consistent with that of the elicitation task. She used one of the two strategies mentioned above, and never marked PPs with *no*.

Recall that the obligatory genitive *no* was correctly marked on NP prenominal modifiers. Thus, Emi applied the *no*-insertion rule only to NPs, but not to PPs, around the time she overgenerated *no* after sentential modifiers.

#### 5.3.4. Retreat

There was a period of several days at around 3;4 during which the overgenerated *no* disappeared from Emi's Type I relative clauses. But the overgeneration resumed, and continued until 4;0.

At 4;0, *no* suddenly disappeared from all NPs of Type II, i.e., NPs with AP modifiers. At this time, the overgeneration of *no* continued in Type I relative clauses. But two months later, *no* disappeared from relative clauses as well.

The observed pattern in PP and NP prenominal modifiers did not change during the longitudinal study, except for an increase in the vocabulary of P. The undergeneration of *no* on PPs was still taking place at 4;2, when the overgeneration ended and the longitudinal study was terminated.

#### 5.3.5. Principle Dependent Overgeneration

In the longitudinal study, it was observed that Emi produced the adjectival verbs in NPs incorrectly. A relevant example is shown below.

- (44) iziwaru no obatyan  
mean \*NO woman  
(a mean woman (referring to a step mother of Cinderella))

Interestingly, Emi consistently put *no* on the stem of the adjectival verb, or, the nominal adjective (See Chapter II). In what follows, I will briefly discuss the incorrect form of adjectival verbs.

In Murasugi (1990), it was proposed that the adjectival verb has the following structure.

- (45) Adjectival Verb: *kirei-na(pretty)*  
[Adj.v [Nkirei]-na/da]

According to this analysis, the stem of the adjectival verb (*kirei*) is associated with exactly the same features as a noun, i.e., [+N, -V], but differs from a noun in that it is a bound morpheme. The adjectival verb

(*kirei-na*), on the other hand, has the same feature complex, i.e., [+V], as regular adjectives, such as *yasasi-i* (*kind*). (See the detailed discussion in Chapter II.)

Given this analysis, the incorrect form of an adjectival verb in (44) can be considered a principle-governed error. The "mistake" is in the usage of a bound morpheme as a word. However, the stem is a bound noun associated with the feature [+N, -V]. Therefore, as far as the syntactic feature is concerned, the stem of the adjectival verb is qualified to be genitive Case marked, since *no*-insertion applies to any prenominal modifier with the feature [+N, -V].

Hence, this type of incorrect form is a principle dependent erroneous production. The *no* in (44) is overgenerated for reasons independent of the overgeneration in question, but it is overgenerated to conform to the *no*-insertion rule. It is worth noting that this "principle-dependent erroneous production" takes place while there is no positive evidence available in the input. While the adult speakers do not produce such strings as (44), children do produce them on the basis of their knowledge of the syntactic features and the *no*-insertion rule.

## 5.4. Experiment 2: Cross-Sectional Studies

### 5.4.1. Subjects

A total of sixty two monolingual native speakers of Japanese aged 1;8 through 5;8 participated in the experiment. In the main experiments, forty two children, who are Tokyo Dialect speakers in Nagano City, participated.

In the follow-up experiments, twenty subjects, who were Toyama Dialect speakers, were tested in Toyama City and Sugihara Town in Japan.

A control group of 6 adults was also recruited for the experiment. Three adults spoke Tokyo dialect, and three spoke Toyama dialect. This was done to ensure that the adults did what the theory predicted they would do; and also to compare children's responses not with what we predicted the adults would do, but with what adults actually do when faced with the same type of experiment. Further, the adult control group was tested to ensure that the overgeneration observed in children was not due to the kind of performance error that even adult native speakers of Japanese make.

### 5.4.2. Procedures

The main experiments were held at Kurita Hoikuen (day-care center) in Nagano City.<sup>108</sup> A few days prior to the beginning of the experiment, the experimenter visited the day-care center so that the children and the experimenter could become familiar with each other. By becoming involved with the class room activities, the experimenter checked the spontaneous production of each child.<sup>109</sup> For the experimental session, each child was tested individually in a quiet room prepared for the experiment. The ex-

<sup>108</sup> The follow-up experiments were held with Toyama dialect speaking children with the same experimental technique at the following day-care centers: Hibari Hoikuen in Toyama City, and Sugihara Hoikuen in Sugihara Town in Toyama Prefecture.

<sup>109</sup> This was to ensure that the child can use *no* of the three types (discussed in Chapter II) in the spontaneous production. This procedure took advantage of the tendency of Japanese speaking children to use different types of *no* quite often.

perimeter escorted each child from the classroom, and on the way from the classroom to the experiment room, the child was told that s/he would be playing a game with the blind-folded bear. The experimenter also told the child the schema of the games s/he would be playing in the experiment room. This informed the child of what to expect when s/he arrived at the room.

#### 5.4.2.1. Pre-Test

Each session began with a pre-test. The pretest was aimed at seeing two crucial factors: (i) whether the subjects know the "tense" on the adjectives and verbs, and (ii) whether they know the names of the animals that are used in the tests as the head nominals of the target NPs.

"Tense" was important for the following reason. In Japanese, adjectives and verbs are distinguished from nouns and prepositions in that only the former categories are inflected for tense. Furthermore, adjectives and verbs often have nominal counterparts which do not show tense inflection.

For example:

- (46) a. *katazuke-ru* (verb) /*katazuke* (noun)  
           clean up                      clean up
- b. *tiga-u* (verb) /*tiga-i* (noun)  
           different                    difference
- c. *yasasi-i* (adjective) /*yasasi-sa*  
           kind                              kindness
- d. *aka-i* (adjective) /*aka* (noun)  
           red                                red

If a child has not acquired tense, then it is thus possible that s/he analyzes adjectives and verbs as nouns. And in this case, s/he would analyze

the prenominal modifiers in (2a-b) as NPs. Then, even if s/he overgenerated *no* after those prenominal modifiers, the result could be straightforwardly accounted for by *no*-insertion rule. On the other hand, if a child uses tense correctly, it is more likely that s/he understands that the prenominal modifiers in (2a-b) contain a verb and an adjective respectively. And if s/he still overgenerates *no* after these modifiers, the result is more significant in the sense that it demands a deeper explanation.

In the experiment room, each subject was introduced to the blind-folded bear, a puppet. It was explained that the child was going to tell the bear what s/he saw. In the pre-test, the elicited production with a picture book was employed. The book contained a story of the day of two characters, from morning (when they found that it had snowed the previous day) till the night (when they dreamt of the next day).<sup>110</sup> Thus, the tense marking was required to describe the time transition of the events that characters were involved in. The child was shown the picture book (with the characters to be used in the main session), and was asked to narrate to the blind-folded bear the story drawn in the book. After the child had produced the tense marker properly, and named the characters correctly, the

<sup>110</sup> The storybook contained a story of Piggy Hanako on a Christmas day: from the morning when Hanako found out that it had snowed the previous night, until the night time when the Christmas Party was over. Hanako and her friend Squirrel Sumie, were always involved in the same activities. The two knit, cook, draw pictures, prepare for a party, play with slides, iron several colored clothes, go to a friend's house with other friends, decorate the room and at the party they sing, play, and return home with a lot of presents.

pre-test was terminated. It was kept as short as possible to hold the child's attention.

#### 5.4.3. The Results of the Cross-Sectional Experimental Study

This section presents the results of the cross-sectional experiments. First, I will briefly discuss the data from the control group of adults, and then I will discuss the children's data.

##### 5.4.3.1. Adult Controls

The adults in this experiment produced the correct forms of the target NPs. In other words, there were no performance errors in the adult controls. Without exception, there were no instances of overgeneration or under-generation of *no*.

##### 5.4.3.2. Results of the Pre-Test

The children who were tested all passed the pre-test. The following illustrates the pre-test, in which M (2;4) demonstrated her knowledge of tense in adjectives and relative clauses, and also showed the overgeneration of *no* in AP modifiers.

(47) Protocol: kyoo wa kurisumasu. kore, kobuta hanako-san.  
 today Top Christmas this piggy Ms.  
 (Today (is) Christmas. This (is) Piggy Hanako.)  
 kore, korusu Sumire san. ohanasi yonde  
 this squirrel Ms. story read  
 kurenai?  
 could-not-you  
 (This (is) Squirrel Sumie.  
 Couldn't you read the story?)

---> M: Hanako san, okitenno. pinku no pazyama  
 Ms. is-getting up. pink Gen pyjamas  
 kiteru no.  
 is-wearing C  
 (Ms. Hanako is getting up. pro is wearing pink pyjamas.)  
 ---> Mari-tyan pinku no pazyama motteru yo.  
 Ms. pink Gen pyjamas is-having  
 (Ms. Mari (referring to herself) has pink pyjamas.)  
 ---> M: yuki hutta no. hutteta no, takusan.  
 snow is-falling C was-falling C a lot.  
 (The snow fell. pro was falling a lot.)  
 ---> M: massiro dattette.  
 white was  
 ((pro) was white.)  
 ---> M: e kaiteru.  
 picture is-drawing.  
 (pro is drawing a picture.)  
 B: donna?  
 how  
 (What kind?)  
 ---> M: \*akai no boosi siteru no.  
 red \*NO hat is-wear C  
 (pro is wearing red hat.)  
 E: nani?  
 what  
 (What?)

---> M: \*akai no boosi.  
red \*NO hat  
  
(a red hat.)  
  
E: risu san?  
squirrel Ms.  
  
(Ms. squirrel?)  
  
---> M: risu san, boosi kabutte nai no.  
Squirrel Ms hat is-wearing not  
  
(Ms. Squirrel, is not wearing a hat.)  
  
-----> a, oyooohuku kiteru. Mari tyan, kore suki.  
Oh suites is-wearing Ms. this like  
  
(Oh, (pro) is wearing a suite. Ms. Mari likes this.)  
  
---> M: ano ne. kotti. kore. aoi no yatu.  
well this this blue \*NO one  
  
(Well. This. This. Blue one.)

#### 5.4.3.3. Lack of Relative Clauses

Out of the 42 subjects in the main experiment, two could not produce relative clauses.

Relative clauses were not elicited from two of the children, at 1;9 and 2;0, who passed the pre-test. The following is an example of the data collected from A (2;0).

(48)  
--> A: neko.  
cat  
  
(a cat.)  
  
--> A: tori. kore, tiisai.  
bird. This small.  
  
(Bird. This (is) small.)

--> A: ookii.  
is-big.  
  
(big.)  
  
--> A: kore ookii. kore, ookii. tori san. neko san. (pointing)  
this is-big this is-big bird-Ms. cat-Ms.  
  
(This is big. This is big. Bird. Cat.)

As is clear from the above, the subject could identify the adjectives and the head nouns, but he could never put them together and construct a relative clause.<sup>111</sup>

#### 5.4.3.4. Overgeneration Paradigms

11 children overgenerated *no* in Type I relative clauses. Out of these 11 children, 8 (2;0-3;3) consistently overgenerated *no* also in Type II relative clauses, i.e., after AP modifiers, but 3 (2;8, 3;1, 3;4) did not show this overgeneration. all of the 42 children correctly inserted *no* after prenominal NP modifiers.<sup>112</sup> But many, including all of the 11 children who overgener-

<sup>111</sup> It should be noted here that among the 40 children from whom relative clauses were elicited, 39 were older than 2;0, but one was 1;8. According to the class-room teacher, the subject M (1;8) was exceptionally fluent verbally in the class. It should also be noted that this child used the relative clause without *no*, i.e., she did not show the overgeneration of *no*.

<sup>112</sup> There was one exceptional case. Interestingly, 5 children (3 out of those who overgenerate *no* and 2 out of those who did not overgenerate *no*), and Emi (2;11-3;8) from the longitudinal study as well, undergenerated *no* only on the particular color term NP, *midori* (*green*), as in (i).

(i) \* midori hebi  
green snake  
  
(the green snake)



ated *no*, undergenerated *no* after PP modifiers. Compare the adult (correct) paradigm of the tested NPs with those of the two types of children who showed the overgeneration of *no*.

(49) Adult Form

- a. [NP[S... ] NP]
- b. [NP[AP... ] NP]
- c. [NP[PP... ] Gen N/N']
- d. [NP[NP... ] Gen N/N']

(50) Type i (8 children):

- a. \*[NP[S... ] no NP]
- b. \*[NP[AP... ] no NP]
- c. \*[NP[PP... ] N/N']
- d. [NP[NP... ] Gen N/N']

Type ii (3 children):

- a. \*[NP[S... ] no NP]
- b. [NP[AP... ] NP]
- d. \*[NP[PP... ] N/N']
- e. [NP[NP... ] Gen N/N']

#### 5.4.3.5. Ages that Overgeneration Takes Place: A Speculation

The overgeneration of *no* was observed in a wide range of ages between 2;0 and 4;2. There seems to be a variation also in the age that children retreat from the overgeneration. But it seems doubtful that there is much variation in the age that they start the overgeneration.

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Those children properly inserted *no* after all the other NP modifiers.

The collected data indicate that the overgeneration starts around 2 years old. On later visits to the day care center, I found children who retreat from the overgeneration, but I found no children who started the overgeneration. That is, there was no child who was able to produce the correct NPs without *no* on the sentential modifier; and later started to incorrectly insert *no* between the sentential modifier and the head nominal. This fact suggests that those children who overgenerate *no* starts the overgeneration as soon as they start producing relative clauses at around 2 years old.<sup>113</sup>

Then, why is it that the duration of overgeneration varies among individuals? Consider the case of the longitudinal study with Emi. Her overgeneration continued more than 14 months, which is the longest overgeneration period ever reported, as far as I know.<sup>114</sup> Why was her overgeneration period so long?

One plausible possibility suggests itself when we consider the nature of the input given to her. Emi's overgeneration started at 2;11, soon after she moved to Oswego, New York. The positive evidence Emi could get was only from her parents, after her family started living in Oswego, where

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<sup>113</sup> This conjecture is further supported by the longitudinal observation by Nobue Yosida. Yosida (pers. comm.) observed that her son, Yusaku, at 2;0 started producing NPs with prenominal adjectives. And Yusaku's first NPs with prenominal adjectives already had the overgenerated *no*. In the case of Yusaku, the overgeneration continued for about 3 months. At the time when his overgeneration began, he had already produced *no* as the genitive Case marker and the pro-form *no*, as well as the sentential ending marker *no*, which is considered to be C.

<sup>114</sup> The most common overgeneration period seems to be 2-4 months.

there were no other Japanese speakers. The quality of the input should have been the same as the one provided in Japan, because her parents are native speakers of Japanese. However, as for the quantity of the input, Emi may have been in a very special circumstance. Therefore, it is likely that she had neither siblings nor Japanese-speaking friends nearby in her daily life. Therefore, it is likely that she received less input than children brought up in Japan.

If this speculation is on the right track, the length of the overgeneration period may be related to the quantity of input. The overgeneration phenomenon would then provide a piece of evidence for the hypothesis that the quantity of input plays some role in language acquisition.

#### 5.4.3.6. Toyama Dialect

The follow-up experimental study at kindergartens in a region where the Toyama Dialect is spoken revealed consistent results. At around 2-3 years old, the Toyama Dialect speaking children showed the overgeneration of *ga*. More precisely, two out of twenty tested children (2;11 and 3;2) overgenerated the complementizer *ga*. (See Chapter IV above for discussion.) And those children undergenerated *no* on PP prenominal modifiers.

### 5.5. Discussion

#### 5.5.1. Overgeneration of 'No' with Relative Clauses

Out of forty-two children, who all passed the pre-test, eleven exhibited the overgeneration of *no*. The observed patterns of overgeneration were consistent with the data collected in the longitudinal study of Emi, and also with the dialectical acquisition study.

Chapter IV, with the syntactic analysis in Chapters II and III, addressed the questions concerning the overgenerated *no* in Group O. I first drew the conclusion that the overgenerated *no* in question is of the category C. The focus, at this point, moved to the learnability question: why and how they retreat from the overgeneration. Here, I relied crucially on the conclusion drawn in Chapter III that Japanese relative clauses are IPs. Based on this conclusion, I proposed that Japanese children make the initial hypothesis that relative clauses are CPs, and lexically realize the head C as *no*. They later attain the knowledge that Japanese relative clauses are IPs, and hence, cease to overgenerate *no*. It was shown finally that this hypothesis meets the learnability criterion. On the basis of the positive evidence on the structure of pure complex NPs, Japanese children infer that all prenominal sentential modifiers, in particular, relative clauses are IPs. Thus, the IP hypothesis received support from the studies in syntax, learnability and acquisition.

In the remainder of this chapter, I will discuss the following two topics in some detail comparing the results of the longitudinal study and those of the cross-sectional experiments: (i) the undergeneration of *no* with PPs at the period of the overgeneration of *no*, and (ii) the retreat from the overgeneration with AP modifiers.

#### 5.5.2. Undergeneration of 'No' after PP Modifiers

It was reported in the longitudinal study of Emi that at the time when the overgeneration took place, she undergenerated *no* on 100% of the tested PP prenominal modifiers. Further evidence for the undergeneration of *no*

after PP modifiers was provided by the cross-sectional experimental study. All of the 11 children who overgenerated *no* on relative clauses undergenerated *no* on PPs. Yet, all of these children correctly inserted *no* after NP modifiers.

Furthermore, the undergeneration of *no* with PPs was also found in some of the children who did not exhibit the overgeneration of *no*. The younger group of children from 1;8 to 3;6, as well as one child at 3;8, and another child at 4;1 exhibited the same type of undergeneration, illustrated below.

- (51) a. \*Non tyan e                      prezento  
           Non Ms.    to \*(Gen) present  
           (A present to Ms. Non)
- b. \*Tokyo kara                      kippu  
           from \*(Gen) ticket  
           (a ticket from Tokyo)
- c. \*Nagano kara                      densya  
           from \*(Gen) train  
           (a train from Nagano)
- d. \*Santa san kara                      otegami  
           Santa Mr. from \*(Gen) letter  
           (a letter from Santa Claus)

- (52) a. Non tyan no prezento  
           Non Ms. Gen present  
           (a present to Ms. Non)
- b. Tokyo no kippu  
           Gen ticket  
           (a ticket from/to Tokyo)
- c. Nagano no densya  
           Gen train  
           (a train from/to Nagano)
- d. Santa san no otegami  
           Santa Mr. Gen letter  
           (a letter of Santa Claus)

Thus, not only the children exhibiting the overgeneration, but also some children who did not exhibit the overgeneration undergenerated the obligatory *no* on PP-modifiers in NPs.

This result was confirmed in the follow-up imitation task, in which the children were asked to repeat the NPs with PP modifiers. The result of the imitation task coincided perfectly with that of the elicited production. Those children who were able to genitive Case mark PPs in the elicited production also Case mark PPs in the imitation task. On the other hand, those who did not Case mark PPs correctly in the elicited production did not do so in the imitation task, despite the fact that the correct forms were provided preceding the child's production.

This undergeneration was further confirmed by the longitudinal study with Mari, who never exhibited the overgeneration of *no*. In both elicitation and imitation tasks, the two types of undergeneration in (51)-(52) were

observed with Mari. That is, while Mari could produce the sentential modifiers in NPs correctly like adults, she undergenerated *no* on 100% of the PPs.

### 5.5.3. Two Types of Overgeneration

As reported earlier, eleven out of forty-two children overgenerated *no*. The results of the experiment indicate that those children who exhibited the overgeneration of *no* are divided into two groups. Eight out of the eleven attached *no* both on APs and IPs.<sup>115</sup> Three out of the eleven overgenerated *no* on IPs, but not on APs. Interestingly, no child incorrectly marked *no* only on APs.

With those children who exhibited the overgeneration only on IPs, further elicitations were performed. Several NPs with different types of adjectives were elicited from those children after the experimental session. But they never overgenerated *no* on APs. This observation is quite consistent with the findings in the longitudinal study. Recall that Emi, at 4;0, retreated from the overgeneration of *no* on APs. At that stage, she never attached *no* on APs. But at that time, *no* still remained overgenerated on IPs. It was only two months later when the overgenerated *no* disappeared from her relative clauses suddenly and completely.

Thus, both the cross-sectional experimental results and the longitudinal observational results suggest that children begin retreating from the overgeneration of *no* on AP modifiers, followed then by retreat from the ov-

<sup>115</sup> One child attached *no* on just a few adjectives. These adjectives were color terms: *aoi* (blue) and *kiroi* (yellow).

ergeneration of *no* on IPs. Why is it that the retreat of *no* from APs precedes the retreat of *no* from IPs?

This developmental process seems to be related to a commonality between APs and IPs in the adult grammar of Japanese. APs and IPs are common in that they contain tense. Japanese adjectives conjugate with regards to Tense, as shown below.

(53) a. *oisi-i*  
delicious (+present)

b. *oisik-atta*  
delicious (+past)

(54) a. *sizuka-da*  
quiet COP (+present)

b. *sizuka-datta*  
quiet COP (+past)

Hence, the acquisition data can be interpreted as follows. Children are initially sensitive to the tense-features and hypothesize that AP modifiers are clausal, i.e., relative clauses. This is in fact the hypothesis I maintained in the discussion of the overgeneration data in Chapter IV, and also in this chapter. However, suppose that the AP modifiers can be APs, and need not be relative clauses in the adult grammar of Japanese. Then, the children acquire this knowledge at some point.<sup>116</sup> And at that point, they realize that AP modifiers need not be CPs. Hence, if the overgenerated *no* is a C, as argued in Chapter IV, they can cease to overgenerate *no*

<sup>116</sup> It is not clear at this point what kind of positive evidence would be available to make the children achieve this knowledge.

with AP modifiers, even if they still assume that relative clauses are CP and the head C must be realized as *no*.

Given this hypothesis, the possible order in the retreat from the overgeneration of *no* is correctly predicted. Suppose, as argued in Chapter IV, that children retreat from the overgeneration of *no* when they find out that Japanese relative clauses are IP. If they acquire this knowledge, while they still assume that AP modifiers are relative clauses, then the retreat should take place uniformly in all cases. On the other hand, if they find out that AP modifiers can be APs before they attain the knowledge that relative clauses are IP, they should retreat from the overgeneration of *no* in AP modifiers first.<sup>117</sup> Since there are only these two possibilities, it would be impossible for a child to retreat from the overgeneration of *no* on IPs first, while they still overgenerate *no* on APs.

<sup>117</sup> Note that this does not predict the fact that the children completely cease to overgenerate *no* on AP modifiers. Even if AP modifiers can be APs, examples such as (i) should have both (ii) and (iii) as its possible structures.

(i) yasasii hito  
kind person

(a kind person)

(ii) [<sub>NP</sub>[<sub>AP</sub>yasasii][<sub>N</sub>·hito]]

(iii) [<sub>NP</sub>[<sub>Rel</sub> c<sub>1</sub>e<sub>1</sub> yasasii][<sub>NP</sub>hito]<sub>i</sub>]

Given the availability of (iii), it should be possible for the children to overgenerate *no* with AP modifiers. The fact that they completely retreat from the overgeneration with AP modifiers suggests that once (ii) becomes available as a possible structure for (i), it is chosen over (iii). This follows from, and hence, provides support for the 'economy of representation,' proposed by N. Chomsky (1990, MIT class lectures).

#### 5.5.4. Two Types of Adjectival Verbs

So far, it has been pointed out that the longitudinal studies and the experimental studies led to the same observations: the undergeneration of the genitive Case marker on PP modifiers, and the fact that the retreat from the overgeneration can start with AP modifiers. However, one fact was observed only in the experimental study and not in the longitudinal study.

As reported earlier in the longitudinal study, Emi produced the adjectival verbs in NPs incorrectly. A relevant example is shown below.

(55) iziwaru no obatyan  
mean \*NO woman

(a mean woman (referring to a step mother of Cinderella))

In the experimental study, it was found that there are, in fact, two forms of incorrect adjectival-verbal prenominal modifiers that children produce.

One is the type shown above. The other is the type shown below.

## (56) Adjectival Verb

- a. \*[Adj.v kirei na] no hana  
pretty \*NO flower

(a pretty flower)

- b. \*[genki na] no onnanoko  
cheerful \*NO girl

(a cheerful girl)

- c. \*[iya na] no neko  
disgusting \*NO cat

(a disgusting cat)

- d. \*[kirai na] no ninjin  
dislike \*NO carrot

(the carrot that pro dislikes)

- e. \*[D tyan daisuki na] no oningyoo  
Ms. likes \*NO a doll

(the doll that Ms.D likes)

Interestingly, no child used the two forms in a mixed way in this experiment. That is, those children who produced incorrect forms of prenominal adjectival verbs were divided into two groups: Those who put *no* on the stem of the adjectival verb, as in (55), and those who overgenerate *no* on the adjectival verb, as in (56).

In 5.3.5., it was pointed out that the incorrect form in (55) can be considered a principle-governed error. The incorrect form in (55) can be considered a case where children "correctly" insert *no* in the context where *no*-insertion applies, if the rule is sensitive only to the syntactic features of a category, as argued in Chapter II. The stem of an adjectival verb is a bound noun associated with the feature matrix [+N, -V]. There-

fore, as far as the syntactic features alone are concerned, the stem of the nominal adjective is qualified to be genitive Case marked, as nouns also receive *no*. Hence, the *no* in (55) seems to be overgenerated for independent reason.

The type of incorrect forms shown in (56), on the other hand, seems to be due to the same kind of overgeneration of *no* as that observed in relative clauses and AP modifiers. In these cases, the whole adjectival form, which carries tense, receives *no* incorrectly, as the regular adjectives. Thus, the overgeneration in (56) can be considered as subcases of the overgeneration of *no* in Type II NPs.

## Chapter VI

### Concluding Remarks

#### 6.1. A Solution for the Puzzle

The goal of this thesis was to explain why some Japanese speaking children, at 2 to 3 years old, produce such NPs as (1).

- (1) a. \*[aoi                   ] no buubuu  
       blue (+present) \*NO car  
       (the blue car) (Clancy, 1985: 459)
- b. \*[usatyan ga tabeta] no ninzin  
       rabbit Nom eat (past) \*NO carrot  
       (the carrot that the rabbit ate) (Harada, 1980)
- c. \*[tigau ] no outi  
       differ \*NO house  
       (the different house) (Emi, 3;0)
- d. \*[gohan tabeteru] no buta san  
       food eating \*NO piggy  
       (the pig that is eating the food) (Nagisa, 3;2)

In order to attain the goal, I discussed in Chapter II the adult syntax of several types of *no*. Chapter III dealt with the adult syntax of a type of NP that does not contain *no*, i.e., relative clauses.

With the syntactic analysis in Chapter II and Chapter III, the resolution of the puzzle was pursued in Chapter IV. First, the results of the experimental and observational studies were reported. Then, in the discussion section, I first drew the conclusion that the Japanese speaking children do not overgeneralize the genitive Case marker, but rather, they start from the minimal application of the *no*-insertion rule, and attach *no* only to prenominal NP modifiers. By attaching *no* to NPs, they obey the Case Filter as young as 1 year of age. I analyzed the acquisition data as a piece of supporting evidence for the existence of some UG principles such as the Case Resistance Principle, and the Case Filter.

Second, the acquisition study reached the conclusion that the overgenerated *no* is of the category C, and the focus moved to the learnability and the syntax questions: why and how the Japanese children overgenerate *no* of the category C in relative clauses, and why and how they retreat from it. At this point, I relied crucially on a conclusion drawn in Chapter III. There, I proposed that Japanese relative clauses are IPs, and showed that given this IP hypothesis, a difference between English and Japanese relative clauses directly follows from the ECP, as formulated in Lasnik and Saito (1990). Based on this conclusion, I proposed that Japanese children make the initial hypothesis that relative clauses are CPs, and lexically realize the head C as *no*. They later attain the knowledge that Japanese re-

relative clauses are IPs, and hence, cease to generate *no* in relative clauses. It was shown finally that this hypothesis meets the learnability criterion. On the basis of positive evidence on the structure of pure complex NPs, Japanese children infer that all prenominal sentential modifiers are IPs, and in particular, Japanese relative clauses are IPs. Thus, the IP hypothesis received support from the studies in syntax, learnability and acquisition.

## 6.2. Capturing the Overgeneration in the Parameter

### Theory

In this final subsection, I will briefly discuss the learnability of the English relative clauses and Japanese relative clauses in light of the parameter-setting approach.

First, let us consider the grammatical set relationship between English relative clauses and Japanese relative clauses. Do they have a subset relationship? There are two possible answers. If we consider only the strings<sup>118</sup> that the grammars generate, it could be claimed that there is a subset relationship, since English has relative clauses both with and without 'that', but Japanese has only those without. However, if we consider the structures of the relative clauses, we really do not have a subset. English has only CP relative clauses, but Japanese relative clauses are IP. Since English does not have IP relative clauses, the English set is not a

<sup>118</sup> The term "string" used here refers to the terminal string with no actual phonetic realization.

superset of the Japanese set.<sup>119</sup> Then, what kind of set relationship do they have? The only possibility is that they have separate sets: IPs or CPs.<sup>120</sup> And this relationship does not create any learnability problem in the acquisition of Japanese relative clauses. Because there is no subset relationship, positive evidence can trigger the target grammar of Japanese. As long as there are relative clauses in Japanese that are not generated by other grammar of English, positive evidence is available.

What is the positive evidence available here for the Japanese children who, at some acquisition stage, chose CP as the category of relative clauses? As noted in the discussion above, it is the positive evidence found in the pure complex NPs. The target grammar generates pure complex NPs without a complementizer. And those pure complex NPs violate the ECP if they contain CP. If the ECP is a part of UG, and if the children know the ECP, then, this positive evidence tells the child that the set they chose is wrong. In order to conform with the ECP, children attain the conclusion that the category of the prenominal sentential modifiers in the target grammar is IP.<sup>121</sup>

Given this analysis, the existence of a complementizer, or the functional category CP in Japanese is confirmed not only from the syntactic analysis

<sup>119</sup> This is based on the assumption that English relative clauses without *that* are still CPs.

<sup>120</sup> This was pointed out to me by Diane Lillo-Martin (pers. comm.)

<sup>121</sup> This learnability picture is very similar to the parameterization of pro-drop in Rizzi's analysis. According to Rizzi (1986), English is the initial setting, and then Italian-speaking children would have positive data from null subject sentences.



presented in Chapter II, but also from the learnability point of view. Given the conclusion that the overgenerated *no* is C, and the category of Japanese relative clauses is IP, for the overgeneration to ever take place in the child grammar, there should be primary linguistic data available that convince the children that the category C is lexically realized as *no*. In fact, it was pointed out in Chapter II that in the cleft sentence, the head C of the sentential subject is obligatorily lexically realized as *no* in Japanese. Then, the cleft sentence provides the children with positive information, including (i) in Japanese, functional categories, such as C do exist, and (ii) in Japanese, C can be realized as *no*. When children find out that there is CP in Japanese, they (or some of them) overgeneralize the CP hypothesis to relative clauses.

It has been proposed, e.g., in Fukui (1986), that one fundamental difference between English and Japanese is in the presence/absence of functional categories. According to this hypothesis, English, but not Japanese, has functional categories such as C. However, according to the conclusion drawn here, Japanese, like English, has C. Japanese has C in cleft sentences, and the Japanese speaking children hypothesize at one point that relative clauses are CP. Yet, Japanese and English are not identical with respect to phrase structure: English relative clauses are CP, but the Japanese relative clauses are IP. Thus, there is a parametric difference in phrase structure between the two languages. This thesis, then, agrees with Fukui (1986) in the existence of a parametric variation, but suggests that the variation is more localized.

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